[COMMITTEE PRINT]

VOLUNTARY INDUSTRIAL STANDARDS IN THE UNITED STATES

AN OVERVIEW OF THEIR EVOLUTION AND SIGNIFICANCE FOR THE CONGRESS

REPORT TO THE
SUBCOMMITTEE ON SCIENCE, RESEARCH,
AND DEVELOPMENT

OF THE

COMMITTEE ON SCIENCE AND ASTRONAUTICS
U.S. HOUSE OF REPRESENTATIVES
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LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C., June 1, 1974.

Hon. OLIN E. TEAGUE,
Chairman, Committee on Science and Astronautics, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: I am transmitting herewith the report, "Voluntary Industrial Standards in the United States." This report was undertaken beginning last year, partially as a result of the subcommittee's interest in the growing materials research area and partially as a result of its oversight hearings of the National Bureau of Standards. In each case it was apparent that one of the major problems from a management and economic point of view is the standardization of industrial materials. This applies not only nationally, but internationally as well.

The report is intended primarily to provide an overview of the background and growth of standardization in the United States, together with identification of current problems and issues.

Sincerely yours,

JOHN W. DAVIS,
Chairman, Subcommittee on Science, Research, and Development.

LETTER OF SUBMITTAL

THE LIBRARY OF CONGRESS,
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Washington, D.C., June 17, 1974.

Hon. MIKE MCCORMACK,
Chairman, Subcommittee on Energy, Committee on Science and Astronautics, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: At the request of the Committee on Science and Astronautics, The Science Policy Research Division of the Congressional Research Service has prepared an overview report on voluntary standards in the United States, with special attention to U.S. participation in international standardization activities. The research and initial analysis was done by Dr. John C. Burt during his stay with CRS. This report was prepared by Dr. Warren H. Donnelly with the collaboration of Dr. Frances Gulick. The final version also has benefited from comments received informally from the National Bureau of Standards, the American National Standards Institute, and Mr. William McAdams, President of the U.S. National Committee of the International Electrotechnical Commission.

The overview is intended to give to Members of Congress highlights of the evolution of voluntary standards in the United States, in both the private and government sectors, and also to identify problems and issues that may merit fresh congressional attention, as well as an insight into advice and commentary received by Congress during the past 10 years.

Sincerely,

LESTER S. JAYSON,
Director, Congressional Research Service.

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OVERVIEW AND OBSERVATIONS

In an era of increasingly technological products and services for sale in the domestic market of the United States and by U.S. industry in world markets, the role of voluntary standards is taking on fresh importance. With the reduction of tariffs, some international and foreign standards appear as nontariff barriers, while foreign industries that would sell in our internal market express the same view about many voluntary and mandatory standards now in use within the United States. The possibility that regional standardization activities of the European bloc of nations might put U.S. products at a disadvantage in that market has led to a series of proposals for legislation to regularize U.S. participation in international standards setting. To date, none of that legislation has been enacted, although one bill was passed by the Senate. The legislation introduced has sometimes been referred to the Committee on Interstate and Foreign Commerce in the House, and sometimes to the House Committee on Science and Astronautics. The present bill in the 93rd Congress, H.R. 7506, lies before the Commerce Committee. Export minded sectors of U.S. industry generally favor this legislation as does the Department of Commerce. However some doubts have been raised in Congress about the proprietary of private organizations representing U.S. interests in international standardization activities, and other doubts have been expressed about the effects of standardization upon competition in industry and upon small businesses.

The question of representation is clouded by the existence of two kinds of international organizations: voluntary ones that draw their representation from the industries of member countries, and governmental ones established by treaty whose representatives are government officials. Some overlap exists because in many countries the interrelation between government and industry or business is so close that some representatives may be regarded as government officials. For the United States, various private organizations concerned with standards see themselves not as representing official United States interests in international organizations such as the United Nations but as representing only U.S. standards interests in the work of international non-treaty, non-governmental organizations. However in the absence of strong leadership by U.S. agencies concerned with commerce and industry, the voluntary standards organization whether willingly or not exert influences that impinge upon the interests of government.

The purpose of the following examination of voluntary standards in the United States is intended to highlight the principal features of the two principal participants: the American National Standards Institute (ANSI) for the private sector, and the National Bureau of Standards for the Government. Additionally, the examination draws attention to the growing trend for Governments to set mandatory standards for manufacturers in terms of product safety, public health

and environmental considerations. It extends also to the principal international and regional organizations for voluntary industrial standards and concludes with a review of Congressional interest for the ten years 1963–1973.

Ten current problems identified in the course of this examination which may warrant Congressional attention include the following:

1. The lack of a national policy for domestic and international standardization.
2. Uncertainties in authority to represent the United States Government's interests in international standards activities.
3. The adequacy of consensus as a basis for voluntary standards.
4. A need for interagency coordination of government standards activities.
5. The lack of a strong coordinative force in voluntary standardization.
6. The lack of a single set of national standards in the United States.
7. Some disadvantages of standardization.
8. Inadequacy of voluntary standards for consumer product safety: an example.
9. Standards as a limitation to competition.
10. Metrication and international standards.

THE STANDARDIZATION PROCESS

Standards have become a part of the language of domestic and international commerce, particularly for highly technological goods and services. They also are becoming the basis for assurance of product safety, socially acceptable environmental effects, and public health effects of using the output of our manufacturing industries. The National Bureau of Standards, which is the government leader in the preparation of voluntary standards, defines a standard to be a prescribed set of conditions and requirements, of general or broad application, established by authority or agreement, to be satisfied by a material, product, process, procedure, convention, test method; and/or the physical, functional, performance, or conformance characteristics thereof. The International Organization for Standardization defines a standard as a document available to the public, drawn up with the cooperation and consensus of all interests affected by it, embracing defined terminology or characteristics and the way in which characteristics are to be measured, based on the consolidated results of science, technology and experience, aimed at the promotion of optimum community benefits and approved by a recognized authority.

An understanding of the standards setting process is a starting point for consideration of voluntary industrial standards on the domestic and international scene. Wherever a multiplicity of practices is both possible and likely, group cooperation to achieve some desirable good may require the acceptance by members of the group of some joint decision to use one or a limited number of possible alternatives. When the activities involved relate to social behavior, the agreements (standards) are called laws. When related to religious behavior, they are canons. And when related to manufacturing, testing, measurement practices and conventions, properties and performance of materials, or to the performance or characteristics of things, they are variously called standards of practice, codes, regulations, or conventions. All can be lumped together under the term "engineering standards." [1]

The essential ingredients for arriving at such standards are:

(1) A set of alternatives,
(2) A method for agreeing upon a selection to be used,
(3) A group which agrees to abide by the selection, and
(4) A means for insuring compliance.

Once set and embodied in technology, products and applications, standards may be difficult to change. The controversies over metrication have often revolved more around standards than the metric system.

The number of alternatives in a specific situation may range from a minimum of two (e.g. right or left handed screw threads) to an unlimited number ranging over all the products and conventions in

[1] The following discussion draws heavily upon the discussion of engineering standards in U.S. Department of Commerce, National Bureau of Standards. U.S. Metric Study Report: International Standards. Washington, D.C.: U.S. Government Printing Office, 1970, pp. 51–54.

which our society is involved; for example, all possible sizes for shoes, hats, clothing, electrical outlets and plugs, doors, windows, bricks, tires, wires, drills, screws, etc.

The cooperating group may extend from a buyer and a seller to a company, to an industry, to a nation or even to the whole world.

The standardizing group usually involves competing interests whose desires and goals for choices among alternatives may differ, as they do between producers, assemblers, consumers, or between buyers and sellers. It may also include those who actually had no effective voice in the selection or agreement and may or may not feel bound to it, and some who may not choose to follow the agreement.

Standards may enjoy the force of law (i.e. mandatory) or may be voluntary, to be used or not at the will of the participants. Within the United States, most standardization has been permissive and voluntary, working through private organizations, although there is a growing trend towards mandatory standards authorized by Federal, State or local legislation and concerned with health, safety, fraud or the environment. Other exceptions are the mandatory regulations promulgated by the regulatory agencies such as the Federal Aviation Administration, the Federal Communications Commission, the Food and Drug Administration, the Federal Trade Commission or the recently established National Commission on Product Safety.

Some standards of voluntary organizations are referenced by government agencies in procurement and regulatory actions. Briefly, "reference to standards" is a method of stating technical requirements in a regulation or order by referring to detailed specifications in standards produced by private or governmental organizations. Recently the concept has been limited to internationally harmonized standards. Generally the "reference to standards" technique has been used by administrative agencies more frequently in economic activities such as in the procurement of supplies than for regulation of public health and safety.

However referencing standards has its difficulties. Some states have a constitutional constraint on including materials in laws by reference. There are other legal barriers. One is the issue of delegating too much administrative authority to private-standards-making bodies. And a second is that of adhering to procedures, known as "due process" which must be lawfully observed by government in adopting any standards.[2]

International mandatory standards are set by organizations established by international treaties, such as the Food and Agriculture Organization, the International Civil Aviation Organization, the International Labor Organization, the International Telecommunications Union, the World Health Organization and the World Meteorological Organization—to name some. Additionally, international voluntary standards are set by privately established organizations which may be national or regional in scope, such as the International Organization for Standardization, the Internatonal Electrotechnical Commission, the two European standards coordinating committees, CEN and CENEL or Pan American Standards Commission (COPANT).

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[2] For a detailed discussion of referencing standards, its legal and other problems, see the speech of Vincent D. Travaglini, Director, Foreign Business Practices Division, Bureau of International Commerce, U.S. Department of Commerce, at the 9th Triennial Meeting of the International Organization for Standardization, September 13, 1973, Washington, D.C.

The uses of standards evolved initially into two categories which recently have been joined by a third. The first standards were those developed by suppliers or sellers and those developed by buyers. The past decade has seen increasing use of voluntary standards as a basis for federal, state or local regulations. Among industrial organizations, standards may be developed by manufacturers of parts and materials and assemblers of devices. Alternatively, standards may be promulgated as specifications by a buyer that is sufficiently large and important to have his standards met. For example, the Federal government with its enormous purchasing power is able to impose procurement specifications upon those who would sell to it. These Federal specifications may become defacto national or even international standards as buyers and sellers adopt them for private use. Many Federal specifications, particularly for military procurement, have achieved this status. In fact, military and other federal specifications include more standards for consumer goods than those issued by all private organizations combined. Clearly, the two methods of arriving at standards—one initiated by the supplier and the other by the buyer—will often yield different decisions, with differing advantages and disadvantages. The third category of use where the ultimate consumer or user's voice may be more heard, reflects governmental needs for standards to measure compliance with regulations. Some examples include standards now being set by government agencies for occupational health and safety, environmental protection, consumer product safety and building codes. A fourth class, where the ultimate consumer would set standards, has yet to emerge in the United States, probably because of lack of organization and competence among the body of consumers.

Where small groups which have individually developed standards join together to form a larger aggregate of cooperation, they must resolve the differences in their standards. This is the process of coordination or harmonization of standards. If the standard is established directly for the enlarged group, in principle the cost of setting standards for the individual members and subsequent readjustment of these standards can be saved. However this approach of setting standards from the top down rather from the grass roots up, is unlikely to succeed in an industry where competing products and services are well established.

Extent of Standardization

Standardization activities have grown in the United States with little coordination and are fragmented among some 400 organizations. While the American National Standards Institute, and its predecessors, have sought to cover the gamut of engineering standards, only a small part of national standards in the United States were developed directly through ANSI. Over 40 other organizations in the United States issue standards that may be adopted by ANSI as American National Standards. But there is no requirement that this be done. In addition, there are national standards for biological materials, drugs, and foods which are not included in the scope of ANSI's voluntary activities or those of its member organizations.

As seen by the National Bureau of Standards, fragmentation and lack of central responsibility for voluntary standardization in the

United States has led to duplication of effort and confusion. For example, standards for steel pipe are issued by three Federal agencies and five private organizations. Some of these standards are essentially duplicates, but others differ.[3]

The development of multiple standards, where one could suffice, not only complicates and multiplies the effort and costs of the standards process, it runs contrary to the basic principles upon which good and useful standards are based:

> . . . The manufacture and distribution of moderately different, but nominally identical, products, is equivalent to producing for a fragmented market. Costs increase, reflecting manufacturing modifications and distribution complications. If carried far enough, standards duplication can lead producers to frustration and to rejection of the whole idea of costly participation in the standards process. The increased costs can also lead buyers to alternative products and sources of supply, where the standards process has been used more effectively.[4]

Most standards pertain to industrial materials, intermediate parts, assemblies or products used by large companies or government agencies. Recently, standards have applied to safety and environmental problems.

Another factor is government standards. The Department of Defense by 1970 had issued almost 35,000 specifications and standards in addition to some 5,000 other Federal specifications it had found useful. This total greatly exceeded the combined total of standards issued by all U.S. voluntary organizations, a total estimated at somewhat more than 20,000. Despite this large number of standards, there are relatively few national standards for products used in industry (e.g. machine tools) and fewer still for products used by the consuming public. A National Bureau of Standards report lists some 1,200 voluntary standards for consumer products of which about 500 specifically reference safety or safety and performance.[5]

Standards and Consumers

The use of standards by consumers in purchasing and the desire of consumer groups for a voice in the setting standards, is an emerging phenomenon associated with increasingly technological products. The ability of the consumer to judge intelligently about many products is decreasing at a time when product complexity is increasing, as may be their possible hazards. So there are signs of a fundamental philosophical change from the let-the-buyer-beware dictum of common law to the concept that the seller has a responsibility for the performance of his product, which is specified by standards. The success of consumer groups in using standards requires some means for financing their participation in the expensive and highly technical process of standards development. But a sustained source of such funding has yet to appear.[6] Another equally critical limitation has been the lack of consumer representatives with sufficient knowledge and experience to be effective participants in setting voluntary standards.

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[3] U.S. Department of Commerce. National Bureau of Standards. U.S. Metric Study Report: International Standards. op. cit., p. 59.

[4] Ibid.

[5] Tabulation of voluntary standards and certification program for consumer products, National Bureau of Standards Technical Note 762.

[6] While the issue of consumer participation in voluntary standardization is one of increasing contemporary response, it is not treated further in this paper.

CURRENT LEGISLATION FOR VOLUNTARY INTERNATIONAL STANDARDIZATION

Pending before the 93rd Congress are H.R. 7506 and S. 1761,[7] bills introduced to foster fuller United States participation in international trade by the promotion and support of representation of United States interests in international voluntary standards activities. The bills were introduced at the request of the Secretary of Commerce.

Reasons for the Proposed Legislation

Greater U.S. participation in the setting of voluntary international standards is seen necessary to protect future U.S. exports against non-tariff barriers in the form of foreign engineering standards.

The major participants in international trade are the industrialized nations. One characteristic of these nations has been their adoption and use of engineering standards which are seen as the building blocks of successful production. In the United States, and in most countries of the free world, most of these standards are voluntary, except for those relating to public health and safety and environmental effects or those used by Government in its business activities.

The use of standards permits decentralization of manufacturing, locating factories most advantageously for energy sources, raw materials, labor and markets, thereby enabling the greatest number of companies, large and small, to share in industrial activity. The existence of standards is seen as fostering innovation and the establishment of new businesses by assuring both the entrepreneur and the customer that new products meet accepted norms. It allows specialization of labor and also facilitates control and automation of production.

The stimulatory effect of standards is also seen in international trade. According to the Department of Commerce, differences in language, legal systems and terminology, plus the distance between buyer and seller, constitute obstacles which are smoothed by mutually accepted standards which describe products that the purchaser can specify and the seller can supply. The growing U.S. interest in international trade is generating a complementary interest in the representation of the United States in international standardization, particularly by voluntary, non-treaty organizations.

The development of international standards is seen as consonant with long-standing U.S. principles of free trade, for under a system of international standards all nations presumably are able to exploit their special skills and technologies, benefiting not only themselves but other nations as well. As for the United States, further development of international standards would provide the atmosphere in which

[7] H.R. 7506, introduced by Mr. Staggers (for himself and Mr. Devine), May 3, 1973, referred to the Committee on Interstate and Foreign Commerce; S. 1761, introduced by Senator Magnuson (for himself, Mr. Cotton and Mr. Inouye, by request) May 9, 1973, referred to the Committee on Commerce.

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this country could trade in world markets on an equal footing with other nations, not handicapped by standards that are incompatible with our own.

The development of international standards has brought a new word to the vocabulary of international relations, which is "harmonization." [8]

Harmonization is the purpose of several international bodies of a non-treaty nature, notably the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). Although nominally voluntary, most of the national standards bodies represented in these international organizations receive policy guidance and funds from their governments. The notable exception is the United States where the federal role in international standards activities has been largely one of indirect influence through providing technical information and the participation of its technical experts.

Where the United States has participated in international non-treaty standards work, the support provided to the U.S. participants has generally come from those U.S. companies which see a relationship between specific international standards and their own business interests. This has two consequences which are of some concern to the Department of Commerce.

First, participation in voluntary international standardization has been spotty and uneven, with effective participation for some industries, such as automatic data processing, while others have provided little support. According to Secretary of Commerce, Frederick B. Dent:

> Inadequate U.S. participation in international standards development tends to place American goods at a disadvantage in the market places of the world. Differences in European and American color television standards were dramatically emphasized when satellite communication became possible. Complex converters had to be introduced to allow interchange of programs. Moreover, U.S. television programs cannot be taped here and fed directly into transmitters of European origin. Adoption by the Europeans of a color television system incompatible with ours is estimated to have cost U.S. industry many millions of dollars.[9]

A second undesirable consequence is that the impact of international standards upon small firms, consumers, and U.S. foreign policy objectives may often receive insufficient attention.[10] A leading purpose of the proposed legislation is to provide for appropriate participation by all affected U.S. interests in international voluntary standardization, thus promoting international trade while assuring that the legitimate interests of the Government, consumers and small businesses are protected. Appropriate guidance from the Secretary of Commerce would foster development of international standards that will serve the public interest.

The harmonization of international and national standards by regional organizations can pose problems. Exclusive arrangements for product testing and certification can become non-tariff barriers against those nations which are not participating because products which are

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[8] To "harmonize" standards is to make the standards of different countries or organizations the same in content although their formats may differ.

[9] Letter of Secretary Dent, Department of Commerce, to the Congress, April 4, 1973.

[10] Some small companies are active participants in international standardization, however they are very few in comparison with the number of small enterprises whose products or services could be affected by new or changed international standards.

not so certified may have to undergo the expense of further testing. At this time, the United States is not represented in European proceedings toward total harmonization of standards which includes international quality assurance and a system for applying "a mark of conformity" to products.

From the standpoint of the Department of Commerce, the ideal system for international certification of compliance with approved voluntary international standards would be self-certification by each manufacturer.

> . . . This would provide the simplest and most economical method of operating such a system and would involve a minimum of government involvement. A system of self-certification would require an effective sanction for improper certification. While self-certification best promotes international trade, national certification by an authorized institution accepted in each of the participating nations may also serve to promote international trade provided that participation in the certification system is open to nationals of all countries.[11]

Participation in such a system would require much more coordination and cooperation between government agencies and private standards bodies than now exists.

Legislation is proposed because although the Department of Commerce is responsible for fostering foreign and domestic commerce, it has no specific authorization for involvement in international standards work and its authority to work with the private sector in international standards is not now clearly spelled out. The proposed legislation would clarify the Department's authority to promote voluntary international standardization and to fund related work of private nonprofit organizations.[12]

The legislation also provides for inputs from other Federal agencies that are concerned with engineering standards.

Their views are now represented in an Interagency Committee for Standards Policy which was established by the Department of Commerce. However this committee lacks a statutory base.

Purpose of Proposed Legislation

Briefly, the bills now before Congress would:

(1) Designate the Department of Commerce as the focal point of government involvement in international standards work.

(2) Authorize the Department to work with the private sector in voluntary international standardization.

(3) Authorize the Department to promote voluntary international standardization.

(4) Provide a statutory basis for the Interagency Committee for Standards Policy.

(5) Authorize Federal funding to qualified private non-profit organizations to promote and develop international standards.

The estimated cost of the legislation would be about $1 million for the first full year of operation.

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[11] Ibid.

[12] While not explicitly stated by the Department, it seemed commonly understood that much of this funding would go to the American National Standards Institute, ANSI. How such funds would be divided between ANSI and other voluntary standardization organizations in the United States, and for the funding of non-industry delegates remains an open item.

HISTORICAL BACKGROUND

Voluntary standards for manufacture and supply of industrial goods and services have been evolving throughout this century. Initially a function of professional associations and trade organizations, the formulation of these standards has become divided in the United States between many organizations, both voluntary and governmental. The American National Standards Institute (ANSI) strives for national leadership in arranging for the formulation of voluntary standards,[13] while other voluntary organizations, such as the American Society for Testing and Materials (ASTM) or the Society of Automotive Engineers (SAE) are also active compilers and publishers of voluntary standards. The historical sketch that follows traces briefly the evolution of some of these organizations as background and context for consideration of voluntary national and international standardization for the 1970s.

Origins of Industrial Standards

The use of standards in crafts extends far back into history. The Romans, for example, standardized design and construction of their military roads. With the growth of manufacturers before the industrial revolution, problems appeared which are reminiscent of those of today's industrialized society. For example, in 17th Century England, the armour industry had become complex enough to require an investigation. A committee researched the problem, debated their findings, and drew up a document which can well be considered as an early industrial standard. It opened with an explanation that the "often and continual altering and changing of the fasion of armes and armours" had resulted in a lack of uniformity which "do put many of our subjects to a great and unnecessary charge."

This said, the committee specified a standard as follows:

> We do hereby appoint and command, that hereafter there shall be but one uniform fasion of armours of the same common and trayned bands throughout our said Kingdome of England and domynion of Wales, when as any of the said armours shall be supplied and new made, and that form and fashion of armour shall be agreeable to the last and modern fasion lately set down and appoynted to be used by the lords and others of our Councel of Warre (the patterns, whereof are now and shall remayn in the office our ordinance from tyme to tyme, which is our pleasure likewise concerning gunnes, pikes and bandaliers whereof patterns are and shall remayn from tyme to tyme in our said office)." [14]

World War I and Industrial Standards

In World War I, the United States had to convert to a war economy. This was no simple undertaking for at that time the trend in industry

[13] ANSI emphasizes the point that it is not itself a national standards writing body, but rather provides the system and opportunities for professional, industrial and other interests involved to formulate such standards.

[14] Quoted in Benjamin Melnitsky. Profiting from industrial standardization. New York: Conover-Mast Publications, Inc., Book Division, 1953, p. 35.

was towards multiplying the varieties and sizes of products "in response to a demand, fancied or real, from distributors and consumers." [15] This diversity posed an obstruction to supplying the war effort.

On March 24, 1917, one month before the United States entered the war, a Commercial Economy Board (CEB) of the Council of National Defense began its operations. Its assignment was to conserve the resources and facilities of the civilian population in order that more materials could be supplied to the fighting forces.[16] The Board's solution was to cut out or reduce the nonessential uses of labor, capital, and equipment in all industries. This conservation by simplification was put into effect through representative groups of businessmen from the critical industries.[17]

The Board was transferred in May 1918 to Bernard Baruch's War Industries Board, which soon was to regulate the manufacture of some 30,000 articles of commerce. The Board became the Conservation Division of the War Industries Board and effected major savings of manpower and materials in over 250 industries by reducing the number of styles, varieties, sizes, and colors, and other measures. Mr. Rexmond C. Cochrane, in his definitive history of the National Bureau of Standards, summed up as follows the results of this standardization drive:

> As a direct result of simplification and standardization, labor savings in the manufacture of products from clothing to coffins reportedly reached as high as 35 percent. Savings over prewar consumption of materials in some instances rose to 50 percent as simplicity ruled and plentiful wood, paper, zinc, and cotton replaced the steel, tinplate, copper, brass, bronze, pig tin, nickel, and raw wool consumed by war. The country had experienced nothing like it before, and the impact of this husbandry of resources reached into every home, every office, factory, institution, and government agency in the Nation.[18]

But World War I saw the problems and excesses of "an attack of unusually severe standardization fever." [19] Specifications arbitrarily arrived at often defeated their purpose. For example, General Electric complained that it frequently received greatly differing specifications for identical items of electrical apparatus ordered by the Army and Navy. New department or bureau heads, particularly in the War Department, suddenly became specification minded, and were apt to set standards for materials that could be produced only at high cost. In one case, a cement specification so limited magnesium content that it cut off the most important cement-producing district in the United States. In at least one instance, the War Industries Board had to kill a general standardization suggestion of the War Department which would have reduced all machine tools to uniform standards and stifled production for many months.[20]

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[15] E. W. McCullough. "The relation of the Chamber of Commerce of the United States of America to the growth of the simplification program in American industry." The Annals, Standards in Industry, vol. 37, May, 1928, p. 9.

[16] A. W. Shaw. "Official proceedings: conference on simplified practice in industry." Supplement to the United States Daily, sect. II, vol. 5, no. 241, p. 3.

[17] In later years, Arch W. Shaw, a former chairman of the CEB, recalled that simplification and standardization for wool manufacturers was one of the first cases. Of this he said:

"We hit upon the idea that if we could cut down the varieties of woolen cloth and restrict the number of types that each factory made, and increased the width so the full capacity of the looms could be used, there should remain sufficient production capacity to produce the khaki cloth it was necessary to have for the army." (Cf. Shaw, op. cit., p. 3.)

[18] Rexmónd, C. Cochrane. Measures for progress. A history of the National Bureau of Standards. Washington, D.C., U.S. Department of Commerce, 1966, p. 178.

[19] Ibid., p. 179.

[20] Ibid.

Despite the follies committed in the name of standardization, as Cochrane puts it, the practice emerged from the war as an indispensable consideration for the coming age of mass production. The war had demonstrated both the usefulness of standards and specifications to manufacturers, and also their inescapable necessity. However, hopes that the sensible husbandry of resources through standardization would continue into the postwar era soon faded. Industry reverted back to excessive styles and models, and standardization was deemphasized.

The Crusade for Standardization

The 1920s saw a strong interest in voluntary industrial standardization. One landmark of this "crusade for standardization" [21] was the survey report, "Waste in Industry", by the American Engineering Council of the Federated American Engineering Societies. It was initiated in 1920 as one of the first projects of the newly formed Council, which was created as "an association for public service to give voice to the thought of engineers" in National problems of an engineering nature. This survey was initiated while Herbert Hoover was President of the Federation. Twenty-five percent of the costs of production could be eliminated, the report disclosed, without affecting wages or labor. In six typical industries, wasteful practices accounted for almost 50 percent of materials and labor, and it was estimated that $10 billion annually could be saved through standardization and simplification alone.[22]

The concept that industrial waste could be reduced through simplification and standardization received a major impetus when Mr. Hoover became Secretary of Commerce under President Harding's administration in 1921. Almost immediately after taking office, he declared an "all-out war on waste". One of his major objectives directly involved standards.[23] Hoover proposed the reduction of waste in manufacture and distribution through the establishment of grades, standards of quality, dimensions and performance in nonstyle articles of commerce; through the simplification in dimensions of many articles of manufacture, and the reduction of unnecessary varieties; through more uniform business documents as specifications, bills of lading, warehouse receipts, etc.[24]

Certain that industry and commerce succeeded best when acting in their own interests, Hoover sought no legislation. The Commerce Department would supply guidance, information, and assistance, but compliance would be voluntary.[25]

So the "crusade for standardization" took the form of a three-pronged attack upon waste in commerce and industry. It comprised *standardization* of business practices and of materials, machinery, and

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[21] Cochrane uses this term, op. cit., p. 253.

[22] The actual breakdown was: metal trades—29% waste, boot and shoe manufacturers—41%, textile manufacturers—49%, building—54%, printing—58%, and men's clothing—64%.

[23] His other objectives included—
elimination of waste in transportation,
elimination of waste of natural resources,
husbandry of fuel and labor through greater electrification,
curtailment of the swing of business cycles and of seasonal unemployment,
improvement of the distribution of agricultural products,
reduction of waste arising from litigation and from labor disputes, and
development of pure and applied scientific research as the foundation of genuine labor-saving devices, better processes, and sounder methods.

[24] The memoirs of Herbert Hoover, II, 29, 62–63. Quoted in Cochrane, op. cit., pp. 253–254.

[25] Ibid., p. 254.

products; *specifications* to insure good quality of products; and *simplification* in variety of products. Where the wartime effort had sought to achieve mass production of military products through standardization, the postwar effort sought to achieve standardization by establishing mass production techniques in every field of commerce and industry.

A Clearinghouse for Standardization.—A first step towards institutional arrangements for standardization took place in 1919 when the National Bureau of Standards proposed to the American Engineering Standards Committee (AESC) that it become the central agency to "provide a better connection . . . between the agencies of Federal, State and municipal government and the technical and commercial organizations concerned with engineering and industrial standards".[26] Securing the agreement of the technical societies, trade and business organizations, and professional organizations that it spoke for, the AESC that Fall adopted a new constitution, broadened to include representation of government agencies and other national organizations, but not consumer interests, which were not then defined.

The AESC thus became a national clearinghouse for engineering and industrial standardization. By 1927, 356 national organizations—technical, industrial, and governmental—were accredited to the Committee. The following year in recognition of its new functions, the AESC became the American Standards Association.

The Peak of Standardization.—The crusade for standardization peaked in the late 1920s. By then the American Standards Association was able to assert that standardization had become "the outstanding note of this century," its influence pervading "the remotest details of our industrial regime", tapping "all sources of scientific knowledge and (affecting) every phase of design, production and utilization." [27]

The "rage for standardization" of the 1920s extended beyond the United States. It swept every nation with any degree of industrial development. In most countries, however, standardization was Government-directed. In the United States, it was largely a voluntary industrial effort.

Early Payoffs of Simplification Through Standards.—Because the results of product simplification were most readily understandable and produced impressive statistics, this aspect of standardization captured most public interest. An NBS study in 1921 found "many sizes and styles of material and devices (in use), not through any real demand for such variety . . . but through the undirected natural expansion of . . . business". The collective waste in commerce and industry from this source alone was said to represent an annual loss of 30 percent of Americas energies.[28]

In 1921 a division of simplified practice was organized in the NBS and produced some startling results. Its first two simplified practice

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[26] Edward B. Rosa. Reorganization of the Engineering Standards Committee, Engineering News-Record. v. 82, 1919. p. 917.

[27] Cf. Cochrane. op. cit.. p. 256. This statement comes from the opening paragraph of the first standards yearbook of the NBS. Issued in 1927, this publication furnished key information on standardization of manufacturers, industrialists, engineerings, and governmental purchasing agencies. It described the fundamental and working standards of the United States, the organization and work of the Bureau, of the national and international standardization agencies abroad, those of the executive departments and independent establishments of the Federal, municipal, and State governments, the central agencies for industrial standardization in the United States, and those supported independently by technical societies and trade associations.

[28] U.S. Department of Commerce. NBS annual report 1921, pp. 22–23.

recommendations (SPRS) reduced paving brick sizes from 66 to 4,[29] and types of metal and wood beds from a score or more to 4 widths of one standard length.[30]

Cochrane summed up the early impact of simplification as follows:

> Begun with a congressional appropriation of $52,000 made in 1920 for "the general standardization of equipment," by 1925 the simplified practices program alone was spending twice that amount annually. Adopted recommendations had reduced hotel chinaware from 700 to 160 varieties, files and rasps from 1,351 to 496 types, milk bottles from 49 to 9 different designs, and book and magazine paper from 267 to 11 sizes. Recommendations on the verge of acceptance ranged from warehouse and invoice forms to paintbrushes and paper bag sizes. Totting up the rewards as leaders in the crusade, representatives in nine important industries cooperating with the division estimated that their annual savings through simplification already exceeded $293 million. The figure, rounded off to $300 million, received wide publicity.[31]

A year later, in 1926, a total of 3,461 individual acceptances of recommendations for more than 60 commodities had been received at the Bureau from trade associations, manufacturers and distributors. Special surveys for 12 commodities indicated an adherence to published recommendations of 79.5 percent.[32] By 1928, acceptances had almost tripled as the simplification program spread from large manufacturers and distributors to smaller firms, to hotel, hospital and other institutional supply firms, and to city, county, and State purchasing agencies. Manufacturers reported savings in reduced inventories, in interested charges, in reduced obsolescence, and in payrolls among the benefits of simplified practice, and, in at least two reported instances (concrete blocks and shovels) prices to the trade had been reduced by as much as 25 percent.[33]

Commercial Standards and the NBS.—The NBS Simplified Practices Recommendations attained a considerable following, but there remained the issue of voluntary compliance. Some businessmen wished to extend Federal laws to authorized mandatory commodity grades and qualities. The Department of Commerce, under Secretary Hoover, was willing to assist in the development of quality standards. However, the Department held that the standards should be established voluntarily in the trades themselves rather than by legislation, and should be policed by the associations, not by the Government. In 1927, the Commerce Department's Voluntary Standards Program was widened to include commercial standards for grade, quality, dimensional tolerance and other specifications requirements. One byproduct was an increase in the availability to industry of the results of the work of the Federal Specifications Board for many of the new Commercial Standards were based on Federal Purchase Specifications of the Board. The Commercial Standards were limited to commodities which were bought and sold, and so did not apply to safety codes, drafting practices or trade practices. The first Commercial Standards were for such products as Stoddard solvent, clinical thermometers, chain-link fence, porcelain plumbing fixtures, steel pipe and wrought iron pipe nipples.

Because the demand for its services increased steadily, the Commercial Standards unit was given division status in 1929. Renamed the

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[29] E. L. Priest. A primer of simplified practice. Washington, D.C.: U.S. Government Printing Office, 1926. pp. 12, 18.
[30] U.S. Department of Commerce. NBS annual report 1922, p. 266.
[31] Cochrane, op. cit., p. 259.
[32] U.S. Department of Commerce. NBS annual report 1927, p. 35.
[33] U.S. Department of Commerce. NBS annual report 1928, p. 32.

Division of Trade Standards, the group continued its four-fold functions: (1) to provide a neutral agency which would insure adequate considerations of the needs of all interests; (2) to supply such assistance and advice in the development of the standards program as past experience with similar programs would suggest; (3) to solicit and record the extent of adoption and adherence to the standard; and (4) to add all possible prestige to the organized effort to establish adequate standards by promulgation of the Commercial Standard if and when it was adopted and accepted by all elements directly concerned.[34]

To encourage the use of Federal Specifications and Commercial Standards by Government purchasing agencies, the Bureau compiled lists of more than 3,000 "willing-to-certify" manufacturers. But industry sought more than Government approval. Some companies also wanted certification of grade and quality of products such as clinical thermometers, surgical gauze, fuel oils, textiles, and metal products. They wanted certification for greater consumer acceptance. Manufacturers wanted labels to identify or guarantee that commodities complied with the standards, and consumers wanted the information and protection thus provided.[35] Voluntary labeling was approved and by the start of the 1930s over a hundred trade associations were utilizing labels to identify products that conformed to Commercial Standards.

An Early Conflict with the ASA.—The first serious disagreement between NBS and industry arose over the degree of NBS involvement in the simplified practices program which, from the standpoint of the American Engineering Standards Committee, caused some reluctance of industry to accept the principles of simplification and standardization.[36] The establishment of the trade standards division at once generated resistance.

In 1928, the AESC was reconstituted as the American Standards Association (ASA) with authority, through acceptance by consensus of its members, to make industrial standards and validate them as well, and thereby "draw to itself . . . the bulk of standardization and simplification in industry". Preliminary to this reorganization, the AESC formally requested the NBS to withdraw from all commercial standardization activities. A period of estrangement followed during which NBS Staff ceased to attend ASA meetings.

Ultimately the AESC request was rescinded, but the estrangement continued as the NBS reported that whole series of projects begun by its trade standards group were being held up or duplicated by ASA and that the attitude of the association had become antagonistic. Claiming interference and lack of cooperation, ASA in turn replied that the NBS was usurping ASA functions and was promoting Federal specifications as commodity standards. As a result, said ASA, both producing and consuming industries, fearful of Government interference, resisted the validation by ASA of standards largely determined by Federal agencies. The conflict of interest was to go on for another two decades.[37]

Voluntary Compliance: a Limit of Standardization.—By the end of the 1920s the eliminations of voluntary compliance were becoming evident.

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[34] U.S. Department of Commerce. The Commercial Standards Service and its value to business. Commercial Standard CSO–30. Washington, D.C.: U.S. Government Printing Office, 1930. p. 8.

[35] Cochrane, op. cit., p. 261.

[36] Cochrane, op. cit., p. 304.

[37] Ibid.

If there was substance to the idea that standardization would contribute to a new industrial evolution, as Secretary Hoover hoped, it was attenuated by its voluntary nature. The reluctance of even a few members in a trade group was sufficient to bar any consideration of joint agreement, and as often as not carefully worked out programs suddenly collapsed at the point of success. Moreover, despite unsparing publicity and the exertions of such trade-wide organizations as the National Association for Purchasing Agents, gaps in agreement and compliance spread.[38]

Depression and Standardization

The great depression ended the crusade for standardization as appropriations were cut and staffs shrank. But there was no thought of abandoning the standardization work of the Bureau. Before leaving office in 1932, President Hoover asked the NBS to take over the Commerce Department groups concerned with specifications and trade standards. This was done and there they remained until after World War II. In 1950, following the postwar reorganization of the NBS, they were transferred back to the Department of Commerce.

Beginning with fiscal year 1933, appropriations cuts together with impounding of funds, came close to putting an end to all NBS standardization work. One-third of the Bureau's staff was separated from service in July 1933 and an 8-day furlough was given to all those who remained. The Simplified Practice Division was severely affected. Believing that the Division's work could be continued by outside groups, an economy advisory committee drastically curtailed standards activity. The Division's staff was cut from 40 to four and transfer of the entire program to the American Standards Association was considered. As for Commercial Standards, this work was shifted to ASA. Some companies protested this transfer. NBS' work on specifications, simplified practices, trade standards, and building and safety codes had been to the advantage of many industries, and they protested to Congress. As a compromise, the Department agreed that the Bureau would cooperate in ASA standardization, continue its representation on almost a hundred ASA committees, and sponsor certain projects assigned to it by ASA. When this agreement took effect, some of the staff separated earlier by the Bureau were taken on by ASA to continue their work at the Bureau as ASA employees.[39]

The initial shock of the depression wore off and by 1940 the NBS had 51 employees working on commercial standards.[40]

Standardization and World War II

Little publicized, yet important for the conservation of critical materials during World War II was the wartime effort of the simplification and commercial standards groups at the Bureau. At the beginning of the defense program in 1940, industry advisory committees were set up as liaison between industry and Government on simplifica-

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[38] Cochrane, op. cit., p. 261.
[39] Cochrane, op. cit., p. 346.
[40] The three divisions comprising the commercial standards groups were the: Codes and Specifications, Simplified Practice, and Trade Standards. The first was concerned with safety codes, building codes, building practices and specifications, producer contacts and certification, and consumer contacts and labeling. The second included metals and construction materials; wood, textiles, and paper; containers and miscellaneous; and materials handling equipment and ceramics. The third covered metal products, textiles, wearing apparel, wood, paper and leather; petroleum, chemicals, rubber and miscellaneous; and export standards.

tion. Simplified practice recommendations of these committees were incorporated into regulations of the Office of Price Administration and later into the orders of the War Production Board. The results were savings in labor, machines, and both critical and noncritical materials.[41]

The American Standards Association had this to say about the role of standards in the war effort:

> Never before has the country been so standards-conscious. The President—his Director of Economic Stabilization—the Army—the Navy—WPB—OPA—industry—are all using standards as a means of carrying out the tasks imposed upon them by the war.
>
> Standards are being debated on the floor of Congress, which has set up a committee to study their use. The WPB is using them to conserve materials, manpower, and production facilities. They are basic in government procurement. They are basic in subcontracting. OPA has found that price cannot be controlled without standards to define the product. Standards are already in lend-lease.[42]

A Time of Ferment

A marked difference between the Government standards programs for the first and second World Wars was their extension in World War II to include consumer goods. During that war, actions of the Office of Price Administration (OPA) and the War Production Board clearly reflected this demand. For example, OPA initiated an extensive program of standardization and grade-labeling "as a means of protecting consumers against the hidden inflation of quality deterioration.[43] However, OPA use of standards was criticized in Congress and industry, especially for grade-labeling, and consequently the program was limited. But OPA did call attention to a problem that was not easily dismissed. Even before the war's end, Members of Congress, businessmen, advertisers and others began to reevaluate their approach to consumer standardization. Some found deficiencies, and wrote to the Secretary of Commerce about inadequacies of existing standards, especially the lack of coverage in such areas as consumer goods. At the same time there was debated the issue of who should lead the expected post-war expansion and development of standards. One group felt that the Government should take the initiative with the aid and advice of industry. Another group thought that private organization should take the lead with the cooperation of the Government. The NBS was proposed as the agency to carry out standardization for Government, while the American Standards Association was suggested as the private sector's choice. This debate led to two milestone reports in the evolution of current thinking about voluntary industrial standards in the United States.

The C. L. Wilson Report of 1943.—To examine the issue of who should set standards, Secretary of Commerce Jesse Jones, during World War II, assigned a special Commerce consultant, Carroll L. Wilson, to report on the standards problem with specific emphasis on the role of the NBS in developing consumer goods standards. Wil-

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[41] WPB orders which limited the sizes and weights of tubular radiators, for example, were estimated to have saved 23,000 tons of cast iron. Builder's hardware was reduced from about 27,000 to 3,500 items. Sixty-five percent of all types and sizes of brass and bronze pipe fittings were eliminated and the variety of brass and bronze valves was reduced from 4,079 to 2,504 types, saving thousands of tons of carbon steel, copper, and alloy steel. Cf. Cochrane, op. cit., p. 424.

[42] Standards in the war effort. New York: American Standards Association, 1943, foreword.

[43] "In Wallace's lap: standards." Business Week, July 7, 1945, p. 22.

son reported in December 1943. In his report, "Standards in Commerce—A Basis for Action", he reported that neither the Government's nor the ASA's standards programs were adequate. "In the application of standards to commerce the actual achievements of both NBS and ASA seem to have fallen short of their opportunities". Concerning consumer standards, Wilson said:

> Recent developments, in particular the work of the OPA, have emphasized the likelihood that standards may come to be applied more extensively to consumer goods. . . . It is probable that the next two decades will bring a strong growth in consumer's demands for facts on performance of things they buy. From this demand will come the need for many performance standards.[44]

In Wilson's opinion, there was a clear case for Government leadership only if the need were predominately for standards involving health, personal safety, or protection of property. Otherwise, leadership belonged to the private sector. Thus he concluded that since most standards did not involve such questions, "the public should look primarily to business rather than Government, to evolve the performance data it will want." The Department of Commerce and the NBS could provide facts, measurements and technical assistance. In other words, the effective development of consumer standards could not be left to the public or the private sectors alone, but rather demanded collaboration between them. Private organizations, in Wilson's analysis, should take the lead and deal with such aspects as standards promotion, negotiation, and education, while the Government would assist with technical problems. He concluded his report with a suggestion that the Secretary of Commerce with the aid of the Visiting Committee of the NBS might plan a conference of business executives and other leaders interested in the future development of standards in the United States.

The C. E. Wilson Report of 1945.—In response to the concluding suggestion of the C. L. Wilson report, the Secretary of Commerce called a conference in January 1945. Fifty industrial executives met to clarify the roles of Government and industry in the development of standards. The conference noted with approval "the steps taken by the American Standards Association to broaden the scope of its work," so that it could deal "with any standard or standardization project within the fields of engineering, accounting, business practice or consumer goods."

In addition, the conference recommended that the Secretary of Commerce appoint a policy committee of industrial executives to discuss with the ASA the recommendations that were made and steps to carry them out.

Later, Under Secretary of Commerce Taylor selected seven businessmen and educators to make up the Policy Committee. Mr. Charles E. Wilson, president of the General Electric Co., was named chairman of this committee. This Committee reported to the Secretary of Commerce through the Visiting Committee on June 6, 1945. It reached the same conclusion as had Carroll Wilson, holding that the private sector should take the lead in standardization, with Government playing a secondary role by assisting in testing and research.

The Committee noted that standards would have an ever-increasing importance that would ultimately affect the production and sale of

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[44] Quoted from materials supplied by the NBS.

all goods.[45] To adequately respond to future needs, the Committee suggested that standardizing activities which involved negotiation, opinion, judgment, or compromise, should be developed through individual and joint efforts of technical, manufacturing, merchandising, and consumer groups. These efforts, the Committee asserted, would need to be coordinated and promoted through a disinterested private agency functioning in the public interest. "It appears that this function can most logically be fulfilled by the ASA," the Committee stated.

To prepare the ASA for its added responsibility, the Committee recommended that its activities be broadened to include any standard or standardization project which deserved national recognition, whether for raw materials, intermediate goods, production goods, or for safety or for engineering or commercial transactions. The Committee also observed that the ASA must make sure that it included in its activities all groups entitled to a voice in the adoption of standards as well as those competent to advise on consumer reactions; and that the ASA maintain itself as a truly independent association privately financed and accomplishing its standards clearance and standards promotion voluntarily, with full participation of all interests including those of the consumer.

In the Committee's view, the role of the NBS was to aid in supplying consumers with information they were entitled to and would need about the products they bought. To this end, the Committee recommended that the Bureau develop laboratory and service testing facilities "to supply the desired information to consumers in standardized definitions, terms, designation, and specification of consumer's standards." More specifically, the Committee said, "the true functions of the NBS in connection with standardization should be those of basic research, furnishing facts, measurement, and technical assistance in the development of adequate testing methods."

As for division of standardization work between the Bureau and the Department of Commerce, the former should concentrate on furnishing physical data for standards while the latter should supplement such materials with economic and marketing information. Together they would provide back-up research for outside groups forming standards. In addition, the Bureau and the Department would give technical counsel and would be encouraged to take a direct part in the standardization activities of public interest bodies. However, the Committee made clear its view that the Department should abstain from promoting new standards on its own initiative and should avoid any attempt to compete with ASA as a clearinghouse. According to the Committee, this last recommendation assumed that:

1. private groups were best qualified to initiate and formulate voluntary standards, and
2. the ASA could and would in due time develop adequate capacity, know-how, and status for nationwide clearance and promotional leadership.

ASA Action.—Coinciding with the report of the Policy Committee in 1945 was an announcement by ASA of changes in its constitution

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[45] Report on the Policy Committee on Standards, Charles E. Wilson, chairman, June 1945, p. 2.

to allow it to meet more fully the postwar needs of Government and industry. The changes were to ease the development of consumer goods standards. A restriction that had limited ASA was removed, and another proposal was approved which advocated that all groups with an interest in a particular standard have a voice in its development. Another constitutional change provided for the addition of three "members-at-large" to the association's board of directors to give more voice to groups interested in consumer standards. To launch its expanded program, ASA sought the official blessing of Secretary of Commerce, Henry Wallace.

Some nine months were to pass before the Secretary replied to the Wilson report, and then there were conflicting views. Business Week summed up the problem as follows:

> Wallace will be cautious about signing over—to ASA or any other private organization—the Commerce Department's interest in developing and promoting consumer goods standards. Against the Wilson Report, he will have to weigh the arguments of many interests which, for one reason or another, favor a strong Bureau of Standards whose activities would embrace all phases of standards.
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> Many retailers, and some manufacturers of consumer goods, feel that ASA's long association with the engineering field makes it a poor vehicle for consumer goods standards. Consumer groups feel their counsel has not carried sufficient weight with ASA. (They are piqued because they were not represented on the Wilson Committee, nor consulted on its report.)[46]

Secretary Wallace compromised the conflicting viewpoints. In a letter to C. E. Wilson, he said that he would be glad to see a general expansion of the country's standards programs and that the Department would encourage the use of ASA facilities for the initiation, development, and publication of standards once that Association made the changes called for in the Wilson report. However Secretary Wallace rejected the recommendation that the Commerce Department drop its industrial standards activities. Looking to the future, he anticipated the following functions for the Department.

1. As recommended by the Wilson Committee, to sponsor and perform basic research in economics and marketing for the ASA and other groups and organizations engaged in formulating voluntary standards or desiring to initiate standards;

2. As recommended by the Wilson Committee, to sponsor groups in proposing standards to the ASA for issuance as American Standards;

3. Retain the Department's function of initiating and proposing standards to the ASA, or to any other group or groups; and the development of voluntary standards where the Department finds on the basis of economic studies that such standards would be desirable in the public interest; and

4. Retain the function of publishing a voluntary standard developed by a group if that group requested the Department to do so.[47]

The Kelly Report of 1960.—The role of the Department in voluntary industrial standards was examined again in 1958 when Sinclair Weeks, then Secretary of Commerce, requested the National Academy of Sciences to appoint an ad hoc committee to evaluate the functions and operations in the field of science and technology of the Department of Commerce. NAS President Detlev W. Bronk appointed a committee

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[46] "In Wallace's lap: standards." Op. cit., p. 24.
[47] Material supplied by the Department of Commerce.

of 10 scientists and engineers, headed by Mervin J. Kelly, president of International Business Machines Corp. One of seven areas selected by the Committee was the Office of Technical Services of the NBS which was then responsible for the industrial standards. The panel which examined the OTS recommended that the Department halt the development of voluntary standards, but called for continued advisory and research support to private efforts. Despite praise for the Department's industrial standards work, the panel concluded that its contribution to national standards was insignificant because of limited staff and funds and because interviews with industrial, technological and research groups and several trade associations indicated that the majority of them were unaware of this function. According to the Panel, the only realistic alternative was at least a ten-fold increase in appropriations to permit a commercial standards and simplified practices program worthy of the United States position as a foremost leader in industry. The Panel called attention to the confusion in the United States over standards. It observed there were so many groups issuing and promulgating standards that one could conclude "that, in reality, the United States has no standards program." [48]

The Panel's specific recommendations included the following:

1. That the Secretary of Commerce take the leadership in initiating another study of standardization in the United States for the purpose of strengthening and unifying the standards and simplified practices program of the Nation.

2. That the standards and simplified practices preparation and promulgation activities of the Commodity Standards Division be discontinued and these discontinued activities be referred to existing private standards bodies such as the ASA or the American Society for Testing Materials.

3. That the activities of the Department be strengthened as a research and advisory service.

The NAS report was not unanimous on the withdrawal of the Department from voluntary industrial standards. The Society of the Plastics Industry, Inc., dissented and argued the case for the Department's role as follows:

> . . . The voluntary standards procedure of the Department of Commerce offers advantages not available through privately supported standards-making agencies. . . . While the standard is being developed, it is a decided advantage to have the standard in preparation under the constant review of the Commodity Standards Section, and most important under the review of the National Bureau of Standards. With the experience the National Bureau of Standards has had in developing tests, measuring materials, in conducting research, and assisting and developing standards, the Bureau, through making comments and suggestions, offers a completely invaluable service. Such assistance is not available from any other government or private agency.[49]

The LaQue Report of 1965.—Acting on the recommendation of the Kelly Committee, J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, in the spring of 1963 formed an ad hoc Panel on Engineering and Commodity Standards to review the U.S. national industrial standards program and to make recommendations. He appointed Dr. Francis L. LaQue, vice president of the

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[48] The role of the Department of Commerce in science and technology; a report to the Secretary of Commerce, March 1960, 157 p.

[49] Ibid.

International Nickle Company, Inc., as chairman.[50] The final LaQue report was released on February 2, 1965.[51]

In his letter enlisting the service of the panel members, Dr. Hollomon defined its mission as follows:

> The purpose of the committee is to review the broad requirements for industrial and commodity standards in the United States and to make recommendations as to activities important to meeting national requirements for standards, with particular emphasis on the role of the Federal Government and the Department of Commerce. It will be important to give special attention to the relationship between activities of the private standards groups and the Federal Government and to the problem of international standards.

The LaQue report disclosed that the principal problems in standardization in the United States were in coordination of activities and the recognition and designation of appropriate voluntary standards as "USA Standards."[52] Technical societies and trade associations which were principally concerned with the development of voluntary standards were found to be competent and effective. In the Panel's judgment, the primary responsibility for development should be left in their hands. However, some organizations that produced many standards of national importance had not recognized the advantages of further designation as American Standards through the ASA. Of the 13,675 nationally used standards in 1965, only 2,300 (16.8 percent) had been advanced through the procedures of the ASA for recognition and designation as American Standards.

The LaQue Panel strongly recommended legislation to establish a national coordinating institution for voluntary standardization with international recognition equivalent to that of national standards bodies of other countries having officially recognized national standards organizations. This institution should have a Federal charter and its standards should be designated as "USA Standards".

To implement this recommendation, the Panel called for preference to reconstituting the existing ASA rather than the creation of an entirely new body. The voluntary nature of the development, promulgation, and use of "USA Standards" was emphasized by the Panel in its rejection of any suggestion for compulsion, for that would conflict with the principles of free enterprise.

Financial support for the proposed Institute for Standards would come from four sources:

(1) sales of publications and services to industry and government,

(2) dues and contributions from industry,[53]

(3) dues from participating memberships held by government agencies having significant interest in standards, and

(4) direct financial support from the U.S. Government.

The LaQue Panel called for appropriation of funds for direct support of the Institute, with the limitation that the government's share

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[50] Dr. LaQue retired in 1969 into an active life in standardization. He headed ANSI from 1969–1970, and the International Organization for Standardization (ISO) from 1971 through 1973. In 1974 he was appointed deputy assistant Secretary of Commerce for Product Standards.

[51] Report of the Panel on Engineering and Commodity Standards of the Commerce Technical Advisory Board. Francis L. LaQue, chairman. 1965. Parts A and B.

[52] The major conclusions and recommendations of the report were published also in The magazine of standards, v. 36, April 1965, pp. 115–126.

[53] If government agencies could be dues paying members, there would be less need for direct financial support from the Federal government.

in any year would not exceed the portion of the total budget of the Institute for that year assigned to international activity, or one-third of the total, whichever was greater. Direct government support would become unnecessary as support from industry and other sources increased.

Governmental participation in the Institute would be through the Department of Commerce and the National Bureau of Standards, which would be the channel for funds. The government would also be represented on the Board of Directors of the Institute by representatives appointed by the President from government agencies concerned with standards.

The Institute's procedures to qualify a standard as a "USA Standard" would be distinguished by adherence to the principle of voluntary national consensus of producers, users, and general interests with full opportunity for open expression of views of those affected. The Panel also had antitrust issues in mind as it recommended that the prescribed procedures should be defined in consultation with the Department of Justice so as to guide individuals and standards generating bodies in avoiding conflict with, and prosecution under, the antitrust laws. The Institute, concluded the LaQue Panel, should provide procedures to assist industry groups and trade associations to establish and promote properly planned and independently administered certification programs, in order to promote confidence in and acceptance by government agencies and others of products produced in accordance with industrial standards.

Concerning the industrial standards of the National Bureau of Standards, the LaQue Panel remarked that this output represented 3 percent of the nationally used standards identified in the study. It backed earlier recommendations that the commodity standards work of the NBS be transferred to private voluntary standardization organization.[54] The Panel did not, however, recommend an end to related Bureau activities. These should continue as required to provide standardization services not otherwise available to those who required such services.

The detailed recommendations covered commodity standards, systems of measurement, codes and related standards, legal aspects, international aspects, the role of industry, and other institutional aspects. The text of the recommendations appears in Appendix I.

Results of the LaQue Panel Report.—The Department of Commerce did little with the recommendations of the LaQue report, including the one that the American Standards Association be given a federal charter. ASA, however, seeking to create a new image and a new identification for expansion of its activities, changed its name to the United States of America Standards Institute (USASI) which, in retrospect, proved to be an unfortunate choice. ANSI made one attempt to obtain a Federal charter, but this effort failed according to

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[54] The Panel explained the opposition of certain trade associations to withdrawal of the Bureau from industrial standards work as follows:

The minority groups who prefer to use the Commodity Standards Division for the promulgation of standards base this preference in large part on two principal misconceptions. The first misconception is that the standards promulgated by the Commodity Standards Division have a "quasi-governmental status" which can be exploited. The second misconception is that this route to a standard somehow insulates those participating from exposure to potential action by the Department of Justice. Competent counsel has advised the Panel that the legal exceptions from the effect of the antitrust laws in regard to the Commodity Standards process of the Department of Commerce are no different from those with respect to the voluntary standards processes of private organizations.

the Institute because the House Judiciary Committee had stopped granting all federal charters to private organizations until criteria for such charters could be developed. So ANSI's standards gained no special recognition in legislation.

Nonetheless, the Government actively encouraged the Institute to be a U.S. spokesman for National standards activities. The policy of the Department of Commerce and the National Bureau of Standards recognized the role of the Institute, and the director of the Bureau was a member of the Institute's Board of Directors.

The LaQue Panel recommended that an interagency committee be established to help in the development of uniform standards for the government and to act as a point of contact in the government for industry groups. As a result of this recommendation, the Secretary of Commerce in 1968 established the Interagency Committee on Standards Policy (ICSP) which is charged with surveying the Federal organization of Government standards activities.

The Panel also recommended that an Office of Engineering Standards Services (OESS) be continued to provide private groups with means to develop engineering standards when the private sector organizations were unwilling or unable to develop the required standards. This too was done.

The report singled out building codes as a critical area for more comprehensive study. In response, the Bureau mounted a major program in support of the National Conference of States on Building Codes and Standards (NCSBCS) which provided a forum through which the States can cooperate one with another and with public and private bodies.

The report recommended that the Department of Justice release guidelines to those participating in standardization activities whereby they might expect to avoid conflict with antitrust laws. This was not done.

The Panel recommended that the Federal Government officially recognize the Institute as the body responsible for representing the interests of the United States in international standardization. Additionally, the Administration proposed the International Voluntary Standardization Cooperation Act of 1971 (S. 1798 and H.R. 8111) to enhance U.S. participation in international standardization. This legislation was not enacted.

The Panel recommended that the Department of Commerce urge the proposed Institute to develop an information system to provide current information on existing and proposed standards, codes and specifications from all sources of standards writing organizations, both national and international. The Bureau's Standards Information Center was founded as a result.

An NBS Shift to Voluntary Product Standards (1965–1970)

Following the LaQue report, the Department of Commerce on September 8, 1965, published steps to clarify and strengthen the Commodity Standards procedures. Revised procedures were published on December 10, 1965. The new procedures provided for only one type of standard, a Voluntary Product Standard (VPS) instead of the previous Simplified Practice Recommendations and Commercial Stand-

ards. Initially, SPRs had been limited to recommended sizes while Commercial Standards had contained only quality requirements. However, the distinction had diminished as quality requirements were added to the SPRs and size requirements to the Commercial Standards. Another change was the addition of criteria that had to be met before the Department would develop a Voluntary Product Standard. These criteria were:

(1) The standard must not be contrary to the public interest,
(2) It must have national effect or implication,
(3) It must have apparent industry-wide interest and endorsement, and,
(4) The standard must be such that it cannot be processed according to the needs or the desires of the industry by a nationally recognized private standardizing body.

This last criteria emphasized the policy that the Government's standards should not compete with those of the private sector.

In May 1966, the voluntary product standards became the responsibility of the newly established Office of Engineering Standards Service (OESS) at the Bureau. Its functions were to:

(1) cooperate with and assist producers, distributors, users, and consumers of products and agencies of the Federal, State, and local governments in the development of standards for products;
(2) develop safety standards required by statute and conduct appropriate sampling, testing, and evaluation; and
(3) provide information services with respect to public and private engineering standards.

On August 22, 1967, the Department of Commerce announced its intention to amend the procedures for the development of Voluntary Product Standards. The purpose was to clarify the procedures, and to define certain deficiencies found by the Department's General Counsel. Gathering and analyzing comments took more than two years. Finally, the Department of Commerce published its revised procedures for development of Voluntary Product Standards on May 28, 1970.

One significant change was the addition of a requirement that the Department not duplicate a standard published by or actively being developed or revised by a private national standardizing body, unless such duplication was found to be in the public interest. The most controversial change was for initiation of new standards. Previously a standard could only be initiated upon receipt of a request from a group of manufacturers, distributors, consumers, users, testing laboratories, or from a State or Federal agency. This had been interpreted to mean that only an outside group could initiate a new standard. The new procedures allowed the Department to initiate a standard when a real need existed.[55]

As spelled out in the regulation, the role of the Department in the establishment of a Voluntary Product Standard is to:

(1) act as an unbiased coordinator in the development of the standard;

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[55] The regulation specifies that the Department may initiate the development of a Voluntary Product Standard, if such action is deemed by the Department to be in the public interest, notwithstanding the absence of a request from an outside source. (15 CFR 10.1(e))

(2) provide editorial assistance in the preparation of the standard;

(3) supply such assistance and review as is required to assure the technical soundness of the standard;

(4) seek a satisfactory adjustment of valid points of disagreement;

(5) determine the compliance with the criteria established in these procedures for such voluntary standards;

(6) provide secretarial functions for each committee appointed by the Department under these procedures; and

(7) publish the standard as a public document.

The corresponding role of producers, distributors, users and consumers is to:

(1) initiate and participate in the development of standards;

(2) provide technical or other relevant counsel, as appropriate;

(3) promote the use of, and support for, the standard; and

(4) assist in keeping the standard current with respect to advancing technology and marketing practice.

ASA Becomes USASI: 1966

In August 1966, under a new constitution and bylaws, the American Standards Association became the United States of America Standards Institute (USASI). The change anticipated a Congressional charter to give special meaning to its standards, and plans to increase the organization's emphasis on voluntary international standardization. USASI described itself as a federation of trade and other organizations which did not itself develop standards. Rather, it made use of the combined technical talent and expertise of its Member Bodies, which included more than 100 technical, professional, and trade organizations. The standards developed by these organizations through the Institute would become national, or USA Standards, after the Institute had determined that they had been developed in accordance with its procedures, which included agreement among interested and affected parties.

The stated purposes of USASI were to:

(1) act as the national coordinating institution for voluntary standardization, through which interested organizations may cooperate in establishing, recognizing, and improving voluntary standards of the United States of America.

(2) assure that the interests of everyone concerned—industry, consumers, and government—are recognized and protected in national standardization activity.

(3) eliminate duplication, overlapping, conflict, and variations in national standardization activity.

(4) promote knowledge, understanding, and use of voluntary national standards.

(5) simplify the development of engineering, commercial, consumer, and safety standards.

(6) encourage competent organizations to develop standards in accordance with Institute procedures.

(7) serve as the national clearinghouse for information on all U.S. and foreign standards.

(8) provide the channel for U.S. representation in the development of international standards recommendations.[56]

USASI Becomes ANSI—1969

Several factors led to another name change in 1969. Functionally, the organization decided to become directly engaged in certification of products conforming to American National Standards. Also the Federal Trade Commission was showing signs of objection to the use of the term "United States" in the names of the organization and its certification programs since these might be read as connoting governmental endorsement of private standards and certification. Lastly, the Institute itself did not wish to be identified as a government organization. So after consultation with the FTC, the Institute voluntarily changed its name in 1969 to the American National Standards Institute (ANSI) so as to leave no doubt that it was and is a private, non-profit organization.

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[56] What is the United States of America Standards Institute? New York: USA Standards Institute, 1968. Cf. also testimony of Francis K. McCune in U.S. Congress. House. Ad Hoc Subcommittee. Hearings. International commercial standards activities. 89th Cong., 2d sess., 1966, p. 33.

ANSI AND VOLUNTARY INDUSTRIAL STANDARDS IN 1973

The unique feature of voluntary standards in the United States today remains the decentralization of standards preparation among many professional societies and trade associations with coordination through the American National Standards Institute (ANSI). Today ANSI is a federation of some 180 voluntary organizations representing virtually every technical discipline, every facet of trade and commerce, organized labor, and consumer interests. These organizational members join with some 1,000 individual companies, both large and small, and with representatives of Federal, state and local government to coordinate development of voluntary standards, and to provide a clearinghouse for information on national and international standards. Table 1 lists the 24 categories of ANSI standards today.

TABLE 1.—*List of categories of ANSI standards*

Acoustics, Vibration, Mechanical Shock, and Sound Recording
Chemical
Construction
Drawings, Symbols, and Abbreviations
Electrical and Electronics
Ferrous Materials and Metallurgy
Gas-Burning Appliances
Highway Traffic Safety
Information Systems
Leather
Materials Handling
Mechanical
Mining
Miscellaneous
Nonferrous Materials and Metallurgy
Nuclear
Petroleum Products
Photography and Motion Pictures
Pulp and Paper
Rubber
Safety Standards
Security Equipment
Textile
Thermal Insulating Materials
Wood

ANSI OBJECTIVES

The primary objectives of ANSI are to provide a systematic means by which organizations concerned with standardization may cooperate in establishing and improving standards of the United States, based on the principle of consensus of parties at interest, so that duplication of work and promulgation of conflicting standards may be avoided. Other supporting objectives are to—

stimulate the work of existing committees and other organiza-

tions competent to formulate standards suitable for American National Standards;

work toward establishment of suitable groups for this purpose where they do not already exist, but not itself to formulate standards;

serve as a clearinghouse for information on standardization work in the U.S. and foreign countries;

further the voluntary standardization movement as a means of advancing the national economy, and to promote a knowledge of and voluntary use of approved standards;

represent the United States in international standardization organizations except where otherwise provided by treaty.[57]

Current Organization for Voluntary Standards

It bears repeating that the unique feature of voluntary standards writing in the United States is its decentralization. ANSI does not write standards. Rather it provides the mechanisms for coordinated development of standards and independent determination of national recognition and acceptance of standards—including international recommendations.[58] With other organizations such as the American Society for Testing and Materials also actively writing and publishing standards, there appear to be possibilities for duplication of effort, or perhaps even competition between ANSI and other organizations. The views of such other organizations should be an input into congressional inquiry into standardization.

As ANSI sees itself, it depends upon the technical, administrative and economic capability of its member organizations along with agencies and departments of the Government to develop national standards as well as the U.S. position on international standards. ANSI's approval procedures for recognizing standards drafted by its member organizations as American National Standards are intended to ensure a consensus of affected interests. ANSI underscores the point that it provides for due process and a right of appeal at several levels of review to establish confidence in and credibility for the standards it approves.

The principal organs of ANSI include the following:

A Board of Standards Review which approves standards as American National Standards and acts on withdrawal and reaffirmation for a standard when it finds that a consensus exists among those substantially concerned with the scope and provisions of the standards proposed for approval, reaffirmation, or withdrawal.

An Executive Standards Council which is responsible for managing standards development activities coordinated by ANSI. Its duties include: developing procedures and criteria for management, development, approval, and withdrawal of standards; initiating standards projects and defining their scope; stimulating organizations and committees to complete standards development work expeditiously; ensuring participation of the U.S. in pertinent international standards activities, in liaison with an International Standards Council. In

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[57] ANSI. Guide for the development of American National Standards, 1972, p. 5.

[58] Cf. statement by Roy P. Trowbridge, President of ANSI, in U.S. Congress. House. Committee on Interstate and Foreign Commerce, Hearings, International voluntary standards, 92d Cong., 1st sess., 1971, pp. 58–59.

carrying out its functions, the Executive Standards Council is assisted by twenty technical advisory boards (TABs), each of which operates in a particular discipline or industrial sphere.

An Organizational Member Council, Consumer Council, and Company Member Council provide communications between their members and constituents and ANSI's Board on programs and policies. They help to determine standards needs and stimulate Institute actions to fill these needs.

An International Standards Council is responsible for ANSI's international activities. It is supposed to guide the Institute's interaction with voluntary international standards organizations.

A Certification Committee administers the accreditation of certification programs submitted to the Institute; fosters development of new programs in response to demonstrated needs; collaborates with government and private organizations in the development of criteria and systems for accrediting certification programs; and advises the International Standards Council on U.S. participation in international activities.

Figure 1 shows the 1973 organization of ANSI.

Table 2 gives the principal officers of ANSI for 1973.

ORGANIZATION OF THE
AMERICAN NATIONAL STANDARDS INSTITUTE

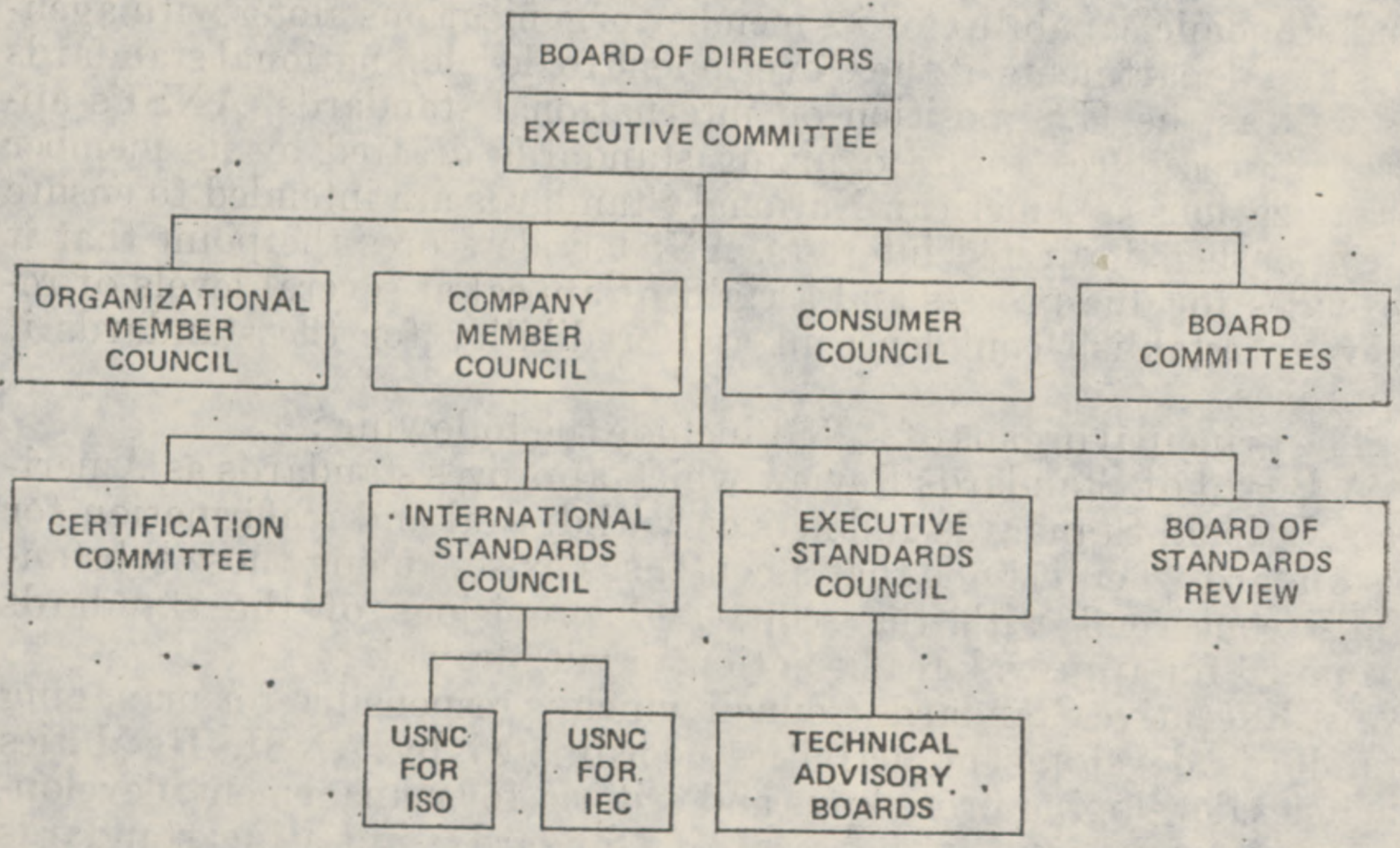

FIGURE 1

TABLE 2.—*ANSI officers—1973*

President, Roy P. Trowbridge, Director—Engineering Standards, General Motors Engineering Staff.

Vice-President, Frank J. Feely, Jr., Manager—Operations Coordination, Logistics Department, Exxon Corporation.

Vice-President, Allen F. Rhodes, Vice-President, Corporate Planning and Development, ACF Industries, Inc.

Vice-President, Rodger F. Ringham, Vice-President—Engineering, International Harvester Co.
Immediate Past President, Francis L. LaQue, Consultant, The International Nickel Co.
Managing Director and Secretary, Donald L. Peyton.

Emphasis on Voluntary Action

ANSI is opposed to the growing trend toward mandatory Federal standards developed largely, if not exclusively, by government agencies.

The insistence on mandatory federal standards is gaining momentum every day. In recent years, Congress has legislated mandatory standards in a number of areas, including automobile tires, safety belts, occupational safety, brake fluid, flammable fabrics, radiation, and gas pipelines. In addition, federal control has been requested over a host of products.

The best way to overcome this insistence that the government alone can protect people and develop impartial standards is to utilize the system for establishing effective national voluntary standards which is above reproach and suspicion.[59]

ANSI's International Role

International trade is affected not only by costs and tariffs, but by hidden barriers, one of which may be national standards. In ANSI's view, to protect and expand its export market, American business must participate in writing international standards. Because international standards are the common language by which trading nations understand each other technically, commercially and legally, American firms have powerful cause to secure the adoption of U.S. national standards as international standards. ANSI functions as a focal point for much representation of U.S. industry to nontreaty standards organizations. However, other U.S. organizations also have a role. For example, the official U.S. member of the IEC is the U.S. National Committee of the IEC which was formed in 1907, long before creation of ANSI or its predecessors. This committee is affiliated with ANSI, but retains its identity as an independent organization. So how far ANSI could or should go with government funding to represent U.S. industrial interests in international standardization remains an open question.

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[59] What is the American National Standards Institute? New York : ANSI, 1971, p. 3.

NBS VOLUNTARY STANDARDS TODAY

The Status of the Voluntary Products Standards (VPS)

By 1971 the Department of Commerce had published 274 Simplified Practice Recommendations, 266 Commercial Standards, and 51 Voluntary Product Standards. The latter now appear to be the focus of the Department's standardization activities.

The criteria and procedures for the development of Voluntary Product Standards (VPS) appear in Part 10 of Title 15, Code of Federal Regulations. The procedures establish the requirements for participation of interested producers, distributors, users and consumers in the development process. All interested groups may participate directly by responding to the public circulation of proposed or recommended standards for comment or acceptance. In formal arrangements, these groups also are represented on Standard Review Committees which consider proposals for new standards on or Standing Committees which consider proposals for revisions of existing standards. While the adoption and use of product standards is voluntary, compliance with such standards, when made part of sales contracts, purchase orders, and building codes is enforceable.

The Voluntary Product Standards program is administered within the Office of Engineering Standards Services, Institute for Applied Technology, of the National Bureau of Standards. NBS policy concerning establishment of these voluntary standards is as follows:

(1) *Private sector responsibility.*—The private sector has the primary responsibility for developing voluntary standards. NBS encourages the standardization activities of the private sector and will assist in every practical and proper way in supporting a national voluntary standardization system that meets the country's needs. As a means of providing such encouragement, NBS shall, subsequent to their publication by the Department, seek the listing of Voluntary Product Standards as American National Standards.

(2) *Determination of need.*—Prior to the initiation of a Voluntary Product Standard, the Bureau will make every effort to assure and appropriately document that there is, in fact, a real need that can best be satisfied by a Voluntary Product Standard. All such proposed standards should be national in scope, and highest priority will be given to the development of those standards which would have an impact on an area of broad public concern.

(3) *Procedures.*—The development of Voluntary Product Standards will be initiated in accordance with the Procedures, Part 10, Title 15, of the Code of Federal Regulations, and only after NBS has determined and documented, after consultation with private standards bodies and proponent groups, that a Voluntary Product Standard would best meet the particular need under the circumstances prevailing at that particular time.

(4) *Development of standards for other agencies.*—Certain agencies of the Federal Government are authorized under legislative programs to issue standards and regulations pertaining to health, safety, and environmental control. As a result of such programs, requests to the Bureau for the development of Voluntary Product Standards may substantially exceed available resources. Under such circumstances, it may be appropriate to request that the agency reimburse the NBS for the development and promulgation of the Voluntary Product Standard.[60]

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[60] U.S. Department of Commerce, National Bureau of Standards. Policy Bulletin No. 4, NBS policy concerning voluntary product standards. November 29, 1971.

An NBS Study and its Results.—In 1972 the Bureau of Standards completed a study of its involvement with the voluntary consensus standardization system. As a result, the Bureau decided to become more active at the policy level in voluntary standardization activities. According to Dr. L. M. Kushner, the Deputy Director of the Bureau, the NBS proposed to be articulate in its participation in the committees whose actions and recommendations, in effect, set policy for the standardization organizations. We propose, he said, to be articulate in our participation on these committees with the hope of influencing the total voluntary standardization system to be more responsive to the broad publice interest.[61] Accordingly the Bureau has developed guidelines for its staff to guide them in their service on standardization committees. In the past NBS personnel have served on technical committees simply as technical experts. The new guidelines now stress the role of NBS participants as advocates of the public interest as well as technical experts.

A similar emphasis appears in NBS administration of its Voluntary Products Standards Program. According to Dr. Kushner:

> . . . We view this program as a supplement to, rather than competitive with, private sector standardization programs. We have examined our activities under this program and are shifting as many of them as possible to private sector organizations. We will use the resources made available by this shift to build up our work on the development of standards in public interest areas such as safety.[62]

The Bureau sees a need for much closer cooperation at all levels between the government and private standards making bodies, with the Bureau the "leading edge" of this interaction. However, Dr. Kushner cautions that if the government and the private sector cannot begin to work more effectively together on a voluntary basis. ". . . ultimately somebody is going to propose a move to take standardization out of the private sector and set up a new institution with Federal financing that brings the interests of the government and the private sector together."[63] As an example, he noted the legislative establishment in Canada of a Canadian Standards Council to coordinate and oversee standardization activities in Canada. It will provide for both public and private participation. Developing this point further, Dr. Kushner opted for a quasi-public institution:

> I really feel that we must make our present standardization bodies function more effectively. They must restructure themselves in such a way that they invite enough Government participation so that we do in effect have a quasi-public institution as a result of cooperation rather than by virtue of law.[64]

Participation by NBS Employees in Voluntary Standardization

The professional staff of the NBS can serve in four different capacities in voluntary standardization.[65] In each capacity, they are expected to represent the public interest of the United States in its broadest sense.[66]

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[61] L. M. Kushner: Interview. Materials research and standards, vol. 12, May 1972, p. 13.
[62] Ibid.
[63] Ibid.
[64] Ibid., p. 14.
[65] The four types include participation as:
(1) An official spokesman of the NBS or the Department of Commerce. Where membership and/or participation in the name of the NBS or the Department and the

In serving the public interest, NBS employees are expected to promote the general or national welfare rather than the self-interest of private individuals or organizations:

> The participant must assure himself that there is balanced representation in the standards activities, including adequate and effective user and consumer representation. In cases of imbalance, he shall take appropriate steps, in consultation with the NBS Program Manager for Engineering and Information Processing Standards, to assure balanced representation.[67]

As for technical soundness of a proposed standard, where the draft does not meet the needs or is not technically sound, the NBS participant is expected to work with the standards committee to make the necessary corrections. If unsuccessful, he is expected to oppose adoption of the standard, but before casting his vote he is directed to consult with the NBS Program Manager for Engineering and Information Processing Standards to develop "an appropriate course of action." [68]

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participant is designated by NBS or the Department to be their representative. Examples include ex-officio membership on Boards of Directors. etc.

(2) As a technical representative of the NBS or Department. Where membership and/or participation is as an individual because of his personal professional expertise and competence and is with full or partial NBS support involving NBS funds, time or facilities.

(3) As an individual. Where membership and/or participation is without NBS support and where NBS funds, time, or facilities are not involved.

(4) As a spokesman for another organization. Where membership and/or participation is in the name of some other organization, or ex-officio because of office held in an organization, but where participation is authorized as an official NBS activity. This basis for such authorization is that the purpose of the organization and the NBS employee's role in it are consistent with the public interest and the interests of NBS.

[66] NBS guidelines to employees describe the public interest as follows: The public interest involves the interests of those parties who are substantially affected by the standard under consideration and include manufacturers and producers, industrial users, distributors and retailers, government agencies, individual consumers, and the public at large.

[67] U.S. Department of Commerce, National Bureau of Standards. Guidelines for National Bureau of Standards participants in voluntary standardization programs. January 1972, p. 2.

[68] Ibid.

STANDARDS AND SPECIFICATIONS: AN INSEPARABLE RELATIONSHIP

A major use of standards is in purchase specifications both for private and Government purchasing. So closely are standards and specifications interlinked that to try to separate them and consider them separately is not feasible. Government use of private standards often has served to transform a voluntary standard into a de facto mandatory standard, so Government use of standards becomes an important factor in consideration of voluntary standards.

A Few Historical Notes

The first official U.S. Government specification, authorized by Presidential order, was published as a circular of the National Bureau of Standards in 1912 and applied to portland cement, which was then probably the largest volume purchase of a single item by the Federal Government.[69]

Specifications for weighing and measuring devices were published in 1916. Specifications in 1919 for oils and paints set minimum percentages each of pigment, oil, thinner, and drier were determined by quantitative analysis.

One of the first acts of the Bureau of the Budget upon its establishment in 1921 was to create a Federal Specifications Board to unify specifications already available to some 40 Government purchasing agencies and to effect greater economies in the quarter of a billion dollars worth of supplies then annually bought by the Federal Establishment. Thereafter, Bureau of Standards specifications were accepted by the Board to become official standards, binding on all departments of the Federal Establishment.

In September 1925, the NBS in cooperation with the AESC and associated industrial representatives, issued its "National Directory of Commodity Specifications." The product of three years' work, it listed 27,000 specifications for 6,650 commodities. This was Hoover's "Buyer's Bible," intended to systematize both industrial and Federal purchasing.

Government Procurement Specifications and Standards

The interconnection of specifications and standards was indicated recently in definitions used by the Commission on Government Procurement. It gave the following as the definitions most frequently used:

> Specifications describe essential technical requirements for materials, products, or services. They specify the minimum requirements for quality and construction of materials and equipment necessary for an acceptable product.
>
> Standards have the collective purposes of providing standard data for reference in Federal specifications and identifying standard items for use in Federal supply system.[70]

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[69] This discussion of specifications draws heavily upon Cochrane, op. cit., pp. 257–260.

[70] U.S. Commission on Government Procurement. Report of the . . . Washington, D.C.: U.S. Government Printing Office, 1971, vol. IV, p. 18.

Under the Federal Property and Administrative Services Act of 1949, the General Services Administration (GSA) has the responsibility to:

> . . . establish and maintain such uniform Federal supply catalog system as may be appropriate to identify and classify personal property under the control of Federal agencies . . . and to prescribe . . . standard purchase specifications.

Pursuant to this authority, the GSA has created a system of Federal and Interim Federal Standards. Additionally, the Department of Defense publishes Military Specifications, Limited Coordination Military Specifications, Military Standards, and Military Handbooks.

The Commission on Government Procurement thinks the process of setting Federal specifications is very costly, time-consuming, and often is poorly coordinated.[71]

In 1972, there were more than 360,000 government specifications in use, as shown in Table 3. In addition, the Federal specifications may cite industry standards. Table 4 shows more than 2,000 such standards.

TABLE 3.—*Number of Federal procurement specifications by type*

Federal and interim Federal specifications	4,661
Federal and interm Federal standards	212
Military specifications	13,956
Limited coordination military specifications	11,161
Military standards	6,658
Military handbooks	98

Source: U.S. Commission on Government Procurement, Study Group 13A (Commercial Products), *Final report,* February 1972, vol. I, pt. 4, ch. 2.

TABLE 4.—*Use of industry standards*

Issuing sources:	*Number*
American National Standards Institute (ANSI)	350
American Society for Testing and Materials (ASTM)	1,050
Underwriters Laboratories (UL)	123
Miscellaneous	488

Source: Same as table 3.

The Commission found that Federal specifications have certain advantages. They advance the public interest by providing a basis for standardization, for establishing quality levels, and for competitive procurement.[72]

On the other hand, the Commission described four problems of Federal specifications:

> Purchase of items under a Federal specification when comparable commercial products are available usually results in greater cost to the Government.
>
> Use of Federal specifications that prescribe specific designs may deny the Government the benefit of technological progress because the high cost of selling alternate designs discourages industry.
>
> Overly strict interpretation of specifications for commercial products forces producers out of Government work, thus reducing competition.
>
> Since specifications establish a minimum quality level, the offering of a better quality is not encouraged.[73]

In October 1973, ANSI proposed that the Institute and DOD work together to assure implementation of industrial standards wherever

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[71] Ibid., p. 19. The Commission wrote: Typically, the development of a Federal specification for a commercial product begins with a company commercial specification. The Government gleans desirable characteristics from the company specification and incorporates them into a proposed Federal specification. The proposed specification is circulated to other firms and eventually, after changes are made, a final specification is developed. This process is very costly, time-consuming, and often is poorly coordinated.

[72] Ibid., p. 20.

[73] Ibid., p. 20.

possible. ANSI proposed to the DOD's Material Specifications and Standards Board that it might consider the following actions:

Establishing key contact points in DOD to which ANSI could send its publications on a regular basis;

Establishing a focal point for interface with voluntary standards programs analogous to the National Bureau of Standards' Office of Engineering and Information Processing Standards;

Recommending policy guidelines for DOD participation in voluntary programs;

Encouraging greater participation in voluntary programs; and

Nominating a top-level official to represent the Material Specifications and Standards Board on ANSI's Board of Directors.[74]

Forcing Technological Progress Through Specifications and Standards

Sometimes specifications are thought of as freezing the state of a technology for the goods or service desired. The idea of using the Government specifications to bring new or improved products into the market is soon to be tested as part of the Experimental Technology Incentives Program (ETIP) of the National Bureau of Standards.[75]

One experiment planned for ETIP is to explore whether it is cost effective to stimulate technological invention and innovation through the use of government purchasing power. For the experimental procedure to be effective, not only should the supplies and services furnished to the government change, but also there should be an impact on the goods and services available in the commercial market. In a recent interview,[76] the director of ETIP said that he intends soon to release the first series of production specifications on air conditioners and power mowers which the General Services Administration hopes to use in writing bids for its equipment purchases.[77]

As now contemplated, the Bureau of Standards will write model specifications for a particular product. Next, the General Services Administration will ask manufacturers whether they can supply products to the new specifications. If the manufacturers refuse, ETIP will try to determine why and will attempt to write compromise specifications. Manufacturers will then set a price for the government, which will decide whether the cost is worth the benefit. The company that wins the government award will also have to submit a plan showing how the product can be introduced into the commercial marketplace. If, after seeing the proposed specifications, the manufacturers either refuse to participate or inform the government that they cannot meet the specifications, then the experiment will end and the government will try to learn what went wrong.

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[74] ANSI reporter, Nov. 2, 1973, p. 3.

[75] The Experimental Technology Incentives Program (ETIP) of the Bureau is part of the Administration's effort to find ways in which it can work as a more effective partner with the private sector of society in the development and application of science and technology to strengthen the nation's economy and improve the quality of life. The concern of ETIP is the improvement of the climate for technological invention and innovation. Its specific objective is to obtain knowledge and experience concerning invention and innovation in the United States and to determine what cost effective actions the Federal Government can take to increase the rate at which new technologies are successfully introduced into the marketplace. The output of ETIP is expected to enable the Federal Government to shape its policies, programs, and procedures so as to accelerate technological progress.

[76] As a point of interest, in a time of energy problems, is the ETIP specifications for air conditioners. The thought is to raise the required energy-efficiency ratio from seven times the cooling power per watt to 11 times.

[77] "A federal spur to product development." Business week, August 25, 1973, pp. 68–69.

THE TREND TOWARDS GOVERNMENT STANDARDS

For many years governments at all levels have been prolific writers of standards, but the great majority of these many thousands of government standards were developed and used only for procurement and relatively few of them were made mandatory for use in the private sector.

This situation has been changing since the late 1950's as Federal, state, and local governments have created new departments and agencies, or expanded others, giving them not only authority but also the responsibility to issue standards. The approach has been to attack individual problems as the public attention has focused upon them. As a result, there are more and more mandatory standards issuing in uncoordinated form and philosophy. Mr. William A. McAdams, as a Director of the American Society for Testing and Materials, recently summed up the situation as follows:

> . . . The approach has been to attack individual problems as public attention is focused on them and we are now seeing the results: more and more mandatory standards, pressure to establish these standards in a limited period of time, more requirements for premarketing testing and approval of products, greater penalties for failure to meet standards, and unfortunately, considerable duplication and conflict among the branches of government involved.
>
> While most of these mandatory government standards are intended to provide short and long range improvement in the health and safety of the American people, there is a trend toward the mandatory standardization of product quality and engineering design far beyond what is required for health and safety. If this trend continues, it will not only have a major impact on standardization in the United States, but will seriously affect the social and economic future of the country.[78]

Consumer Product Safety Standards: An Example

In the Consumer Product Safety Act of 1972,[79] Congress created a Consumer Product Safety Commission. Section 7 of the Act provides that the Commission may promulgate consumer product safety standards. The Act specifies that such a standard shall consist of one or more of the following types of requirements:

(1) requirements as to performance, composition, contents, design, construction, finish, or packaging of a consumer product.

(2) requirements that a consumer product be marked with or accompanied by clear and adequate warnings or instructions, or requirements respecting the form of warnings or instructions.

As for enforcement, the Act requires that every manufacturer of a covered product issue a certificate to certify that the product conforms to all applicable consumer product safety standards, and to specify the standard which is applicable. Additionally, the Commission may prescribe reasonable testing programs for consumer products.

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[78] William A. McAdams. "The four worlds of standards." ASTM standardization news, vol. 2. February 1973, p. 32.

[79] P.L. 92–573, 86 Stat. 1207, Oct. 27, 1972.

ANSI has proposed establishment of consumer "sounding-boards" to help in development of consumer product standards, which, according to the Institute, shows its effort to build a ". . . meaningful and viable consumer program".[80]

Occupational Health and Safety Standards

The problem of assuring safe and healthful workplaces for the workforce has become one of the urgent national problems of mid-century America. One approach to reducing the toll of industrial accidents and illness has been to authorize the Secretary of Labor to set mandatory occupational health and safety standards, many of which are voluntary standards established by ANSI and other organizations.

The Occupational Safety and Health Act of 1970[81] adds three terms to the vocabulary of standardization: "occupational safety and health standards," "national consensus standard," and "established Federal standard."[82]

Section 6 of the Act specifies that the Secretary shall, as soon as practicable during the two years following approval of the Act, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation would not result in improved safety or health for specifically designated employees. In event of conflict among such standards, the Secretary is to promulgate the standard which ". . . assures the greatest protection of the safety or health of the affected employees." Additionally, the Secretary is authorized to modify or revoke any occupational safety or health standard through a rather elaborate procedure.

The purpose of this procedure was to establish as rapidly as possible national occupational safety and health standards with which industry is familiar. The Senate Committee on Labor and Public Welfare in reporting the legislation[83] commented that such standards may not be as effective or as up-to-date as is desirable, but they will be useful for immediately providing a nationwide minimum level of health and safety.

Concerning the role of private standards organization, the Senate report said:

> Two private organizations are the major sources of consensus standards: the American National Standards Institute, Inc., and the National Fire Protection Association. Since, by the Act's definition, a "consensus standard" is one which

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[80] ANSI reporter, Oct. 26, 1973, p. 2.

[81] P.L. 91–596, 84 Stat. 1590, approved Dec. 29, 1970.

[82] Sec. 3 of the Act includes the following definitions:

The term "occupational safety and health standard" means a standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment.

The term "national consensus standard" means any occupational safety and health standard or modification thereof which (1) has been adopted and promulgated by a nationally recognized standards-producing organization under procedures whereby it can be determined by the Secretary that persons interested and affected by the scope or provisions of the standard have reached substantial agreement of its adoption, (2) was formulated in a manner which afforded an opportunity for diverse views to be considered and (3) has been designated as such a standard by the Secretary, after consultation with other appropriate Federal agencies.

The term "established Federal standard" means any operative occupational safety and health standard established by any agency of the United States and presently in effect, or contained in any Act of Congress in force on the date of enactment of this Act.

[83] U.S. Congress. Senate. Committee on Labor and Public Welfare. Occupational safety and health act of 1970. Sen. Report No. 91–1282, Oct. 6, 1970.

has been adopted under procedures which have given diverse views and opportunity to be considered and which indicate that interested and affected persons have reached substantial agreement on its adoption, it is appropriate to permit the Secretary to promulgate such standards without regard to the provisions of the Administrative Procedure Act.

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The committee has also concluded that the Secretary should be able to make use of so-called proprietary standards which have been produced by various industrial and professional groups, such as the American Conference of Governmental Industrial Hygienists, the Manufacturing Chemists Association, and the National Electrical Manufacturers Association. Such standards have gained wide acceptance by American industry. However, since they were not adopted by their associations with the same procedural limitations applicable to consensus standards, the committee has provided that the Secretary must afford interested persons an opportunity to participate in the rulemaking through submission of written data, views, or arguments before making such standards effective.

By mid-1973, the Secretary of Labor had adopted or referenced 120 ANSI-approved national consensus standards under the Act. Many of these American National Standards, plus some additional 20, have also been adopted by the Labor Department in its Inspection Survey Guide.

The Occupational Safety and Health Administration of the Department of Labor, has now passed through its initial emergency phase, following the Act, of adopting existing Federal and national consensus standards as mandatory standards for industry and business to follow. During a second phase, now coming to its end, some of these standards were revised to make them more suitable to mandatory enforcement. OSHA is now entering a third phase during which its effort will be to develop entirely new standards in areas where few or none exist. In an interview in 1972, Mr. John Proctor, Chief of the OSHA Office of Standards Development, discussed the third phase as follows:

"There is no way of knowing with certainty now, why a certain dimension or material was specified in the old safety standard," Mr. Proctor observed. "The obvious solution to this problem is that we must start from scratch during the third phase of our program, and define all over again what it is that we want, how to get it, and how to measure it once we have it."

OSHA is going to need far more research and engineering data to back up its proposed standards during the third phase. Each proposed standard may have a hearing if it is requested by anyone under the provisions of the Safety and Health Act, and the voices opposing the adoption of a new standard will also be heard.

"I can see that the way this law is written, it is going to be much more of a struggle to have a standard accepted in the future than it has been," Mr. Proctor predicted. "If we are unable to demonstrate conclusively that a proposed standard is appropriate, efficent, enforceable, and that it doesn't put undue burden on the affected industry, it simply won't get approval." [84]

By the end of 1973, 19 revised ANSI-approved safety standards were in the rule making process at OSHA to form the basis, in whole or in part, of OSHA standards. OSHA already has adopted some 120 ANSI-approved standards, and has listed 9 ANSI-approved consensus standards as acceptable on a trial basis and 15 low-priority consensus standards as valid guidelines for compliance officers' use and evidence of "good faith" of employers that comply with them.[85]

So in the administration of this legislation, there are evolving new relations between government and the private organizations for stand-

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[84] OSHA and mandatory consensus standards. Materials research and standards, v. 12, June 1972, p. 31.

[85] ANSI reporter, Oct. 26, 1973, p. 3.

ards. Looking to the future, there is the open ended question of what role organizations such as ANSI will play. Will they produce additional consensus standards to be adopted by the Department of Labor, or will the Department trend towards writing its own mandatory standards? In highly technological industries which are often characterized by risks of industrial accidents and illnesses, the answers to this question will be important.

Safety Standards for Mobile Homes and Recreational Vehicles: Another Example

A recent example of an issue that is generating pressure in Congress for mandatory safety standards is safety for products of the mobile home and recreational vehicle industries. A major expression of this interest occurred on March 6, 1973 when Congressman Frey and 36 cosponsors introduced H.R. 5224, The National Mobile Home and Recreational Vehicle Safety Act of 1973, which was referred to the Committee on Interstate and Foreign Commerce. According to the Mobile Homes Manufacturers Association, 42 states now "recognize" ANSI's American National Standard on Mobile Homes [86] for mobile home construction. "Recognition" usually means adoption. A few states, however, have adopted only specific sections of the standard and some others have written their own codes based on the ANSI standard. The Department of Housing and Urban Development has announced its intention to adopt the standard for mobile homes sold under Federal Housing Administration insured loans.[87]

The ANSI standards, however, have been criticized as not requiring use of the latest technology and thereby providing inadequate protection to the consumer.[88] These inadequacies are seen to be the result of a lack of resources by ANSI and its use of the consensus principle:

> The American National Standards Institute lacks the resources for its own research and must rely on that of the industry. It is unable to conduct its own independent research to develop standards. Secondly, the Institute uses the "consensus" criterion in adopting a new standard. Rather than requiring adequate safety and quality levels, "consensus" puts its emphasis on acceptability.[89]

ANSI, on the other hand, points out that the latest, 1974, version of the standard has corrected most if not all the problems with the mobile home standards that were criticized in Congress.

Since the legislation on mobile home standards is still pending, the preceding discussion of these standards should not be viewed as any judgment on the matter. The case of the mobile home standards does, however, serve to illustrate how the issues of standardization may boil over and be brought to Congress for resolution.

Another problem is that some States in using the ANSI standards do so in various, nonuniform fashions. Some refer to it. Others adopt a specific edition but in essence exclude subsequent revisions and updatings. Even more of a problem is the lack of enforcement by the States. According to Congressman Frey's analysis, the variance in the quality and manner in which the standards are enforced makes reciprocity between the States impossible. On the Federal scene, there is no formal safety regulation of mobile homes or recreational vehicles.

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[86] American National Standard A119.1–1973.
[87] ANSI reporter, Jan. 4, 1974, p. 4.
[88] Mobile home and recreational vehicle safety legislation. Congressional Record, March 6, 1973, pp. 1398–1402 (daily edition).
[89] Ibid., p. H 1399.

Both the FHA and VA require that before they guarantee a mobile home mortgage, it must meet the ANSI standard. However this is seen by critics as far from adequate since these agencies insure mortgages of only a small fraction of the mobile homes manufactured. The National Highway Traffic Safety Administration has adopted some standards for recreational vehicles, but these deal primarily with their over-the-road safety and not with their "housing" characteristics. Furthermore, few over-the-road standards have been formulated" . . . since there is no legislative mandate, machinery, or appropriation for NHTSA to deal with recreational vehicles." [90]

For these reasons, Congressman Frey introduced the National Mobile House and Recreational Vehicle Act to establish uniform safety standards and minimum State enforcement requirements. The goal of the legislation is to ". . . replace the confusing patchwork of ineffective State and local regulation and provide greater protection to the 7 million occupants of mobile homes and the 3.7 million owners and occupants of recreational vehicles." The development of the proposed standards would be divided between the Departments of Transportation and Housing and Urban Development. The former would develop operational, over-the-road standards and the latter would develop nonoperational—housing—safety standards.

While this legislation through September 1973 had not received legislative action, its introduction is another example of the expanding role of mandatory Government standards growing out of dissatisfaction with the present voluntary development and enforcement of standards by private organizations.

New Criteria for Standards: The Best Practicable and the Best Available Technologies

The Federal Water Pollution Control Act Amendments of 1972 [91] introduces two concepts that can affect voluntary industrial standards for equipment manufactured for steam electric powerplants and their associated heat dispersion systems. The Act requires the Administrator of the Environmental Protection Agency, with the advice of a Water Pollution Advisory Board, to establish effluent mandatory limitations or standards to govern discharges into the Nation's waterways and to establish Federal guidelines for State and local governments to follow in their water pollution control programs. The Act specifies a tight time schedule for improvements in water pollution control. By July 1, 1977, dischargers must employ the "best *practicable* technology." Six years later, by July 1, 1983, they must employ the "best *available* technology." The Administrator of EPA is authorized to define these terms and Section 304(b) sets out detailed procedures for doing so.[92]

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[90] Ibid., p. H 1401.

[91] Public Law 92–500, 86 Stat. 816, approved Oct. 18, 1972.

[92] Section 304(b)(1)(B) provides that regulations to be issued by EPA shall specify factors to be taken into account in determining the control measures and practices. Factors relating the assessment of *best practicable control* technology currently available are to include ". . . consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, and shall also take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the applications of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate."

Section 304(b)(2)(B) specifies that factors relating to the assessment of the *best available technology* shall take into account the ". . . age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate."

ANSI is seeking a role in the formulation of environmental standards. According to the Institute's managing director, Mr. Donald L. Peyton, the United States is experiencing difficulties with proposed environmental standards because the Environmental Protection Administration has taken the position that itself must develop the standards it promulgates and enforces. Thus a whole series of EPA documents developed largely by contract with various research and development organizations have been found by many experts in such fields as water quality, air quality, and solid waste disposal to be ". . . less than satisfactory in meeting the objectives of the environmental protection acts. In fact, many are felt to be counter productive." [93]

In November 1973 ANSI announced plans for a Washington conference in February 1974 to "dramatize the problems industry is experiencing with proposed environmental standards and to underline the willingness and capacity of the private sector to help solve these problems." [94] The conference, a first of its kind, was cosponsored by ANSI, the American Society for Testing and Materials and the American Society of Mechanical Engineers. According to ANSI, the decision to hold the conference stemmed from concern that the Environmental Protection Administration had not made full use of the private sector's background, experience, and technical expertise in developing standards for environmental improvement. ANSI saw one reason for this situation as EPA's lack of specific legislative authority to adopt voluntary standards.

The goals of the conference were fourfold:

1. To present evidence of the need for sound standards in the fields of air and water quality and solid waste disposal;
2. To make conference participants aware of the common environmental goals of government and the rest of society;
3. To create a consensus in favor of standards development through the voluntary standards system;
4. To demonstrate that the voluntary system of standards development is ready, willing, and able to produce the needed standards within reasonable time requirements.[95]

What role, if any, the private organizations for voluntary standardization will have in preparing these regulatory standards remains to be seen. Whatever role does emerge will be important to the future evolution of voluntary standardization in the United States, particularly in highly technological industries.

Standardization for Nuclear Power

A nuclear powerplant is a large, complex and expensive structure. Typically, one can cost almost a third of a billion dollars and the time to design, license, build and bring it into operation may be as long as 9 to 10 years. One reason for this long time is the tendency in the nuclear industry to custom design and engineer each plant including the nuclear steam supply system and all other parts.

The U.S. nuclear power industry, primarily the manufacturers of nuclear power reactors, took an early interest in standardization of

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[93] ANSI reporter, Oct. 26, 1973, p. 3.
[94] The conference was scheduled for February 20–21, 1974, which was after the completion of this report.
[95] ANSI reporter, Nov. 9, 1973, p. 1.

some components, working through the voluntary industrial standards system. Recently the Government, in the form of the Atomic Energy Commission, has called for substantial acceleration of the preparation of such standards, and is putting pressure upon the system to produce more standards quickly. The origins of this pressure lie in the lengthening time required to design, license, build and bring a nuclear powerplant into operations. The AEC would like to see standardized parts, subsystems, and perhaps even entire nuclear steam systems. The government's interest in standardization to speed up construction of nuclear plants was picked up by the President and made part of his energy messages. His latest message, of January 23, 1974, calls for accelerated licensing and construction of nuclear facilities.[96]

A milestone for nuclear standards was passed in May 1972 when, just before the first Executive Conference on Nuclear Standards, AEC Chairman Schlesinger on April 28, 1972, announced an AEC policy on standardization. The statement said, in part:

> It is the policy of the Atomic Energy Commission to encourage, support, and give priority consideration to activities leading to greater standardization of nuclear power plants in terms of their design, fabrication, construction, testing and operation. It is expected that the activities leading to greater plant standardization, including the standardization of balance-of-plant systems and components, would take full advantage of progress to date in the standardization of reactor systems and components and in the development of codes, criteria, and standards applicable to nuclear systems and components.

Benefits of standardization expected by the AEC included:

Maintaining and improving the protection to be provided to public health and safety and the environment.

Permitting maximum use of successful experience with resultant improvements in plant reliability, availability, and overall economy.

Improving the focus of safety-related research and development.

Permitting more efficient use of resources in industry and in Government.

A benefit not mentioned then but of primary importance now is the possibility of reducing the time for licensing and construction.

The Commission emphasized that a prerequisite to achieving the benefits of standardization is the development and adoption of additional comprehensive industry-wide codes, standards and criteria. It noted some progress, but said that significant further progress would depend on "strengthened leadership by industry and prompt participation of highly-qualified industrial personnel."

By October 1972 the AEC and ANSI reportedly had launched a massive drive to develop well over 100 nuclear standards within two years. During meetings in September and October 1972, AEC and ANSI officials agreed upon a list of 131 subjects ranging in nature from

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[96] In discussing nuclear power, the President said:

"Nuclear power, which lessens our dependence on foreign fuel, is an essential part of our program of achieving energy self-sufficiency. At present, however, it takes 9–10 years to complete the planning, licensing, and construction of nuclear power plants. In order to get vitally needed nuclear power on-line more rapidly, I have directed that steps be taken to reduce the licensing and construction cycle to 5–6 years, without compromising safety and environmental standards.

"I will soon transmit a legislative proposal to expedite the completion of nuclear power plants by separating the approval process for plant sites from the reactor licensing process and by encouraging the use of standardized plant designs. These designs, once approved, would reduce the required licensing review time and would enhance safety. This legislation would also permit the establishment of an inventory of approved sites for nuclear plants."

design, operation and protection of nuclear power plants to standards for such products as luminous wrist watch dials and Plowshare-released natural gas.[97]

Early in 1973 the AEC announced a major step towards standardization of nuclear plants and their components. Effective March 5, 1973, the AEC's Regulatory Staff was prepared to consider applications for review and licensing of standardized designs for nuclear plants and for major plant systems important to safety.[98]

Soon after, the AEC's director of regulation, L. Manning Muntzing, reiterated the need for standards at a meeting with ANSI. He said:[99]

> There are two main reasons why standards are an absolute necessity at this time. First, standards are needed to permit the regulatory process and the construction of nuclear plants to proceed at a pace which is consonant with the national need. If accepted engineering standards are available they can be referenced in applications, saving the applicant much time and expense in preparing the application. The standards will then provide a basis for expeditious accomplishment of licensing reviews. The wholly unacceptable alternative is that we continue to evaluate technical issues in depth according to basic engineering principles on a case-by-case basis. That is why standards serve as an important cornerstone of any effective move toward the standardization of nuclear power plants.
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> * * * * * * *
>
> The second reason why standards are a necessity is to provide assurance that nulear power plants and fuel cycle facilities will operate safely and reliably, and with minimum and predictable environmental impact. We know from constantly enlarging experience that the technology is available to achieve these results. Standards provide a means for documenting this experience, so that, as utilities and interested members of the public consider nuclear power among the various energy alternatives, they can do so with confidence that past successes can be reproduced. Industry and the public are entitled to these assurances; indeed ,they cannot be expected to make rational choices without them.

However, the AEC was unhappy with the progress. Said Muntzing:

> While we are glad to point to these measures of progress, and to give appropriate credit to ANSI and the professional societies responsible, the progress made has not been sufficient. The effort being put forward on writing nuclear standards is, in fact, inadequate both in relationship to the size and importance of the nuclear industry and in relationship to the standards-writing goals which have been identified . . .

Factors hindering standards development, as seen by the AEC, included:

A failure to establish priorities among the thousands of standards that need to be written.

A lack of schedule consciousness on the part of the standards writing groups and on the part of the supervisors of individual working group members.

The consensus process employed by ANSI in reviewing standards.[100]

Insufficient financial support by industry.[101]

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[97] Nuclear Industry, v. 19, Oct. 1972 : 41.

[98] AEC press release R–85, March 5, 1973.

[99] AEC press release No. S. 3–73, April 5, 1973.

[100] Elaborating, Muntzing said: "This process may involve several rewritings because of objections raised at different levels of review. Valid objections must be resolved quickly and objections that are unimportant to the substance of a standard must not be permitted to delay the review process. The process must be streamlined and made more efficient.

[101] Said Muntzing: Unless there is careful planning by ANSI, a major bottleneck in the nuclear standards effort now underway could be the lack of manpower and resources committed by ANSI to provide efficient and effective administrative support to the standards writing committees. The ANSI full time staff involved in nuclear standards still includes only three professionals. Its operating budget is at the $150,000 level. The paucity of industry contributions toward this budget, which is trivial in comparison to the importance of the task and its potential benefits, is a sad commentary on industry lack of commitment to the nuclear standards effort.

Failure of all concerned to make available a sufficient number of competent, adequately motivated people to staff the standards writing effort.

The AEC's prescription to solve the problem could well have been written for standards setting in other fields also. Mr. Muntzing said:

> If the ANSI system is to work, industry must provide adequate manpower. Employers, not individuals, must make the manpower commitment. Employers must not only permit, but require that the necessary on-the-job time be utilized for the standards effort. Appropriate recognition must be given for quality work on standards on the same basis as for any other work assignment, or hopefully, even on a more generous basis.

In reading these comments of the AEC, the reader should keep in mind that the voluntary industrial standards setting mechanisms were never intended to turn out complex, sometimes potentially controversial standards on a tight schedule as virtually a full time occupation of the participants. In comparison with other standardization activities, the response of ANSI and other participants has been substantial. At issue is what to do to get the still greater acceleration seen necessary by the AEC for its regulatory goals. The AEC has given some money to ANSI to help finance the costs, but there remains open the question of how appropriate is the voluntary consensus system to produce standards needed by government for near term application.

In February 1974, Mr. Chet Holifield, a leading member of the Joint Committee on Atomic Energy, addressed the House in support of standardization. He pointed out that the trend toward standardization, to his regret, had not been pursued as vigorously by the architect-engineering firms as he had hoped. In his analysis, these firms needed to join with the vendors of the nuclear reactors and with the utilities in developing coordinated standardized nuclear powerplants which can be reviewed with a minimum of processing time.[102]

The case of standardization for nuclear power plants involves conflicting considerations. On the one hand, the Administration would like to speed up the licensing of nuclear power plants by use of approved standards for parts and even whole systems. On the other hand, some critics of nuclear power believe that such standardization would reduce their opportunity to intervene in the licensing of individual nuclear power plants and to raise what to them are important issues of public health and safety. From a tactical viewpoint, they appear to believe that they and the groups they represent can have more impact upon nuclear power by raising the same questions in individual licensing proceedings rather than by raising them once in the hearings incident to standardization. Also, the weight placed upon voluntary standards by the AEC makes more important the questions of public representation in the work of ANSI and other professional bodies and societies, and the accessibility of these proceedings to critics of nuclear power.

Another different factor important for the future of nuclear standardization is the prospects for foreign sales of U.S. nuclear plants, equipment and technology. Standardization of the principal types of U.S. nuclear power plants (the light water reactors and the gas cooled reactors) could be a useful advantage for U.S. nuclear industry in its foreign sales campaigns.

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[102] Chet Holifield. Standardization of nuclear reactors. Congressional Record, Feb. 5, 1974, p. E439.

Building Standards and Energy Conservation

Conservation of energy in our homes, in commerce and industry is widely accepted as one short term measure to help reduce the imbalance between domestic demand and supply of fuels and energy. Congress is giving attention to energy conservation measures with many legislative proposals centered on use of tax and regulatory powers to provide incentives for energy users to conserve energy. The setting of performance standards for various classes of products, such as automobiles, electrical appliances and building construction is a common feature of many such proposals. One example is to be found in the proposed National Fuels and Energy Conservation Act, S. 2176, by Senator Jackson. A separate section of this bill deals with building standards. The Secretary of Housing and Urban Development would be authorized and directed to develop, in cooperation with the National Bureau of Standards and the General Services Administration, improved performance standards and specific design, lighting, and insulation standards to promote efficient use of energy in residential, commercial and industrial buildings. The Secretary of HUD, in cooperation with the NBS and GSA, would be authorized and directed to prepare the most practicable standards possible for efficient use of energy for different types and classes of buildings in different regional environments. Such standards would, to the extent possible, specify the energy conservation which would be achieved by adopting the recommended practices. The standards would be designed for ready incorporation into all currently available model building codes and new model building codes. The Secretary of HUD also would review and revise standards of the Federal Housing Administration to incorporate into them the most "advanced practicable standards for efficient energy use" including the most advanced practicable space conditioning and major appliance standards.

Similarly, the Secretary of Transportation would be authorized to establish minimum fuel economy standards for new automobiles with the goal to increase the average fuel economy by at least 50 percent in 1984 over that of 1974.

The breadth of energy conservation functions to be carried out through use of standards in S. 2176 is yet another illustration of the expanding role of standardization in the U.S. economy. What is not clear from the bill is the interaction of the voluntary standards setting organizations vis-a-vis the Government.

For example, the National Conference of States on Building Codes and Standards in cooperation with NBS and ANSI already has begun to prepare a comprehensive energy conservation standards for buildings. The output of this venture may well be a model code for the States. However adoption and use by the States will be voluntary. Will such an action be considered sufficient by the Federal Government, or might it wish to take some action, as it has for air and water quality, to assure that energy conservation standards for buildings will indeed be put into effect in each State?

Other questions posed by use of building standards to conserve energy include the extent to which government agencies would use and rely upon the consensus principles and organization of ANSI and other professional societies and trade organizations. If these orga-

nizations are used, how will consumer views be introduced at an early stage. Likewise, a strong move by government toward building standards for energy conservation could have implications for U.S. export trade and U.S. influence in the world of international standardization. Getting there "firstest with the mostest" could give U.S. standards and U.S. industry a position of world leadership which should benefit U.S. export trade.

INTERNATIONAL STANDARDIZATION

Since 1966 legislation proposed to Congress for voluntary standardization has emphasized the representation of the United States in the establishment of voluntary international standards. Product standards have become a language of international trade. They are the means by which a producer in one country can understand exactly what a customer in another country wants. They extend to terminology and definitions, product descriptions (the ratings, tolerances and performance criteria), test methods and procedures for acceptance.

Initially the standards used in international commerce were national standards, adopted or modified. However, differences between national standards in format and content have caused problems. Of recent years, considerations of safety, quality and performance—which differ from country to country—have complicated affairs. While some United States businesses are intensely interested in international standards and their effects, so much of U.S. trade and commerce is internal that comparatively little overall attention is given to the role of U.S. industry and government in the drafting and application of international standards.

Four aspects of international standardization treated in this chapter include a brief description of the International Electrotechnical Commission (IEC) and of the International Standards Organization (ISO), plus discussion of regional organization for standardization in Europe and nontariff barriers to trade in relation to U.S. trade negotiations and the General Agreement on Tariffs and Trade (GATT).

Impact on U.S. Business

Over the last 15 years for which data is available, the total world trade, measured by the value of exports of all countries, tripled from $103 billion in 1956 to $312 billion in 1970. During this same period the U.S. exports increased from about $19 billion in 1956 to $43 billion in 1970, indicating a slower growth than for the world as a whole. Over this 15 years, the U.S. share of the world market dropped from about 19 percent to about 14 percent, a decrease that is of concern to some observers.

Of course, there were variations among industries. For one highly technological industry, electrical and electronics, while the total world exports increased from about $3 billion in 1956 to nearly $16 billion in 1970, the U.S. share dropped from more than 30 percent to 19 percent.

In 1971 the Department of Commerce published a report on international trade as part of the U.S. metric study. The report analyzed the replies to a questionnaire sent to many U.S. businesses. It included a tabulation of the most significant factors affecting U.S. export trade. These factors are listed in order of importance in Table 5. Note that design of products to U.S. standards appears on both lists. This in-

dicates to some observers that in some cases our overseas cutomers buy our products because they are made to U.S. standards rather than to their national standards. On the other hand, some customers overseas find products made to U.S. standards simply will not "fit" or be suitable for their needs. Note too that in both lists, standardization was given much less importance than other factors. It is here that international standards become important.

TABLE 5.—*List of factors helping and hurting U.S. exports*

Factors helping U.S. exports:

1. Product reputation and reliability
2. Superior technology
3. High quality
4. Competitive pricing
5. Available maintenance
6. Expanding foreign market
7. Vigorous export promotion
8. Design to U.S. standards.

Factors hurting U.S. exports:

1. Prices not competitive
2. Local or third country competition
3. High tariffs
4. High shipping costs
5. No technological advantage
6. Nontariff barriers
7. Design to U.S. standards.

The two major, non-treaty international standardization bodies are the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). Together they have issued more than 2500 international standards and the number is expected to double over the next five years.[103]

The ISO and IEC standards are rapidly becoming the documents on which international commerce is based. The expanding European Community Market and the European Free Trade Association have agreed to use them to harmonize the national standards of their members. Developing countries are republishing these standards as their own national standards, and NATO, other treaty organizations, and the United Nations agencies are referencing them when ordering materials and equipment.

At this time, little use is made of IEC and ISO standards within the United States, which may generate criticism from other countries in future trade negotiations dealing with nontariff trade barriers.

Traditionally, international standards have evolved out of national standards. However, some countries lately, especially in Western Europe, believe that standardization should be done first at the international level before national standards are fully agreed upon. Many of the committees of the ISO and IEC have been set up with this in mind.

THE INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

The International Electrotechnical Commission is a non-government, non-treaty international organization which issues international electrical standards for electrical and electronic goods and services.

The IEC was founded in 1906 in London. Its headquarters now is in Geneva, Switzerland.[104] IEC's aims are to facilitate coordination and

[103] William A. McAdams. "The four worlds of standards." op. cit., p. 32.

[104] In 1972 the Secretary General was C. J. Stanford, 1 rue de Varembe, 1211 Geneva, 20. Switzerland.

unification of national electrotechnical standards. IEC consists of a Council which annually elects a Committee on Action. It functions through 72 technical committees. The Commission has official relations with the International Organization on Legal Metrology and the International Bureau of Weights and Measures.

The IEC issues recommendations which express an international consensus to assist National Committees to harmonize their national standards with IEC recommendations. The IEC works through annual general meetings which totaled 36 through 1971. More than 100 meetings of the individual technical committees and subcommittees are held each year. Some 700 IEC recommendations were published through 1971. IEC also publishes an annual report, a quarterly information bulletin, a catalogue of publications and a handbook of members, committees and officers.

IEC members are the national committees that represent the technical and scientific organizations of each country which deal with electrical and electronic standards. In 1972, 41 countries were so represented.[105]

Some History.—In 1876, the United States celebrated its first hundred years of independence with a Centennial Exposition in Philadelphia. The main attraction was at Machinery Hall where a huge Corliss steam engine was on display. Capable of producing 1000 horsepower of mechanical energy, it was then the largest prime mover in the world. In the same exhibit hall were two new machines of interest mainly to curiosity seekers. These machines were dynamos, each supplying electric current to light a single arc lamp. While few people at the time realized the importance of these electrical machines, by the end of the exposition a company was being organized to put them to practical use. Within the decade, in 1882, Edison had opened his Pearl Street central generating station in New York City which supplied 59 customers with electricity for 1,284 lamps. By 1888 there were 185 such stations in operation supplying nearly 400,000 lamps. Meanwhile in 1884, the first electric street railway went into operation in the United States and by 1886 electrical motors were beginning to appear in business and industry. This was the start of the U.S. electricity industry whose products generate a demand for power that still continues to grow with a doubling time of about 10 years.

Standards for the U.S. electricity industry found a home in 1918 with the formation of the American Engineering Standards Committee. By then much of the work for standardization of electrotechnical fields had already begun as an international activity. In 1881 the French government invited other nations to send delegates to Paris for the first International Electrical Congress. The first item on its agenda was "measures to be taken to arrive at the general adoption of an international system of electrical units." The Paris Congress also proposed that international standards be developed for international telegraphy, comparison of luminous intensity, and comparison of the effects of different types of electromedical apparatus and lighting arrestors.

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[105] IEC membership included the following countries: Africa—Egypt, South Africa; the Americas—Argentina, Brazil, Canada, Cuba, the United States, and Venezuela: Asia—China, India, Iran, Israel, Japan, North Korea, South Korea and S. Pakistan: Europe—Australia, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, Turkey, the United Kingdom; the Soviet Union and Yugoslavia; Australia is also a member.

In 1893, the Fourth International Electric Congress met in Chicago. There it agreed upon a brief electrotechnical dictionary and in 1894 the U.S. Congress approved this new vocabulary for use in the United States. Establishing this international vocabulary was one of the most outstanding achievements ever made in the development of basic units of measurement in any technical field.

The Sixth International Electrical Congress met in St. Louis in 1904. During this Congress, a Committee on International Standardization [106] was established to organize an international program for the development of electrical standards. This led to the International Electrotechnical Commission which was formally organized in London in 1906, with Lord Kelvin as its first president.

The IEC's central office remained in London until 1947 when it was transferred to Geneva. At that time IEC became affiliated with the new International Standards Organization as its electrical division with financial and administrative autonomy. The United States National Committee of the IEC was founded in 1907 and, while still autonomous, has been affiliated with the American National Standards Institutes or its predecessors since 1931.

In retrospect, the IEC was the only organization concerned with voluntary international standardization to survive two World Wars. It has become the leading international organization for engineering standards in the electrical and electronics industries.

Some Recent IEC Actions Affecting U.S. Trade.—Dr. Alan V. Astin, while director of the National Bureau of Standards, in analyzing the effect of international standards upon U.S. manufacturers noted examples of manufacturers being excluded from foreign markets because of the lack, inadequacy, or incompatibility of standards.[107]

On the other hand, U.S. participation in IEC affairs has secured some international standards which allow the free movement of American products and have even influenced some national standards into more hospitable form.[108] Case histories of U.S. participation proved, according to Dr. Astin, that where the United States participates fully in international standards deliberations, it usually succeeds in protecting U.S. technology and practices.

A U.S. Proposal for International Certification.—One continuing problem for any standards organization is assuring compliance with the standards. One way to do this is through certification. At a meeting of the IEC in Washington in 1970, the U.S. National Committee proposed that the IEC establish a worldwide certification program. This idea was included in a report of the IEC Committee on Action and a

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[106] Much of this discussion is drawn from W. A. McAdams. "Electrotechnical standards: 90 years of progress," Magazine of standards, October 1968.

[107] A. V. Astin. "A time for action in international standardization," Materials research & standards, May 1968, pp. 18–24. He said, in part:

". . . European standards for light bulbs and sockets call for a different depth of socket from ours. Many countries require 220 volt, 50 cycle electric current for refrigerators and other electrical appliances. A number of national standards and safety requirements for heating equipment, plumbing fixtures, and building materials exclude U.S. manufacturers."

[108] Of this Astin wrote:

". . . Recent U.S. representation in the development of international standards for automobile headlights headed off the adoption of a Swiss standard which would have banned American-made sealed beams from the world market.

"U.S. efforts between 1954 and 1957 succeeded in having removed from IEC specifications for electronic components and equipment the requirement for a salt spray test for corrosion resistance. Oure electronics industry was convinced that the tests were valueless, but they had been written into IEC requirements during the time when the United States was not represented on the technical committees involved. Acceptance of the test requirements could have put a great dent in the sale of U.S. made electronics all over the world." Ibid., p. 21.

technical committee of the IEC, under U.S. leadership, drafted plans for a worldwide certification system. In 1971 the IEC meeting in Brussels voted affirmatively to set up a worldwide system and set up an IEC management commission to implement this decision.

By 1973 the procedures were close to being ready to be sent to National Committees for approval. However, there is apparently no target date to accomplish this worldwide certification. Also, certification would be limited to electronic products and would not include electrical products.[109]

IEC Organization.—The International Electrotechnical Commission is a voluntary, non-govermental, non-treaty, international organization for formulating international standards for electrical and electronic industries.

The members of the IEC are National Committees, one for each country, organized especially for participation in the Commission. The National Committees have various roles and status within their parent countries, but all are broadly representative of the groups having interests in the electrical and electronic fields—producers, users, educators, government, professional organizations and the general public. Except for the United States, most of these committees are at least partly official with affiliation in some way with the national standards organization of their country.

The governing body of the Commission is a Council, composed of the Commission officers and the Presidents of the National Committees. The technical operations are delegated to a Committee of Action made up of nine National Committees selected by the council. The drafting of standards is carried out by Technical Committees and Subcommittees under direction of the Committee of Action. Each Technical Committee and Subcommittee is administered by a Secretariat supplied by a National Committee appointed by the Committee of Action. Because the Secretariat has considerable influence over the work of the technical committee, there is often competition among member countries for the Secretariats of new committees and subcommittees. Possession of a secretariat is seen as an advantage to a nation in having its engineering practices incorporated into IEC recommendations. Of 180 secretariats in 1973, the United States held 29 in comparison with 25 of the United Kingdom, 27 by France, and 24 by the Netherlands.[110]

The U.S. National Committee for the IEC was organized in 1907 under the sponsorship of the American Institute of Electrical Engineers (now the Institute of Electrical and Electronic Engineers). It became an independent body from 1920 to 1921. In 1931 it affiliated with the then American Standards Association and has since maintained that affiliation with ASA and its successor organizations, including the present American National Standards Institute.

The U.S. National Committee is sponsored by 21 organizations, including five professional societies, seven industry associations, two testing laboratories, and five branches of the Federal government. These organizations provide most of the resources for the U.S. National Committee. However, the Federal government as such has no

[109] Cf. statement of Richard Simpson, Department of Commerce, in Hearings, International Voluntary Standards, op. cit., p. 33.

[110] This information was obtained from William A. McAdams, President, U.S. National Committee of the International Electrotechnical Commission.

official representative, and Federal employees participate as professional experts rather than official representatives. Likewise there is no focal point within the Federal government for consideration of draft standards.

The U.S. National Committee is now active in practically all of the IEC Technical Committees and Subcommittees. It appoints a Technical Advisor and an Advisory Group to each IEC Committee and Subcommittee. The Technical Advisor for a particular committee is the best expert the National Committee can find. The job of the Technical Advisor is to form the U.S. positions through consultation with his Advisory Group and to see that the positions are presented effectively in international meetings. In 1971 there were more than 3,000 U.S. Technical Advisors and Advisory Group members.

The U.S. National Committee itself is composed of an Executive Committee, elected by other members, representatives of the sponsor organizations, the Technical Advisors and members-at-large (elected by the other members.)

In 1971 the United States participated in about 95 percent of the IEC technical committees and subcommittees, but U.S. participation in their working groups was estimated to be less than 50 percent.[111] More than 100 meetings of the individual technical committees are held each year. The working groups are kept small for reasons of effectiveness. That, however, limits opportunities for large industrial countries to unduly dominate many such groups. An attempt by the United States to place representatives on most working groups could provoke resentment or suspicion. At issue then is whether the United States is represented on working groups whose decisions could be important to U.S. commerce and industry.

IEC Procedures.—The initial draft of a proposed standard originates in a working group of a Technical Committee. It progresses to a draft recommendation when the technical committee approves it. IEC automatically sends drafts of all recommendations to all the National Committees under a "six-months rule." Modifications to reconcile objections are next circulated by letter ballot under a two-month limitation.[112] The final IEC recommendation is issued as representing the best consensus.

A. U.S. Breakthrough.—What may be an important development in international standards for electronic components was reported recently by the U.S. delegation to the last meeting of an IEC Committee (IEC/TC 40) on standards for capacitors and resistors. At issue was the degree of detail to be included in international standards. American domestic practice is to have a completely definitive standard that can be referenced directly for procurement. The European practice, on the other hand, tends toward use of general requirements with final details left to bilateral negotiation between the manufacturer and user, case by case. From the American viewpoint, the European approach can result in inconvenience, since the distances from the U.S. to foreign customers make it more difficult to achieve

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[111] U.S. metric study interim report: engineering standards. Washington, D.C.: U.S. Government Printing Office. 1971. p. 50.

[112] The two-month procedure is used in IEC not to resolve substantive objections, but only to deal with matters of wording. It usually does not serve to change the technical content of the six-month rule document, but it may be used to choose between two alternative wordings. If the vote in the two-months procedure does not sustain it, the wording reverts to that of the six-month rule document.

close liaison necessary for such negotiations. At the same time, the European manufacturers do not encounter this disadvantage in serving the U.S. market because our standards are specific. The U.S. representative, Mr. J. R. Isken, recently reported that the U.S. had achieved a significant milestone in finally obtaining acceptance of the principle that there should be detailed international standards.[113]

The International Standards Organization (ISO)

The International Standards Organization (ISO) is a non-governmental, non-treaty, international organization with the purpose of promoting the development of international standards to facilitate international exchange of goods and services and to develop mutual cooperation in intellectual, scientific, technological and economic activities. It now comprises the national standards bodies of 69 countries. Founded in London in October 1946 and organized in 1948, its structure consists of a General Assembly and Council. Member nations are represented by national standards organizations, with one to a country. ISO member countries numbered 59 at the start of 1972. The ISO has consultative relations with nine formal international organizations [114] and has liaison with more than 200 non-treaty organizations, notably the International Electrotechnical Commission.

The ISO works through technical committees of experts appointed by Member Bodies. By January 1, 1972, 1,800 ISO International Standards had been published and 800 more were in draft form.

Some History.—Interest in international standardization began informally in the United States as immigrants continued to use the engineering practice that they had brought with them. The first formal movement began in 1882 when a small group of workers in experimental engineering held an international conference in Munich to stimulate standardization of testing procedures. This movement expanded rapidly and larger meetings were held which ultimately led to organization of the International Association for Testing Materials (IATM). Interest in international standardization within the United States peaked just before World War I.

At that time, 623, or over 20 percent of the 2,849 IATM members were in the United States. To promote the international use of ASTM Standards, twenty specifications for steel products were published in several languages by ASTM in 1913. Subsequently, the U.S. Department of Commerce translated ASTM Standards important to export trade and distributed them to Consular Offices throughout the world.

U.S. interest in international standardization continued during and after World War I, but it decreased markedly after IATM ceased to function in 1915. Neither a new IATM nor the International Standards Association, which both were formed in 1926, revived the U.S. interest in international standardization. Both the new IATM and ISA were casualties of World War II.

The need for international standardization was recognized by the Allied nations. In 1944, they formed the United Nations Standards Coordinating Committee to coordinate standards for products procured in various countries. The need for continuing work of the com-

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[113] ANSI reporter, vol. 7, Sept. 14, 1973, p. 3.
[114] These include ECOSOC, WHO, ICAO, ITU, IAEA, IMCO, UNCTAD, and the ILO.

mittee after the war led to the establishment of the International Organization for Standardization which began to function in February 1947.

Changing ISO Functions.—When ISO was created there were already some 150,000 national standards in existence, many of them conflicting. Not only did the larger countries like the United States, the United Kingdom and West Germany have their own national standards, but many smaller countries also published numerous national standards.

Consequently the initial ISO effort sought to harmonize the national standards of the member countries.[115] In those post war years, however, there was only limited interest in international standardization and the existence of ISO had little effect. The national standards organizations still gave first priority to national standards, and international standardization was considered as a useful but hardly an indispensable activity.

In the mid-1960s, things began to change. The rapid technological developments and the increase in international commerce highlighted a need for international standards. As nations removed tariff barriers to trade, the world discovered rather suddenly that other barriers remained, not the least of which were technical standards. Olle Sturen, Secretary General of the ISO, explained the changes as follows:

> Linked to the discovery of the technical barriers to trade and the increasing interest in international standardization of the past 10 years are such factors as:
>
> The development of multinational companies which found their commercial activities hampered by conflicting national standards; and
>
> The recognition by other international organizations of the need for rules in technical questions.
>
> But there were also other reasons behind the change:
>
> The creation of standards institutions in a great many developing countries which realized the need for a sound international basis for their national work; and
>
> The widening scope of ISO, which engaged more and more people from different interest groups, including the consumer movement.

In other words, by the midsixties there had developed a *demand* for international standards—not only a desire. The climate was right for ISO's growth. The result: while only a hundred ISO recommendations were published in the fifties, some 1,400 international standards agreements were reached in the following decade.[116]

By 1972 there were nearly 2,000 ISO recommendations, half of which had been published in the preceding three years. A further 2,000 drafts and proposals were in process and the total number of ISO agreements is expected to double by the mid 1970s.

A significant change in the purpose and outlook of ISO came when it began to publish International Standards rather than Recommendations. While a Recommendation is intended for use as the basis for a national standard, an ISO International Standard is a document that can, and will be, used as a standard in its own right. They can become competitors to national standards, although ISO prefers to view this as the International standards becoming a real substitute for different national standards.

Some Western European countries already have decided to adopt ISO International Standards as national standards whenever possible.

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[115] To "harmonize" standards is to make the standards of different countries or organizations the same in content although their formats may differ.

[116] Olle Sturen. "Towards international standardization." Technical news bulletin, V. 56, Oct. 1972, p. 236.

The European Standards to be issued by the European Committee for Standardization, CEN, are expected to be endorsed ISO standards wherever such are available.

The British Standards Institution has decided to submit draft international standards to the same public review as their own British Standards. Also, the German Standards Institution (DIN) decided in 1972 to permit adoption of ISO standards as DIN standards without change, thus replacing the procedure of writing DIN standards based upon ISO standards. Denmark has decided to devote its entire standards effort to IEC and ISO standards.[117]

On a regional front, the Commission for the European Common Market intends to refer to CEN European standards in the technical regulations they issue on behalf of their member governments. A parallel development can be seen in Eastern Europe through their organization commonly known as COMECON.[118]

Another indication of the increasing emphasis on international standards as substitutes for national standards is a shift in the ISO technical programs. Initially ISO programs focused on test methods for materials, terminology and rather basic standards. Now the preparation of specifications, dimensional and performance standards for products are accelerating. The additions of such items is bringing out national differences.

The difference most frequently observed is the different measurement systems still used in the industrial world, namely the English and the metric systems of units. While two measurement systems need not create problems in international standardization, the tendency of designers to use rounded-off values for dimensions is causing difficulties.

Another difficulty in international standardization has to do with differences in national safety philosophy. What is needed, according to ISO, is better collaboration between government agencies in establishing minimum requirements for safety and a better understanding on the part of governments of the need to change present national safety philosophies and adopt an international approach instead.[119] How well this idea will sit with government agencies in the United States that set mandatory standards based on safety and environmental factors remains to be seen.

ISO Organization.—The ISO consists of a General Assembly, which meets every three years, a Council composed of a President and representatives of 14 elected Member Bodies. Membership is limited to one standards body per country. The central staff is based in Geneva.[120] Member countries are represented by a national standards body, with each such committee having one vote.

The ISO is concerned with standardization in all fields except electricity which is the sphere of the IEC. Since ISO was organized in 1948, 139 technical committees have been established. Additional committees are established yearly. For example, ISO committees have been established to deal with health and safety problems including anes-

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[117] International newsfront. ASTM standardization news, V. 2, April 1973, p. 4.
[118] Ibid., p. 237.
[119] Ibid., p. 250.
[120] Dr. Ake Vrethem, a Swedish industrialist and president of the Swedish Standards Institution became ISO president in January, 1974, succeeding Frances L. LaQue of the United States. The Secretary General is O. Sturen, 1 rue de Varembe, 1211 Geneva 20, Switzerland.

thetic and breathing equipment, athletic equipment, dentistry, food, medical syringes, protective clothing and equipment, stretchers, and blood transfusion equipment. Most of the committees deal with industrial materials and equipment including such products as aircraft, agricultural machines, automobiles, computers, earth moving machines, office machines, and shipbuilding.

The secretariats of ISO technical committees, subcommittees and working groups are distributed among 29 member countries. The United Kingdom and France predominate. Together they had 420 or over 40 percent of the 1,010 total of 1971. Germany had 128 and the United States had 99. These four countries accounted for nearly two-thirds of the secretariats.

The time between initiation of work by a technical committee on a recommendation and the issuance of the recommendation is typically five years or more. After issuance, the recommendations are to be reviewed at least every five years.

While in 1967, ISO published 126 recommendations, some 350 were to be published during 1973. More than 1000 ISO standards have been issued during the last three years, so that about 45 percent of ISO standards available today are less than three years old.

The American National Standards Institute (ANSI) represents the United States in ISO. This membership goes back to the founding of ISO in 1946.

As one of the founding charter members of ISO and, by the rules of the newly formed ISO, the then American Standards Association was admitted as a member by reason of its participation in the London Conference in 1946 which gave rise to ISO. The United States, through ASA, had the distinction of being the first country to have its Member Body ratify the charter of ISO. ASA in representing U.S. industry did not receive financial support or official recognition from the United States government, nor does ANSI now.

ISO Procedures.—In the ISO, the draft of a proposed standard is prepared by a working group and becomes a draft recommendation when the technical committee concerned approves it. The draft recommendation is next submitted to all member countries by letter ballot. Disapprovals and comments are referred back to the technical committee for consideration. An ISO Recommendation requires approval of a majority of the member countries participating in the technical Committee and 60 percent of the 150 member countries that have voted. When consensus is finally reached, the document is issued as an ISO Recommendation.

An ISO Recommendation may become an ISO International Standard. The procedure involved recently was described as follows:

> An International Standard is the result of agreement between the member bodies of ISO. Member bodies taking an active part are designated as *P-members* (participating) of an ISO committee. They have the right to participate in the meetings and to vote. Member bodies that are only kept informed of the work of a technical committee or subcommittee are designated as *O-members* (observers). (The average ISO technical committee consists of 22 P-members and 18 O-members.)
>
> A first important step toward the International Standard takes the form of a draft proposal—a document circulated for comment within the technical committee. When agreement is finally reached within the responsible technical committee, the document is sent to the Central Secretariat for registration as a *Draft International Standard* (DIS) : the DIS is then circulated to all member bodies

for voting. If 75 percent of the votes cast are in favor of the DIS, it is sent to ISO Council for final acceptance as an *International Standard*. ISO has established the general rule that all ISO standards should be reviewed every five years.[121]

According to ISO's Secretary General, Olle Sturen, the most significant recent event in international standardization has been the changeover from ISO Recommendations to the publication of the results of the ISO technical work as International Standards. This change is more than one of names. It involves a new attitude towards international as well as national standardization. Previously many ISO member bodies thought of ISO Recommendations as internal documents which should not be available to the public but be used only as working documents of national standards organizations. The development of an international consumer market, of multi-national corporations, and of a desire by governments and industries to eliminate technical barriers to trade has brought about, however, increasing reference to and use of ISO Recommendations as de facto International Standards. The ISO decision in 1971 to cease publication of recommendations and to apply its constitutional right to publish International Standards is seen by ISO as both a confirmation of this change and the start of a new era in international standardization.[122]

Congressman Roush's Report on the ISO.—In 1967 Congressman J. Edward Roush was invited to the Tri-Annual Meeting of the International Organization for Standardization, which was held in Moscow. Upon his return he reported to the House Committee on Science and Astronautics.[123]

Mr. Roush observed the weakness of United States' participation in international standardization activities, particularly in the technical committees. He wrote:

> . . . Our weakness, however, has been rather in the work of Technical Committees. In some instances we were very capably represented. In some instances, you will observe that we are not represented. In some instances we have a very passive representation, and in others we just do not have the quality of representation we should have. At this working level, we should be aggressive, competent and show a greater degree of leadership. In each instance where we do have representation on a Technical Committee, we should be prepared to see to it that that representation is the most competent and the best representation that we can find.[124]

Mr. Roush cautioned about a concerted effort by the ISO to induce the participation of underdeveloped emerging countries. There is, he said, a decided economic vacuum in many of these countries. The United States should be in a position to step in and fill that vacuum. It is our goods and services which could go to these countries, not as gifts, but as goods for sale by private industries in this country.[125]

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[121] International newsfront. ASTM standardization news, V. 2, March 1973, p. 4.

[122] Elaborating, Mr. Sturen said:
"This new era is primarily characterized by the elevation of the formulation of standards from the national to the international level. The traditional approach—starting with national standards and then negotiating internationally—is being replaced at an accelerating pace. This is particularly true in new technological fields, such as information processing, plastics, and nuclear energy; but the development towards international agreements is evident also in those fields where the national standardization work has been carried out since the beginning of the century—such as mechanical engineering, building and transportation." Cf. Olle Sturen. ISO activity 1970–1973. Remarks at the 9th Triennial Meeting of the ISO, September 10, 1973.

[123] U.S. Congress. House. Committee on Science and Astronautics. Report on the Tri-Annual Meeting of the International Organization for Standardization. 90th Cong., 1st sess., 1967, 6 p. (Committee print.)

[124] Ibid., p. 5.

[125] Ibid.

The Triennial Meeting of the ISO.—The ninth triennial meeting of the ISO was held in Washington, D.C., September 4–14, 1973. Delegates from fifty-six nations convened for meetings of the ISO governing bodies, technical committees, and General Assembly. A feature of the meeting was a series of special sessions of the General Assembly which covered:

The impact of international standards on world trade,
Safety and health at work,
National and international environmental standards,
Impact of a metric world on commerce, and
References to standards in regulations.

Some highlights of ideas expressed at the sessions include the following:

ISO president Francis L. LaQue outlined future ISO activities as extending to: standards for government use in implementing regulations and trade agreements; development of standards responsive to needs of people; a new approach to the needs of developing countries; and definition of the proper role of regional organizations.

Edson W. Kempe, chief of the Special Trade Activities and Commercial Treaties Division, Department of State, outlined a three point U.S. position aimed at reducing barriers to trade caused by differing standards. He said that: [126]

> The United States believes that the optimum solution to the problem is an international arrangement which would minimize barriers to trade arising from the creation of standards. Therefore, it has supported the effort to write a product standards code under the General Agreement on Tariffs and Trade.
>
> The United States Government should be able to participate more effectively in international standards activity. The Administration is supporting the passage of the International Voluntary Standards Cooperation Act of 1973, which would make this possible. The United States has sought to establish its right to participate in certain regional systems, such as CENEL, the European Electrical Standards Coordinating Committee.
>
> The United States is seeking to rationalize U.S. national standards activity, sensitizing it to potential trade effects. Thus, the Administration is sponsoring legislation to speed up United States conversion to the metric system.

Ian Stewart, of the Standards Association of Australia, noted the paucity of "truly global, trade-neutral" standards. Most so-called international standards, he said, are really regional, usually European. Standards that meet the needs of all countries will be achieved "only by multilateral sacrifices of entrenched positions." [127]

Chan Wing Kwok of the Singapore Institute of Standards, complained that even the international standards which exist are not widely used. Rather the developed countries which formulate international standards, revert to their own national standards in trade negotiations. Unless ". . . the economic powers who monopolize the main bulk of world trade are prepared to accept . . ." international standards, they will be only "paper documents." [128]

On the other hand, Pierre P. J. Schlosser of Commission of the European Communities held that regionally harmonized standards are often necessary, and not necessarily conflicting, substitutes for international ones. The trick, he said, is to design regional and international standards so that they complement instead of negating each other." [129]

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[126] Specialists seek ways out of worldwide maze of product standards. Commerce today. Sept. 17, 1973, p. 7.
[127] ANSI reporter, Sept. 28, 1973, p. 2.
[128] Ibid., p. 3.
[129] Loc. cit.

J. W. van Zwieten of the N. V. Philips Company, endorsed the idea of multiple standards. Standards, he said, should not represent compromises of conflicting interests; the conflicts will still exist. Five standards would be better than one compromise not optimal for anyone or no standard at all.[130]

E. W. Greensmith, of the British Standards Institution, reported that Great Britain is moving toward voluntary rather than mandatory standards.[131]

During the 1973 Triennial meeting, the Council approved a ten-point Code of Principles on "Reference to Standards" that had been prepared by a joint working group from ISO and IEC.[132]

The code consists of principles intended to guide ISO and IEC committees in developing standards so as to make them more acceptable to national governments and recommendations to governments as to how they should apply the reference to standards technique.[133]

Regional Organization for Standardization: CEN and CENEL

The scene for international standardization and certification has been complicated by the appearance of regional voluntary, non-treaty organizations. Two notable ones are the European organizations CENEL and CEN. CENEL is the European Standards Coordinating Committee for electric products, while CEN coordinates standards in all other fields. The Williams Commission noted that regional European plans for certification marks on electronic components posed a particular threat to U.S. exports.[134]

An immediate cause for Congressional interest in 1971 was the formation by the United Kingdom, France and West Germany of a Tripartite Committee to harmonize their standards. A draft Tripartite Accord on Electronic Components was completed in April 1970. This tripartite committee then invited representatives from the member countries of the European Standards Coordinating Committee (CENEL), to participate in working out the details. CENEL was asked to administer the arrangements for harmonization of specifications. A separate organization of similar membership, the Electronic Components Quality Assurance Committee (ECQAC), was established to supervise the inspection and quality control aspects of the system.

Several features of this Accord may suggest the pattern of similar ventures for other classes of industrial products. First, the Accord calls for an "authorized institution" in each country to operate the harmonization system and speak for the government. Such an institution can be governmental or private, or a combination of both, but it must be authorized by the government to speak with authority on

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[130] Loc. cit.

[131] Ibid., p. 4.

[132] "Reference to Standards" is a method of stating technical requirements in official regulations by referring to detailed specifications in internationally harmonized standards.

[133] ANSI reporter, Oct. 12, 1973, p. 2.

"Briefly, the major principles call for ISO and IEC to give priority in standards making to standards that are to be referenced nationally or regionally, to make their standards committees representative of all interested parties, and to prepare standards that will have the widest possible geographic support. The principles also call upon governments to give preference to ISO–IEC international standards in adopting national or regional standards."

[134] U.S. Commission on International Trade and Investment Policy. United States international economic policy in an interdependent world. Washington, D.C.: U.S. Government Printing Office, July 1971, p. 102. (The Williams Commission report.) A Department of State paper on this issue appears in Appendix 2.

behalf of all interests in the country, both government and industry. The "Authorized institution" must provide for product testing by approved laboratories to assure compliance with applicable standards and for the use of a mark or stamp certifying conformity of the test product to the standard. This mark must be accepted by all participating countries without further testing, but products of non-member countries would have to be tested and certified before entry into the market.

Such certified products would be expected to enjoy a strong, almost preemptive market advantage and a decided preference in government procurement. Absence of the United States from such a scheme was expected to be a disadvantage for U.S. industry, which gave impetus to the Administration to propose legislation (H.R. 8111 in 1971) to correct the situation by authorizing the Secretary of Commerce to participate in such international arrangements and to support greater U.S. participation in international standards writing.

U.S. industry objected to the Government about the trade threat. The Electronic Industries Association complained that this tripartite agreement was a potential nontariff barrier, particularly because there was no way for U.S. products to obtain the CENEL mark of conformity. The United States then made bilateral representations to the Western European governments and in the GATT identified the tripartite agreement as one of the most important nontariff barriers. At an international meeting in London, in June 1971, the United States got agreement from the government of the CENEL countries to use their best efforts to persuade their national standards bodies to act favorably on any applications from the U.S. electronics industry for participation in the CENEL arrangement.[135]

The Williams Commission was pessimistic about U.S. participation. It wrote:

> Even if the United States is permitted to become a member, however, it is not presently equipped to do so. The plan requires each country to designate an "authorized institution" to certify that products conform to standards. In the United States no such institution exists which represents both private and government interests.[136]

By mid-1972, the Department of Commerce reported the status of European certification as follows:

> CENEL is in business on the electronics component certification—it is in its embryo stages but is operating. IEC is still in the talking stage about setting up an international scheme on electronic components. CERTICO, an ISO committee, is studying ISO's certification role. CEN has a registered mark, their rules are fairly complete, and they are not very far from implementing a certification scheme. EFTA has a system operating on pressure vessels, on pharmaceuticals, and other things. The Common Market has several systems operating.[136a]

Through the end of 1973, however, CENEL had not issued any certifications.

So it seems for U.S. participation in CEN and CENEL, that if this country wishes to participate in a regional system of which it is not a member, then either the United States has to negotiate to become a member, or negotiate an arrangement for certification of U.S. prod-

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[135] William B. Kelly, Jr., "Background for the GATT standards code." Materials research and standards, v. 12, July 1972, p. 16. Mr. Kelly is senior economic advisor, Office of the Special Representative for Trade Negotiations.

[136] Williams Commission report, op. cit., p. 102.

[136a] Richard O. Simpson, "The national impact of the GATT standards code." Materials research and standards, v. 12, July 1972, p. 14.

ucts. The latter is the approach in the case of CEN and CENEL whose membership is open to western European countries only.

Nontariff Trade Barriers and GATT

In recent years, voluntary international standards have become a troublesome form of nontariff trade barrier. Export minded American companies have recognized this fact for some time and are deeply concerned about such barriers to their products. The combination of international standards plus requirements for certification of compliance with such standards is raising new issues of who should represent the United States in the formulation of such international standards and how should certification be accomplished. Additionally, the appearance of regional standardization organizations in world trade still further increases the risk of exclusion of U.S. products, or saddling them with competitive disadvantages in important regional trade markets, such as the European community.

The start of this change coincided with the formation of the European Common Market in the early 1960's. During this era there was a general lowering of tariffs as a result of the Kennedy Round Tariff Negotiations. As tariffs dropped, goods that had not moved in international commerce because of high import tariffs began to move, and the movement began to reveal nontariff barriers. One category of such barriers is standards and certification. Richard O. Simpson, of the Department of Commerce, recently summarized the implications for the United States as follows:

> As a consequence, it is now much more important for the United States to participate vigorously and effectively in international standards work. We need to get our technology incorporated into the standards because ISO and IEC standards are, in fact, being used in preference to all other existing standards by most of western Europe. Ten years ago it was not as important for ASTM, SAE, API, etc., to be concerned about the international standards process because their standards were used worldwide—they were written in the United States, distributed and used worldwide. But that automatic usage is on the decline. We are going to have to work to protect the position we have now and participate vigorously in order to protect the usage that we had in the past.[137]

In the later 1960's, members of the General Agreement on Tariffs and Trade (GATT) listed some 800 separate nontariff trade barriers. This list included standards in addition to other restrictive practices. Subsequently the GATT Committee on Trade in Industrial Products established five subgroups to deal with the broad categories of nontariff barriers: (1) government participation in trade (subsidies, government purchasing, etc.); (2) customs and administrative entry procedures; (3) standards; (4) quantitative restrictions; and (5) charges on imports (surcharges, prior import deposits, etc.) Working Group 3 (WG 3) on Standards is reported to have made substantial progress in developing a draft international code of conduct.[138]

The U.S. proposed to Working Group 3 that a possible solution would be to prepare a GATT code which would not involve GATT in standards writing, but rather would be a code of conduct in standards writing. A draft was prepared in 1972, which would:

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[137] Ibid., p. 14.

[138] Reduced trade barriers aim as negotiators meet to plan worldwide talks. Commerce today, Oct. 15, 1973. p. 9.

(1) encourage participation in standards writing in international organizations so as to harmonize standards on as wide a basis as possible;

(2) encourage participation in international certification arrangements for assuring conformity to standards;

(3) formulate rules for regional standards arrangements so that in standards writing and certification these arrangements will not operate to restrict the trade of third countries; and

(4) formulate rules that should be followed by national standards bodies so that standards writing and certification will not afford protection to domestic production.[139]

Additional reasons for this U.S. initiative is given by the Williams' Commission. Speaking to nontariff barriers, the report said:

> This problem will grow in the future. Aside from electronic components, there are European plans to apply common standards, test methods, and perhaps national recognition of certification to about 25 products which have been scheduled for harmonization.[140]

With this in mind, the Williams Commission urged the United States Government to play a greater role in helping private organizations to formulate international industrial standards and support for the legislation then before Congress.

Hearings Before the Special Trade Representative.—In June 1972 the Office of the Special Trade Representative held public hearings on international product standards. Much of the testimony touched upon the proposed GATT Code of Conduct.

The U.S. National Committee of the International Electrotechnical Commission was represented by its president, Mr. William A. McAdams who emphasized that differences in standards become serious barriers to free and fair trade. He saw the proposed code as a potential significant step in removing such differences. However several matters disturbed him.

One particular concern was the lack of information on timing of the implementation of the code, once signed. Another concern was the silence of the code on treatment of foreign and domestic manufacturers for certification:

> . . . For example, self-certification by a domestic manufacturer, even to a mandatory standard, is frequently acceptable in the United States; if the manufacturer proves to be dishonest or unreliable, he is subject to legal action. It is not as easy to apply the same legal action to a foreign manufacturer, however, inasmuch as he is outside U.S. jurisdiction. On the other hand, if we require the foreign manufacturer to obtain independent, third-party certification in such cases, this could put him at a disadvantage relative to the self-certifying, domestic manufacturer. Yet, if we require third-party certification of both domestic and foreign producers, this could create unnecessary costs for the U.S. consumer. This is a practical dilemma that needs to be resolved.[141]

On another point, Mr. McAdams was concerned that superior U.S. standards might have to give way to lesser standards, especially when a safety, health, expense or quality of operation for a user might be significantly impaired as a result. He urged that the final code should recognize that no country can be expected to adopt an international

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[139] Cf. Notice of Public Hearing, Trade Information Committee, Office of the Special Representative for Trade Negotiations. Federal Register, vol. 37, May 25, 1972, p. 10620.

[140] The Williams Commission report, op. cit., p. 102.

[141] William A. McAdams. Statement before the Trade Information Committee of the Office of the Special Representative for Trade Negotiations, June 26, 1972, p. 7.

standard if its own national standards can be demonstrated to be superior for its own people.

The American National Standards Institute was represented by its President, Mr. Roy P. Trowbridge. ANSI supported the intent and purpose of the proposed code and was particularly pleased that GATT gave priority attention to standards which along with certification had long required an international economic as well as technical review. However, ANSI had several general comments and cautions for the Trade Information Committee:

On timing of application of the code, ANSI suggested a statement that the code in no way would interfere with the responsibility of governments for safety, health and welfare of their people, or for the protection of the environment in which they live.

Implementation of the code, and particularly the changing of existing standards and quality assurance programs, would take considerable time. ANSI suggested a minimum of two years after ratification.

On an implied preference for international standards in lieu of national standards, ANSI wanted it recognized that in many areas of technology, U.S. standards are clearly superior to international standards. Of particular concern to ANSI was that in many instances international standards are based on rounded metric sizes which the U.S. would find impossible to adopt, particularly since no affirmative action had been taken on metric conversion in the United States.

The National Association of Manufacturers was represented by Samuel E. MacArthur, chairman of the NAM Task Force on Nontariff Barriers. He too cautioned that with the exception of a few selected industries, the United States had been slow to recognize the significance of international product standards and harmonization schemes in relation to growing economic regionalism. Urgently calling for U.S. participation, NAM held the view that:

> Short of abdicating all responsibility and participation in international standards deliberations (which is not really a viable alternative), the United States has no option but to seek a more active role and representation in the various international organizations working in these areas, (i.e., OECD, NATO, International Standards Organization). The continued uncontested European leadership in this area, . . . could prove extremely harmful to numerous U.S. export interests across a wide range of industrial and agricultural product groups.[142]

As an example of current problems, NAM cited manufacture of rubber tires for motor vehicles. Draft regulations on rubber tire standards were then under consideration within the Economic Commission for Europe. Enactment of this regulation, warned Mr. MacArthur, would erect definite barriers to U.S. tire exports to Europe. Safety would not be at issue but rather the method and procedures employed in the regulation which, without the influence of active U.S. participation, would, in effect, bar U.S. tire exports which would otherwise be competitively marketable. As for help from the Department of Transportation which represented the United States on the ECE, this department was not empowered to represent U.S. commercial. trade or economic interests. Its representation was limited to safety. This situation, said NAM, not only abdicated a role of U.S. leadership to other nations, but also neglected all opportunity to offer any U.S. input into the formulative proceedings. "In the area of product standards, the

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[142] Samuel E. MacArthur. Statement of the National Association of Manufacturers before the Trade Information Committee, Office of the Special Trade Representative, July 26, 1972, p. 4.

creation of an effective NTB is, therefore, initially spurred by the apparently self-imposed restriction on U.S. participation in standards formation." [143]

From the NAM's standpoint, the United States should work for the adoption of a voluntary international code of conduct in GATT which would call for:

(1) encouraging international organization participation in the writing of product standards, with systematic industry consultation, particularly when new standards are being developed.

(2) The consideration of international certification arrangements on existing standards where complicated national social and economic priority determinations are involved (with exceptions for government agencies in defense, safety and health.)

(3) Discouraging regionally exclusive harmonization of product standards as constituting a dangerous barrier to international trade; and

(4) Discouraging the use of product standards and certification to restrict trade in a discriminatory manner.

At the recent Triennial meeting of ISO, Edson W. Kempe of the State Department called attention to regional standardization systems as potential trade barriers. There is, he noted, a strong movement within the European Communities toward regional systems of harmonized products standards, quality assessment arrangements and certification systems. While these regional arrangements reduce barriers to trade among their members, he cautioned that they may also create new barriers to products originating outside the system.[144]

Current Status of the GATT Code to Prevent Trade Barriers.—In September 1973, the GATT draft of the Code of Conduct to Prevent Technical Barriers to Trade was concluded, although some disagreements remained which the working group was unable to resolve. The group transmitted the draft with these disagreements to the GATT Committee on Trade and Industrial Products which had referred it to the member Governments for consideration. A fundamental difference of viewpoint existed between the United States and other GATT members. The United States saw international standards and the code as an area where international agreement could be independent of the GATT trade negotiations which opened in Tokyo on September 13, 1973. The European members, however, saw the unresolved differences in the draft code as sufficiently important to require settlement in the context of the overall GATT negotiations. So at the time of writing, prospects were dim for any quick action upon the code, and the United States remains on the outside of the European regional standards groups: CEN and CENEL and their harmonization schemes.

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[143] Ibid., p. 5. An "NTB" is a non-tariff trade barrier.

[144] Specialists seek ways out of worldwide maze of product standards. Commerce today, Sept. 17, 1973, p. 8.

CONGRESS AND VOLUNTARY INDUSTRIAL STANDARDIZATION

During the past ten years, legislation affecting voluntary standards has been introduced in each Congress, and since 1966 this legislation has addressed U.S. participation in international standardization activities. In that year, Chairman Miller of the Committee on Science and Astronautics introduced the H.R. 17424 to clarify the authority of the Department of Commerce and the National Bureau of Standards to promote and support representation of U.S. interests in voluntary international standardization and to establish a domestic clearinghouse for standards. The counterpart bill in the Senate was S. 3791, introduced by Senator Magnuson. Table 6 identifies legislative proposals for this period. During this time one legislative proposal became law. Its purpose was to limit the use of voluntary standards by the Government for one specific use, namely standard dimensions for shipping containers for use in containerships. This ten years also saw several Congressional hearings dealing with one or another aspect of voluntary standardization. In this chapter these hearings are summarized, in chronological order, to indicate the nature and extent of this Congressional interest. Some of the views, information and positions that follow have been mentioned earlier. However, they are included again to give a complete picture of the advice being offered to the Congress.

TABLE 6.—*Legislation for standardization: 1963–73*

A List of Bills relating to Standardization, Introduced in the 88th to 93rd Congresses, by Subject and Committee to which referred

88th Congress—1963

Containers: amend act relative to, for fruits and vegetables.
S. 1950: Commerce.
H.R. 7116: Science and Astronautics.
H.R. 7335: Science and Astronautics.
H.R. 7709: Science and Astronautics.
H.R. 7735: Science and Astronautics.
H.R. 9334: Science and Astronautics.

Containers: amend act relative to standards of.
H.R. 5792: Science and Astronautics.

Electrical and photometric measurements: establish standards for.
S. 1064: Commerce.
H.R. 4706: Science and Astronautics.

88th Congress—1964

One and one-half quart container: provide standardization for a dry quart.
H.R. 12017: Science and Astronautics.

89th Congress—1965

Containers: amend act to provide standard for certain.
S. 18: Commerce.

Containers: repeal certain acts relating to, for fruits and vegetables.
S. 17: Commerce.
H.R. 5068: Science and Astronautics.
H.R. 5080: Science and Astronautics.

Standard one and one-half quart container: provide.
H.R. 5069: Science and Astronautics.

89th Congress—1966

International standards : promote U.S. interest in.
S. 3791 : Commerce.
H.R. 17424 : Science and Astronautics.
H.R. 17598 : Science and Astronautics.

90th Congress—1967

International standards : U.S. interest in.
S. 997 : Commerce.
H.R. 1213 : Science and Astronautics.
H.R. 6278 : Science and Astronautics.
One and one-half quart container : provide standard.
H.R. 2101 : Science and Astronautics.

90th Congress—1968

None.

91st Congress—1969

Industrial standards : Federal approval of.
H.R. 10123 : Interstate and Foreign Commerce.
Voluntary industrial standards : require Federal approval of.
H.R. 14036 : Interstate and Foreign Commerce.

91st Congress—1970

None.

92nd Congress—1970

Firehoses : establish national standards for threads and couplings.
H.R. 11258 : Armed Services.
International voluntary standards activities : U.S. interests in.
H.R. 8111 : Interstate and Foreign Commerce.

92nd Congress—1972

Firehoses, establish national standards for threads and couplings.
H.R. 13356 : Armed Services.
International voluntary standards activities : U.S. interests in.
S. 1798 : Commerce.

93rd Congress—1973

International voluntary standards activities : U.S. participation.
H.R. 7506 : Interstate and Foreign Commerce.
S. 1761 : Commerce.

The 1966 Hearings of the Committee on Science and Astronautics

In 1966 two bills were introduced to promote and support representation of United States interests in voluntary international commercial standards activities and to establish a clearinghouse for commercial and procurement standards.[145] Three days of hearings were held on the proposed legislation by an ad hoc subcommittee of the House Committee on Science and Astronautics, chaired by Mr. Roush.[146] Witnesses included the Department of Commerce, the United States of America Standards Institute, the American Plywood Association, Dr. Frank L. LaQue, and the American Society for Testing and Materials. These witnesses all favored the legislation. Congressman John D. Dingel submitted a statement of general support but cautioned, however, about possibly undesirable effects of standardization on small business. Statements from the Department of State, the Office of Science and Technology, the General Services Administration and the President's Committee on Consumer Interests also supported the legislation.

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[145] H.R. 17424 by Chairman Miller of the Committee on Science and Astronautics and H.R. 17598 by Mr. Roush.

[146] U.S. Congress. House. Committee on Science and Astronautics, Ad hoc subcommittee on H.R. 17274, Hearings, International commercial standards activities, 89th Cong., 2d sess, 1966, 120 p.

The Department of Commerce Position.—Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology, strongly supported the development of domestic commodity or engineering standards, except in certain special cases of health, safety, or public welfare, through voluntary cooperation of producers and users.

However, the situation for international standards was different. There seemed to be, he said, insufficient awareness of their importance to producers in the United States and of their importance to our national interest to assure adequate U.S. participation in international standards development.[147]

He said:

> International standards are a two-edged sword; if they are compatible with standards in use in the United States, they permit access of American products to world markets and of foreign products to our markets. They can reduce barriers to exchanging goods and services.
>
> If, on the other hand, international standards are not compatible with U.S. standards, the products of American manufacturers may in effect be excluded from world markets because the barriers to exchange are increased.[148]

Dr. Hollomon believed it desirable to reduce artificial and unnecessary barriers to the exchange of goods and services. He urged adequate participation in the international process by which standards of various countries are harmonized. "The access to markets for American products in the highly industrialized countries, as well as those emerging in less-developed countries, will increasingly depend on harmonized technical standards." Under the principle of consensus, he urged that U.S. policy should be to participate as fully as possible with all interests concerned in the international standards process.

U.S. participation, in his view, was inadequate. Even when U.S. interests did participate, the delegations were not always adequately financed, staffed, or inclusive of all interests that might be concerned. "Frequently, convenience rather than technical competence determines our participation."

As for why this disinterest, Dr. Hollomon said:

> The reasons underlying this relative lack of interest in international standards activities are not difficult to discern. Principal among them . . . is the lack of motive to invest in standards for markets that may never exist. Also, there are inadequate mechanisms for financing national delegations secretariats. There is little continuity in representation and the costs are not borne equitably among those who benefit—including the general public.[149]

As for why the Federal Government should be concerned, the national interest is greater than that of any one business.

> . . . The health of our international trade, our balance-of-payments position, the concern about unnecessary international conflicts for those wishing to compete for markets, and the goals of promoting healthy markets are public matters. It is the responsibility of the Government to anticipate long-range problems and take actions, such as those proposed in this legislation, to promote and protect that national interest—and wherever possible through the voluntary process.[150]

Dr. Hollomon also emphasized the clearinghouse function: The bill would authorize the collection, translation, cataloging, classification, coordination, and integration of standards and related information. In contrast, he said, there were not ways then either for a producer or consumer to obtain this information, and there was no indication that it could be done without special support.

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[147] Ibid., p. 9.
[148] Ibid.
[149] Ibid., p. 11.
[150] Ibid.

> To anyone who has been active in the standardization process, either domestic or international, it is obvious that there is inadequate communications among the many organizations and agencies that generate or issue standards of the businesses and persons needing to use them. There are communications barriers not only in the way of conveying the content and meaning of a standard, but also in the way of obtaining information back from the users of the standards to aid in improving them.[151]

Advice from the Select Committee on Small Business.—A prepared statement from Mr. Dingell supported the intent of the bill. He said:

> The question of standards is one which is of increasing concern and importance to many sectors of our economy. It is clear that participation by the Federal Government in international standardization must be increased if America is to compete in the overseas markets which are expanding so rapidly. I am fully in accord with the intent of the bill and feel confident that the Secretary of Commerce will act to advance our national interests . . .[152]

However, Mr. Dingell was concerned about antitrust and small business implications. He did not favor the option to the Secretary to have the Department itself participate in international standards activities or to contract this function to private nonprofit organizations. Of this he said:

> . . . It is clear that in most instances a public agency is best qualified to pass on matters affecting the public interest. It is often difficult for members of a particular industry to take a broader point of view than their own needs might dictate. Not infrequently the standard most convenient or profitable to a given set of producers is less than satisfactory to their smaller competitors or to distributors and consumers.[153]

Mr. Dingell would have preferred a requirement that the public interest—consumer, distributors, users, and the general public—be represented on the various committees created to implement the act. Also he was concerned about a built-in bias in the system that would favor the larger firms:

> It is a fact that within the private sector those fully versed in the technicalities and intricacies of standards matters are almost without exception employees of, or at any rate primarily available to, larger firms.
>
> Also, in the past the majority of those actively participating in the adoption of standards within the private sector have been representatives of larger firms . . .[154]

As for the effect of voluntary standards upon competition, Mr. Dingell called for a requirement that the Department of Justice should pass upon the antitrust aspects of new standards.

A View From USASI.—Mr. Francis K. McCune, vice president of USASI, supported the legislation:

> It is obvious that the purposes of the Institute and the purposes of H.R. 17424 . . . are in complete accord.
>
> Early enactment of H.R. 17424 will provide necessary Government support to important standardization activities that need to be strengthened for the good of the overall economy, and to assure the proper competitive position of American goods and services in international trade and commerce.[155]

In 1966 the Institute anticipated that Federal support would be temporary, and it hoped the program envisioned in the legislation would become unnecessary as interest in international standards grew in American industry and the required financial support by industry

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[151] Ibid., p. 12.
[152] Ibid., p. 29.
[153] Ibid., p. 30.
[154] Ibid., p. 31.
[155] Ibid., p. 47.

was obtained. But Federal support would be needed at first because U.S. participation in international standardization had been lessened by the sheer magnitude of the task, both in terms of time and required financial resources. Of this he said:

> At present, it is necessary to raise funds for participation in international meetings, and for the support of secretariats, almost on a case-by-case basis. This is not a healthy situation simply because initiation of international projects, which tend to go on for a long time, and long-range planning are virtually impossible.
>
> Another point regarding financial support must be recognized. It is the unfortunate case that much international standards work is of importance to industries which are fractionated, or which may not be represented by trade or professional organizations having the financial resources to support international work.[156]

Concerns of the American Plywood Association.—The Association supported the general intention of the legislation, but viewed some provisions with misgivings because ". . . they might easily be construed as giving the Secretary of Commerce wide authority to change or even abolish existing domestic standardization programs." [157] Specifically, the Association feared that the legislation would enable the Department to abandon its commodity standards program ". . . on which our industry and over a hundred others have relied for many years." [158]

The Association urged that the conduct of international standardization activity for the United States should not be wholly relegated—with a subsidy of Federal funds—to private organizations, but rather that the Department itself, acting through the National Bureau of Standards, would be best equipped to promote in an unbiased and efficient way the Nation's vital interest in international standardization. As for the clearinghouse, this too should be operated and maintained by a public agency.

Summing up, the Association said:

> In sum, we are concerned that the implementation of this proposed legislation could place undue emphasis upon the role to be performed by private standards organizations in advancing international standards. We have no quarrel with the principle that private organizations do have a vital role to play in carrying out the important task before us. But we believe that the responsibilities and role of the public agencies, programs, and facilities should not be overlooked. Indeed, the applicability of commercial standards to international trade would seem to be a matter of foreign trade relations in which the executive is quite properly entitled to an active role. In our view, it should be recognized that both the Federal Government and private organizations have major parts to play in furthering this important cause of international standardization.[159]

Advice From Dr. LaQue.—Since the legislation could be viewed as a response to the LaQue report, it is pertinent to note Dr. LaQue's testimony.

According to Dr. LaQue, passage of the bill would enable the Department of Commerce to serve the national interest by supporting those activities in the field of international standards that were identified as being most essential and in need of help of the type that the bill would permit. He emphasized the finding of his report that the relatively low level of participation in voluntary international stand-

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[156] Ibid., p. 48.
[157] Ibid., p. 64.
[158] Ibid.
[159] Ibid., p. 66.

ardization appeared to be due, in part, to a lack of awareness of the economic importance of international standards. This low interest was due also to the difficulty in organizing adequate and continuing technical and financial participation from individual companies and associations. "It has sometimes been difficult to persuade an individual company to provide personnel at company expense to represent the whole of a particular industry and the overall interests of the Nation in an international standardization effort." [160]

LaQue underscored his preference for the voluntary approach. "Voluntary standards are an integral part of our free enterprise system. Their value will be increased greatly by their more ready identification through the clearinghouse and coordination functions that this bill deals with." [161]

He anticipated a substantial role for USASI:

> The voluntary standards development organizations in the United States have been and will continue to be, primarily responsible for the technical quality of U.S.A. standards. This technical quality of U.S.A. Standards will continue to be their most attractive and most important feature as candidates for recognition as bases for international standards. Their further designation as having national status and acceptance as U.S. standards through the United States of American Standards Institute . . . will accelerate the recognition of the inherent quality of these U.S. standards and the utilization of this quality on the broadest international scale.[162]

State Department Support.—The State Department wrote that the United States should make a more vigorous effort than it had heretofore to influence the development of common voluntary standards in directions favorable to the growth of America exports and to the general facilitation of international trade.

In the Department's analysis, the development of international standards would bring economic benefits to the United States and to all trading countries. Competent standards would reduce production, inventory, and distribution costs, and simplify installation and use of complex machinery and other products. American participation in such efforts would accord with the non-restrictive trade policies of the United States.[163]

Views of the President's Committee on Consumer Interests.—Mrs. Esther Peterson, as Special Assistant to the President for Consumer Affairs, advised the Subcommittee that there were all too few consumer goods standards, and that she hoped the bill would promote their development. The proposed clearing house, from a consumers point of view, would provide the first really comprehensive, definitive survey of standards for consumer goods and point up the gaps where standards were needed. As for international standardization, she found it essential for the protection of American consumer interests that the United States be fully represented in these councils, particularly when new materials and products, new proposals for packaging and transportation standards are being developed.[164]

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[160] Ibid., p. 78.
[161] Ibid., p. 79.
[162] Ibid.
[163] Ibid., pp. 97–98.
[164] Ibid., p. 102.

The 1967–68 Hearings of the Select Committee on Small Business

Congressional Criticism of Voluntary Standardization.—In Congress one critic of some features of voluntary standards has been, and is, Mr. John D. Dingell, of the Select Committee on Small Business. On October 20, 1966, for example, he addressed the House on the problem of industrial development and voluntary industrial standards.[165] Recognizing their major importance to producers, consumers and users, and also to the small businessman, he explained his conclusion that the nature of our economy and our industrial structure is such that the decisions of those bodies fashioning and revising industrial standards tend to have the "full force and effect of economic law." In view of the sheer economic power implicit in such standards, he found it a matter of interest as to how voluntary industrial standards are established, their relation to the antitrust laws, the role of small business in their establishment and revision, and the degree to which standard-making bodies give weight to factors such as consumer interest. In principle, the concept of voluntary industrial standards appeared sound and properly administered standardization could bring great benefits to industry and to the consumer.

However, Mr. Dingell saw some failures in the system. He said:

> However, it does not always work out quite that way. Upon occasion those devising the standard attempt to use it to achieve competitive advantage. This is not a new problem . . .
>
> The potential is always present for manipulating a standard to confuse or mislead consumers, to achieve marketing advantage for some business interests over other business interests and to suppress legitimate business opportunities for small businessmen.[166]

After citing several examples, Mr. Dingell posed a series of questions about voluntary industrial standards:

> How is the small businessman to obtain protection from technical data and technical conclusions that are achieved by persons who have loyalties to other interests?
>
> What disinterested technical advice is reasonably available to him?
>
> What agencies of government are both committed to and expertly staffed to achieve his protection in the field of technology?
>
> What agencies, private or public, that are concerned with the development and promulgation of voluntary standards are staffed with economists in sufficient numbers to diagnose the details of the likely economic consequences of competitive balances when a standard is established or revised?
>
> How can the consumer and general interest participation in the formulation of standards be made truly knowledgeable and, consequently, effective?
>
> What of small business as we move into the far more complex field of international standards?

Mr. Dingell announced a study of voluntary industrial standards preparatory to his holding hearings in 1967 into the extent to which the laudable principle of voluntary industrial standards might have been applied improperly to the detriment of small business.[167]

The hearings were held in 1967 and 1968 by Subcommittee 5 of the Select Committee.[168] In his opening statement, Chairman Dingell said:

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[165] John B. Dingell. Industrial standards—a two edged sword. Remarks, Congressional Record, vol. 112. October 20, 1966, pp. 28303–28315.

[166] Ibid., p. 28304.

[167] Ibid., p. 28315.

[168] U.S. Congress. House. Select Committee on Small Business. Hearings. The effect upon small business of voluntary industrial standards. 90th Cong., 1st and 2nd sess., 1967–1968, 956 pp., 2 vols.

The dominant theme of the hearings will be the effect of these standards programs upon small business, the degree to which smaller firms are being denied minimum participation in the development of the techniques on which the standard is based, or are denied full participation in the actual writing and promulgation of the standard itself.

Possible violations of antitrust laws or other anticompetitive practices will be of particular interest to the subcommittee in these hearings.[169]

Advice from Dr. Hollomon.—The hearings marked one of the final appearances of Dr. J. Herbert Hollomon before he left the Department of Commerce to become President of the University of Oklahoma. Appearing as Acting Under Secretary of Commerce, Dr. Hollomon strongly emphasized and supported the role of voluntary industrial standards. For him, a good standard arrived at fairly and openly served the public interest in at least three ways:

First, by promoting informed choice by giving the consumer information about the performance or characteristics of products he buys.

Second, by stimulating and facilitating domestic and international trade.

Third, by stimulating innovation and competition.[170]

As for procedures for setting standards, he suggested that each private standards organization should undertake a thorough review of its procedures and revise them to serve the public interest through an open process. He proposed the following general principles:

(1) A standard developing committee should be balanced among producers, distributors, users, consumers, testing laboratories, government agencies, and other interests reflecting a more general point of view of the community whose purpose is served by the standard. A list of the names of committee members should be made public.

(2) An open process should be provided with broadest participation from public, as well as private, interest groups, and productive attempts should be made to develop competence to represent such groups by public or private agencies.

(3) The results of the standard development process should be published before the standard is issued and such report should contain an explanation of the reasons why the standard is desirable and the purpose it serves, identifying any opposition, and affording opportunity for dissenting comments.

(4) An appeal by any dissatisfied party in interest should be permitted to an independent, impartial, professional staff for a decision which is published. The right to participate in the appeal should be open to any dissatisfied party who participated in the earlier development and to interested or affected parties if good reason exists.

(5) Organizations should recognize and acquire competence in all aspects of standardization.

(6) An annual report should be published evaluating the procedures and results from the public point of view.[171]

Dr. Hollomon also urged use of performance standards rather than design standards so as not to limit competition. He said:

It is our belief that standards, where it is physically possible, should be based on performance criteria, so that people are not excluded from entering the particular market because of the characteristics of the material or other components which exclude those which compete with it.[172]

A Subcommittee Report.—After the hearings, the subcommittee issued a report which [173] expressed considerable concern about the eco-

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[169] Ibid., p. 2.
[170] Ibid., p. 4.
[171] Ibid., p. 6.
[172] Ibid., p. 7.
[173] U.S. Congress. House. Select Committee on Small Business. The effect upon small business of voluntary industrial standards. A Report of Subcommittee No. 5. 90th Cong., 2d sess., 1968, 110 p., House Report No. 1981.

nomic impacts of voluntary standards and the tendency for them to become virtually mandatory through incorporation into codes. The subcommittee urged use of performance standards as affording greater consumer protection and protection to small business and others who could otherwise arbitrarily be excluded simply because their competitors had "stacked" a standards committee or outlobbied them with a code-writing body.[174] Developing this thought, the Subcommittee said:

> At the present time, most standards are not pure performance standards. As has been above noted, various so-called voluntary standards over a period of time in fact become quite mandatory. As a result, although the considerations of the standard tend to be expressed in rather technical language, behind this facade of engineering jargon, what is actually happening is an economic fight, often of the most savage type imaginable because the stakes are so high.[175]

The Subcommittee also questioned the propriety of voluntary organizations exercising this kind of economic power:

> Further, in the case of those private bodies for promulgating standards or model codes, it is clear that they are performing what is essentially a government function. An organization consisting primarily of manufacturers of various products takes unto itself the power to promulgate a standard. The standard may result in economic prosperity or economic failure, for a number of businesses of all sizes throughout the country. There are no ground rules other than those the organization cares to impose upon itself. Further, no one as a matter of right, is entitled to either voice or vote.[176]

Despite these criticisms, the Subcommittee did not wish to imply that the standards writing should be taken over by the Federal Government. It saw obvious benefits to having the private sector continue with its vital work in supplying the standards so essential to continued industrial growth. "However, it does appear that there is a present and growing need for procedural standards for the standard makers."[177]

The Subcommittee made five major recommendations of which several directly relate to voluntary industrial standards. It called for—

> Legislation to require clearance of any voluntary industrial standard with the Department of Commerce and the Federal Trade Commission.
>
> Department of Commerce review of its procedures for promulgation of voluntary industrial standards.
>
> A higher degree of cooperation between Federal agencies engaged in standards writing and promulgation, with the Department of Commerce charged with responsibility for coordination.

Mandatory Clearance of Voluntary Standards.—Subsequently Mr. Dingell introduced H.R. 10123 on April 15, 1969, the Federal Approval of Voluntary Industrial Standards Act. His bill provided that no organization might establish any voluntary standard for application to, in, or by an industry with respect to any process, product or commodity manufactured, distributed, sold or consumed in interstate commerce unless such standard had first been submitted to, and approved by, the Secretary of Commerce, the National Bureau of Standards and the Federal Trade Commission. Additionally, the standard would have to be published in the Federal Register. The bill provided also that whenever the Secretary of Commerce had reasonable cause to

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[174] Ibid., p. 75.
[175] Ibid.
[176] Ibid.
[177] Ibid., p. 78.

believe that any person was violating the Act, he might bring civil action to request relief, including a temporary or permanent injunction, restraining order or other order. The bill was referred to the Committee on Interstate and Foreign Commerce where no further action was taken.

The 1971 Hearings

In 1971 bills were again introduced to further U.S. participation in international standardization activities and to encourage appropriate use of voluntary international standards.[178] The bills were referred to the Commerce Committees which each held hearings on the proposed legislation.[179] Both hearings featured witnesses from the Department of Commerce, the Department of State, ANSI and various business and trade organizations which generally supported the legislation. In addition, the Senate Hearings included statements by consumer advocate Ralph Nader and from organized labor; which opposed the legislation.

The immediate cause was the formation of the Tripartite Committee to harmonize European standards and require a certification mark on products covered. This was discussed earlier in Chapter VII.

The following excerpts from the hearings are selected to indicate the nature of the advice and opinion presented to Congress.

The House Committee on Interstate and Foreign Commerce.—In opening the hearings, Mr. Moss, chairman of the Subcommittee on Commerce and Finance, recognized the international importance of voluntary standardization and then cautioned that they could develop into important nontariff barriers to trade. When this occurs, he said, the resultant loss of export markets could have a serious and lasting impact on the Nation's balance of trade.[180]

Chairman Moss inquired why, if international standards were so important, U.S. participation could not attract adequate private financial support. Mr. Richard Simpson of the Department of Commerce replied as follows:

> Mr. Chairman, I could attempt to explain this. It is something that has perplexed me for a long time. I don't know if I, or anyone, has the exact answer. I think that recognition of the importance that the activities that these two major nontreaty bodies (IEC and ISO) perform is relatively new. I think there is always a time lag between the occasion when something happens and the awareness generally throughout a country as large as ours.[181]

James Wakelin, then Assistant Secretary of Commerce for Science and Technology, summed up the situation for the House Committee on Interstate and Foreign Commerce as follows:

> Mr. Chairman, I want to emphasize the vital importance of this new development to our ability to expand exports and provide employment in our industries. We produce about 60 percent of the free world's output of electronic components. Exports rose to $780 million in 1970 and could reach close to $1 billion in 1971. Unless the United States is able to take part in the international system, this strong U.S. position is in jeopardy. I should add that some European producers of electronic components already are publicizing their ability to provide products whose quality is attested to by the CENEL certification.[182]

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[178] S. 1798 by Senator Magnuson on May 6, 1971, and H.R. 8111 by Mr. Staggers on May 5, 1971.

[179] U.S. Congress. House. Committee on Interstate and Foreign Commerce. Hearings. International voluntary standards. 92nd Cong., 1st sess., 1971, 93 p. (House hearings).
U.S. Congress. Senate. Committee of Commerce. Hearings. International Voluntary Standards Cooperation Act of 1971. 92nd Cong., 1st sess., 1971, 167 p. (Senate hearings).

[180] House hearings, p. 1

[181] House hearings, p. 30.

[182] House hearings, p. 27.

The Federal Communications Commission did not interpret the bill to preclude the activities of industry groups that for years had actively participated in the development of international voluntary standards and encouraging the domestic use of such standards. Seeking to preserve its position, the FCC commented:

> We have in mind specifically the work of the telecommunications industry in the adoption and use of domestic and international voluntary standards and the special technical assistance the Federal Communications Commission gives to the industry in preparing for negotiations on international voluntary standards. The Federal Communications Commission already plays an established role in encouraging and assisting initiative to obtain international acceptance of these voluntary domestic standards.[183]

The General Services Administration said the proposal would facilitate coordination of procurement specifications developed under GSA's Federal Specification Program, with other governmental standards-making in areas such as health, safety, and other regulation functions. "It would make possible maximum coordination of Federal agency efforts in direct support of United States international standardization activities."[184] GSA favored the bill because United States participation in international certification schemes could be helpful to GSA and other Federal agencies in that it would facilitate the inspection and acceptance of certified products marketed internationally.

The Department of the Interior anticipated a considerable benefit in having a specific official designated to supervise and coordinate domestic participation in international voluntary standards activities. "Moreover, in the interest of conserving national resources and protecting the environment, we favor standardization efforts because they promise to increase the efficiency of production and utilization of our resources."[185]

The Department of Justice expressed concern about possible restraint of trade:

> While the establishment of international standards for products, materials and processes can result in enhanced competition in domestic and international commerce, the establishment of unnecessary or unnecessarily rigid standards can not only significantly disadvantage existing and potential competitors, but it may also serve to impede innovation. Manufacturers should have the greatest possible latitude in choosing among different materials, processes and modes of production consistent with the objectives of needed standardization.[186]

The Department of State supported the legislation.

> Increased cooperation between Government and industry in standards matters should enable the United States to play a role in international standardization activities more commensurate with its economic position in the world than is the case at present and to exert greater efforts to ensure that international standards are compatible with those developed in the United States. Such cooperation would facilitate United States participation in international arrangements for the mutual recognition of programs to assure the conformity of products to agreed standards. If the United States were not able to participate in such arrangements its international trading interests could be adversely affected.[187]

The Department of Transportation observed that the development of an international system of standards would provide an atmosphere in which the United States could trade in world markets on an equal

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[183] Ibid., p. 19.
[184] Ibid., p. 21.
[185] Ibid., p. 22.
[186] Ibid., p. 23.
[187] Ibid., p. 24.

footing with other nations, not handicapped by standards that are incompatible with our own.[188]

The Federal Trade Commission expressed misgivings:

> The Commission recognizes the importance of engineering standards to international trade and the need for participation and coordination by the Federal Government of international standardization activities affecting the foreign commerce of the United States. The Commission also recognizes from its not inconsiderable involvement over the years with standards generally, that standards can and have adversely affected competition. Thus, in analyzing H.R. 8111, the Commission realized the need for harmonizing the needs in international commerce with the longstanding national commitment to competition in both the foreign and domestic commerce of the United States.[189]

The FTC recommended addition of authority for the Commission to petition the Secretary of Commerce for the removal of a voluntary international standard from a list of accepted standards published by the Department, on the grounds that such standard is contrary to the public interest.

The Business Equipment Manufacturers Association (BEMA) supported the legislation, expressing concern about the possible impact of international certification requirements:

> We have been following the development of the Certification Program suggested within the European community, IEC and ISO. We have no doubt that, developed to their fullest, they could impact significantly the American position in trade and technology in world-wide commerce. We are working actively with the American National Standards Institute and the Electronic Industries Association in following and responding to the developments in the certification area. We agree that these constitute a potential threat in the area of nontariff barriers, and suggest that only through adequate participation in all aspects of the international voluntary standards activities will we be able to maintain a satisfactory position.[190]

BEMA warned that in information processing there was an increase in participation of foreign national interests in standardization not only from Western Europe but also from the Soviet bloc and the Far East. "The American position of leadership, at least in our area of technology, is being seriously challenged and will require effort and input in order to maintain a relative position of leadership . . ." [191]

On the other hand, the Electronic Industries Association (EIA) found itself unable to support the legislation. Its members thought there were still too many unknowns to permit the necessary evaluation of the impact of the proposed legislation on the U.S. electronics industry. From EIA's viewpoint, it supported the idea of legislation to establish when and to what extent the U.S. should participate in international certification schemes, and favored government involvement and support for industry implementation of such certification. However, EIA preferred the Government to limit its role in international standardization to supplying experts and information. EIA strongly favored an "appropriate study commission with representation from trade associations, government and other interested parties." [192]

The National Electrical Manufacturers Association (NEMA) supported the legislation, noting the need for a legislative charter for Federal agency participation:

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[188] Ibid., p. 25.
[189] Ibid., p. 51.
[190] Ibid., p. 68.
[191] Ibid., p. 69.
[192] Ibid., p. 72.

We have also observed with gratification the constructive expertise contributed in certain voluntary standards activities, including international ones, by the Federal government, largely through Commerce, but also by the military departments, the FCC and others. Such participation has evidently been limited by budget considerations and perhaps by a feeling that there is no mandate, nor perhaps even clear authorization for devoting governmental talent to these activities.[193]

NEMA too was concerned about "the presently rapidly unfolding implications of international certification." Just what the direction and full impact of this movement would be was not then certain, "but surely American industry and labor will need the strongest possible bargaining position in dealing with standardization and certification bodies in other countries; and support by our Government is essential for such strength."[194]

Costs of U.S. participation in international standards activities were estimated from $10 to $15 million in 1971. Of this, ANSI provided about $150,000 annually. Witnesses who favored some Federal funding, were cautious about the influence that could follow federal dollars, particularly if the Government began to fund a large part of the activities. Mr. Richard Simpson of the Department of Commerce advised on this point that:

> I have generally found that influence follows dollars, and I think it would be a mistake for the Government to dominate this procedure. I think we can take an example from some of the foreign countries who have been involved for a long period of time. The French normally provide about 70 to 75 percent of the direct financial aid to their standards institute. One closely approaching the balance point is the British Standards Institute in England, where the government provides matching funds, and in some circumstances, it runs over 50 percent.
>
> In conversations I have had with people involved in that organization, both governmental and private, they think that is a mistake and that there is too much Government influence. They are looking forward to cutting it back.[195]

The Department of Commerce estimated that costs for salary and travel of its staff while participating in international standards negotiations ranged from $130,000 to $159,000 a year, not including costs for preparation for such meetings.[196]

According to ANSI, its international budget for 1971 exceeded $500,000, of which $130,000 were a direct contribution to ISO, IEC and COPANT. ANSI expected to double this budget during the next several years to "properly represent this Nation's growing interest and involvement in international standards programs. The growing need for certification policy coordination and representation could add substantially to this amount."[197]

The expanded funds would cover additional ANSI services including:

(1) Additional secretariats. It costs ANSI about $15,000 a year to administer an effective secretariat and some $5,000 per year for effective participation.

(2) Additional delegate expenses. Of this ANSI said:

> . . . We must recognize that continuity in technical participation is vital to successful negotiation. Going hat-in-hand to individual companies—particularly smaller firms—is extremely difficult. Public employees and scientific and technical experts from universities and research facilities are especially difficult to attract because of limited or nonexistent travel budgets.

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[193] Ibid., p. 73.
[194] Ibid., p. 74.
[195] Ibid., p. 40.
[196] Ibid., p. 46.
[197] Ibid., p. 59.

(3) Effective translation service. Technical translation of U.S. standards into foreign language, as well as translation of other documents into English, is both costly and difficult. ANSI saw a specific need to provide Spanish and Portuguese translations of U.S. documents for Latin America.[198]

The Senate Committee on Commerce.—The witnesses and testimony before the Senate Commerce Committee also produced support for the legislation, as well as some pointed opposition from consumer advocate Ralph Nader and from organized labor.

The Treasury Department supported the objectives of fostering United States participation in the making of international standards. It said: "Standards can either serve as insurmountable barriers to international trade or they can assure that products can readily cross national boundaries and be usable everywhere. The development of standards by other countries without United States participation could have a "catastrophic impact on our balance of trade." [199] The lowering of trade barriers could prove meaningless if standards became an absolute bar to market entry. Thus, said the Department, where international trade in highly complex products requiring high technology is assuming growing importance, it is "crucial that the United States Government provide support to its private industry for the promotion and development of truly international standards . . ."

The State Department also emphasized the international trade aspect:

> Recognizing the importance of standardization as the means of facilitating international trade, the leading European countries have increased their already substantial contributions to international voluntary standardization activities steadily over the past five years. The United States cannot afford to neglect this activity if it wishes to maintain or increase its share of world market.[200]

The Environmental Protection Agency expressed pleasure with the provision which ensured that any voluntary, international, industrial, or commercial standard would be consistent with applicable environmental quality authorities, policies and standards.[201]

Among trade and industrial organizations, the Scientific Apparatus Makers Association supported and urged adoption of the legislation. The association said:

> We believe that this legislation can provide the basis for more effective U.S. participation in international standards activities and systems. The enactment of this legislation can assist significantly in consolidating U.S. positions for international engineering and commodity standards. The support of U.S. delegates in international standards activities, strengthened by the implementation of the standards system in the United States, will help maintain a favorable U.S. balance in international trade. A. U.S. standards program based on participation by producers, users, and government will assure the technical soundness which has long characterized American engineering and commodity standards.[202]

The American Nuclear Society also supported the legislation: Mr. John W. Landis, appearing as president of the society, said:

> . . . From my observations of international standards meetings, the foreign attendees are experienced, long-term participants with an in-depth commercial interest while U.S. representatives are usually not well versed in either commer-

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[198] Ibid., p. 59.
[199] Senate hearings, op. cit., p. 14.
[200] Ibid., p. 15.
[201] Ibid., p. 19.
[202] Ibid., p. 97.

cial operations or standards activities. This generally is the heart of the U.S. overseas standards problem. I had hoped that S. 1798 would have put more emphasis on the vital need to have the U.S. represented on international standards committees by the most qualified individuals regardless of their affiliation. Often, a private organization will not sponsor the travel of one of its experts to an international standards meeting—for seldom is a specific company product involved in the early negotiations—but the same organization will usually permit its expert to go if travel expenses are paid.[203]

Consumer advocate Ralph Nader voiced strong opposition for at least three reasons:

(1) The public standards setting process should be a public governmental function, rather than a private function. "Government should refrain from giving any support to so-called "voluntary" standards setting processes whether at a national or international level."

(2) Any authorization to a private group, such as ANSI, to represent U.S. governmental interests in international standardization was an improper delegation of public power to a private group. In any government representation in international standardization, the Government should be represented by the Department to which individual consumers and consumer groups have as equal access as corporations.

(3) The potential anti-competitive aspects were not given careful consideration. The role of the multinational corporation, and its ability to use the legislation to inhibit innovation, and even act against the national interest, needed to be thoroughly explored.[204]

The International Brotherhood of Electrical Workers also opposed the legislation as premature and completely inappropriate. It had many reservations regarding the increasing cooperation between government and big business that would be encouraged by standardization.

As for the certification problem presented by CENEL, rather than sanction international certification, the IBEW proposed to condemn the entire program and warn CENEL that if implemented, the United States would retaliate in kind. In the Union's analysis, the harmonization of standards would result in an enormous loss of jobs for the U.S. worker:

> Organized labor can document a whole list of horror stories involving the multinational corporations' cunning exploitation of the bottomless pit of human misery and suffering in an endless pursuit of low wages . . .
>
> If it can be established more clearly that harmonization of standards is in the interest of the U.S. public and/or will advance the welfare of the world community, then the federal government should participate, but to the extent of public interest only. The entire issue of private participation should be determined by the market. It is obvious that if it is profitable for business, they will participate. In non-profitable areas, the federal government participation should be determined by the degree of public interest. I suggest legislation be limited to permitting greater U.S. government participation in ANSI activities and to assume greater financial responsibilities. Then it could sponsor secretariats, pay travel expenses and a wide range of other expenses incurred protecting the public interest.[205]

The U.S. National Committee of the International Electrotechnical Commission (IEC) supported the basic intent and most of the objectives of S. 1798, but raised some points, as follows:

Implementation of agreements. The Committee was concerned about encouraging the "implementation of international voluntary stand-

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[203] Ibid., p. 165.
[204] Ibid., p. 161.
[205] Ibid., p. 167.

ardization agreements." It saw few instances where international agreements to use international standards would benefit the U.S. economy. So clarification was suggested.

Use of international standards within the United States. The Committee noted the proposed responsibility of the Secretary of Commerce to encourage the use of international standards systems within the United States. Was this intended to give the endorsement of Congress to the broad development of international schemes for the certifications of products to international standards? There was little experience in operating comprehensive certification or quality assurance programs on an international scale and, according to the Committee, CENEL was having considerable difficulty in developing its systems for quality certification of electronic components. Accordingly the Committee called for redrafting to substitute a joint Industry-Government study of the problem.

U.S. representation. The authorization for the Secretary of Commerce to arrange for U.S. representation in international standardization aroused some fear that he might displace the Committee from its long standing role. So it recommended that the Secretary not displace those present arrangements which were working satisfactorily.

U.S. funding. This was one of the most important parts of the bill for the Committee. Because of no government support, U.S. delegations repeatedly had found themselves unable to support needed new projects in international standards bodies. They also had been unable to take on chairmanships of committees, committee secretariats, or other positions of leadership. Federal funding would correct this.

Industrial participation. There was a pressing need for "seed" money to stimulate industry participation in international standards work and to encourage the U.S. participating bodies to seek international committee chairmanships and secretariats.

Export of U.S. standards. According to the Committee, some European nations promoted use of their standards around the world by providing translations and special assistance to foreign national standardizing bodies and other organizations. The Secretary of Commerce should be given authority and resources to set up similar programs for the export of U.S. standards.[206]

Shipping Containers for Merchant Marine: A Case of Congressional Intervention and Prohibition

Occasionally competition or conflict between proposed standards may come before Congress for resolution. This was the case in 1967 when the 90th Congress amended the Merchant Marine Act of 1936 to prevent the Maritime Administration from discriminating against some standard cargo containers dimensions in favor of others.[207] The conflict reflected conditions that can arise in a rapidly changing technology as it comes to the time when standards are desirable.

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[206] Ibid., pp. 146–149.

[207] Public Law 90–268 (82 Stat. 49), approved March 16, 1968. The Act contained three directives for the Administrator of the Maritime Administration:

(1) To study means and methods of encouraging the development and implementation of new concepts for the carriage of cargo in the domestic and foreign commerce of the United States,

(2) To study the economic and technological aspects of the use of cargo containers as a method of carrying out the Federal maritime policy, and

(3) Not to give preference as between carriers upon the basis of ". . . length, height, or width of cargo containers or length, height, or width of cargo container cells and this requirement shall be applicable to all container vessels and any container vessel to be constructed or rebuilt."

The dispute over standard shipping containers, the reader should keep in mind, involved more than standard sizes. Some observers view the episode as a successful legislative effort to prevent making a bad standard mandatory. The discussion which follows focuses upon the conflict over standards by opposing interests and does not go into the merits of the regulations that were proposed.

The starting point for the case of standard shipping containers came in 1957 when the then American Standards Association was requested by the American Society of Mechanical Engineers to consider container standards. The ASA subsequently organized a committee, the MH–5 sectional Committee on Standardization of Freight Containers to do so. The scope of the MH–5 project as finally determined was "to provide specifications for a series of standard modular sizes of containers, the sizes of each series being interchangeable in or on carrier equipment and universally interchangeable between modes of transportation." [208]

Subsequently other groups established similar committees to explore container standards.[209] It soon became apparent that there was much overlapping of membership on these various committees, and ultimately the standard size problem came to final decision in the ASA MH–5 Committee. Early in 1959 the Van Container Subcommittee of the MH–5 Committee recommended a series of container sizes all 8 feet high, 8 feet wide, and in lengths of 12, 17, 20, 24, 35 and 40 feet. The 20- and 40-foot groups were considered as advisable standards for the future while the 35- and 17-foot group was based upon the overall trailer lengths then permissible in all States. The 24- and 12-foot series were a concession to western trucking operations which could operate combination double trailers in 11 western states. In October 1959 the MH–5 committee met and the units of 10, 20 and 40 feet length were considered and received with no negative votes. The vote for the regional lengths of 24- and 35-feet and 30-foot length received mixed votes. Following its procedures, the ASA then distributed letter ballots to consider and vote on the recommended sizes. The vote thus taken approved the standard lengths of 10, 20, 30 and 40 feet and these were published in 1961 as an American standard.[210]

Standard sizes for containers became of international interest through the International Organization for Standardization. In May 1965 the Secretariat of the ISO Technical Committee on Freight Containers (ISO/TC 104) circulated a draft proposal for dimensions and ratings of freight containers. The draft was prepared by the Secretariat of the Committee, which was furnished by United States of American Standards Institute. The draft included standard lengths of 10-, 20-, 30- and 40-feet. The majority of the Committee members approved and the draft was circulated as an ISO Recommendation by the ISO General Secretariat to the ISO Member Bodies on May 1965. Of 30 Member Bodies voting, 21 approved the draft, 5 opposed and 4

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[208] Cf. Statement of James W. Gulick, Acting Maritime Administrator, Department of Commerce in U.S. Congress. Senate. Committee on Commerce, Subcommittee on Merchant Marine and Fisheries. Hearings, Standardization of containers. 90th Cong., 1st sess., 1967, p. 81.

[209] Included were the National Defense Transportation Association's committee on containerization and standardization, and the American Trucking Association's standardization committee.

[210] Basic requirements for Cargo Containers, USA, MH–5.1, American Society of Mechanical Engineers, 1965.

abstained. This ISO approval of the standard lengths further foreclosed the use of the 24-foot and 35-foot lengths.

The standard dimensions adopted by USASI were considered relatively settled until proposals were made to consider other container lengths, particularly the 24- and 35-foot lengths used by two American shipping companies in their container ships: Sea-Land Service, Inc., and the Matson Navigation Company. The matter became a legislative issue when the Maritime Administration acted to adopt the USASI and ISO standards in connection with financial assistance to new containerships under the Merchant Marine Act. This precipitated objections from these shipping companies which had not subscribed to the new standards. The issue ultimately caused the Senate Commerce Committee to inquire into the argument in July 1967 and led to P.L. 90–268 which prohibited the Government from specifying length, height or width or carriage of Government property in other than Government owned containers. Additionally, the amendment specified that except in a case where the Secretary of Defense determined that military requirements necessitate specification of container sizes, no advertisement or invitation to bid for the carriage of Government property in other than Government-owned containers should specify such dimensions.

The details of the conflict are too complicated for brief analysis. However the following excerpts from the Senate hearings sample the range of viewpoints:

> Senator BARTLETT. It would seem, then, to a layman in this field, which I assuredly am, that Matson and Sea-Land have flown in the face of all reason, have defied sound business judgment, have put themselves out on a limb that was bound to break, by persisting, at a cost of several hundred million dollars, as has been related here, in going ahead with the 24-footers and the 35-footers. Why do you think they did such a thing?
>
> Mr. GULICK. I am afraid I have to disagree with the possible assumption that they exercised poor business judgment. They started off pioneers in their own domestic operations—and I am using domestic here to mean between points within the United States and its offshore territories—and they have developed that size container, and they were not alone, which best suited that particular type of operation. That, in my judgment, was a good business practice.
>
> Now, however, that the subject of containerization has broken out of the internal U.S. area and is now broadening into worldwide areas, other problems have come to rise, the problems of interchange. Shall the American ships be limited? Should there be a free capability between different companies and their equipment to carry containers?
>
> Note that I say companies here, because I am referring not only to the seagoing but also, the landslide outfits. They now have a problem, and I sympathize with them in the position in which they find themselves. And I wish I had better answers for them at the moment as to where they might go. I am compelled to say to them that in my considered judgment they must, in their own interests and in the interests of the American merchant marine, follow the national consensus on container sizes.[211]

This view was consonant with the Maritime Administration's fundamental position which Mr. Gulick stated as follows:

> We think we have an obligation under the Merchant Marine Act, 1936, to prescribe container-size standards with respect to construction-differential subsidy applications and the use of capital reserve funds for the purchase of containers. We believe we have authority to prescribe such standards with respect to any aid that is furnished under the act. Inherent in this authority is authority to join with the Defense Department and industry groups in the development of such standards. The standards that have been developed have international acceptance, and we believe they are standards which most effectively promote the American merchant marine. . .[212]

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[211] Standardization of containers, op. cit., pp. 103–104.
[212] Ibid., p. 97.

Matson called for consideration of the 24-foot and 35-foot lengths:

> We now have an unparalleled opportunity to aid in the development of maximum efficiency intermodal transportation systems, national and international. The U.S. merchant marine's role as an effective partner, strengthening itself and the economic fiber of the country, will in large part be shaped by its future ability to adapt and innovate. It must not be hampered by artificial or unrealistic limitations created in the name of standardization.
>
> Standardization is an essential component in developing the ultimate system. But the form it takes must be applied to those elements which help, not hinder, reaching this goal.

In conclusion, then:

> Physical interchange does not require the same size container nor modular sizes for standards.
>
> Height standards are not only unnecessary, but in fact are a serious deterrent to full-scale containerization development.
>
> Present length standards have been arbitrarily selected with two of the four having no significant application.
>
> The 24-foot and 35-foot length containers have demonstrated their economic operational success in systems applications without a penny of subsidy.
>
> The 24-foót and 35-foot lengths should not be discriminated against by the U.S. Government by virtue of being outside the voluntary standards, and congressional action should provide this protection.
>
> U.S. Government participation in establishing voluntary standards of commercial container systems should be advisory only.[213]

The outcome was S. 2419 which was introduced by Senators Magnuson, Bartlett and Inouye on September 18, 1967, and became P.L. 90–268 in March 1968. The companion bill in the House was H.R. 12954, introduced by Mr. Garmatz, Mr. Downing and Mr. Maillard.

S. 2419 was referred to the House Committee on Merchant Marine and Fisheries. That committee's report further questioned the role of voluntary industrial standards. The committee wrote:

> The purpose of this legislation is to prevent the application of discriminatory policies or practices by any Government agency against any carrier by giving preference as between them upon the basis of length, height, or width of cargo containers, or, of length, height, or width of cargo container cells, except when required by military necessity.
>
> * * * * * * *
>
> Underlying the intent of this legislation is the belief that it is premature to compel adherence to rigid standards concerning container sizes and that at this stage of the so-called "container revolution" free market development offers the best hope for the future determination of the most efficient, productive, and economic characteristics for cargo containers used in transmodal transportation systems. This view is shared by the Department of Transportation.[214]

The Department of Commerce opposed the legislation.[215] The Department of Transportation discussed the role of standards and supported the legislation, as follows:[216]

> . . . The acceptance of standards for containers to be used among the various modes of transportation (their sizes, structural specifications, securing, and handling devices, testing, etc.) is, of course, fundamental to the integration of transport systems operating in domestic and foreign commerce.
>
> However, the Department believes that the forces at play in the transportation market place should determine the adopion of standards for container lengths and heights. Shippers and carriers operating in this context can be expected to work toward the adoption of uniform standards to the degree economy and efficiency dictate . . .

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[213] Ibid., p. 164.
[214] U.S. Congress. House. Committee on Merchant Marine and Fisheries. Development of cargo container vessels. H. Rept. No. 991, 90th Cong., 1st sess., Nov. 29, 1967.
[215] Ibid., p. 7.
[216] Ibid., p. 8.

In retrospect, another, long term result of this legislation was rejection by Congress of the idea that it should restrict the national voluntary standards effort.

The final outcome of the voluntary standard itself was to incorporate all of the desired lengths. The American Society of Mechanical Engineers published standard ANSI MH 5.1–1971, Basic Requirements for Cargo Containers. Included were standard lengths of 10, 20, 24, 30, 35 and 40 feet.

The issue remained alive, however. In 1971, a representative of Sea-Land Service, Inc., appeared before the Senate Committee to request that P.L. 90–268 be exempted from the pending legislation providing for U.S. participation in setting voluntary international standards.[217] Also at these hearings Senator Inouye asked Mr. Roy Trowbridge, then president of ANSI, about this case as an instance where the American position of American self-interest had not prevailed. He said:

> Now, here was a situation where we felt that the U.S. representatives had no business giving in to the European demands when we were the pioneers and we had the bulk of the business and we were still doing good business all over Europe The only result of this standardization, if put into effect through subsidies and otherwise, would have very effectively put these container businesses out of operation.

To this the ANSI representative, Mr. Donald Peyton, replied:

> I would like to talk about that one. That was a very tragic situation.
>
> This was really before our time in this business when these first committees were set up.
>
> The original ISO recommendation did come out with a modular construction which are not in the interests of American shippers, some American shippers.
>
> I will add, Senator, that at that time those same American shippers were not very active themselves in international standards. They really thought they had a system which would sell.
>
> Since that time we have corrected our way of doing business, to be sure this does not happen again, and frankly, at this time, I believe you will find that the American scene does predominate internationally.
>
> As a matter of fact, the new international standards which are now up for adoption—I have them here—do contain all the sizes and, frankly, are much better.
>
> But what had to happen was we had to come back and regroup, get these organizations involved.
>
> This is a good example of the fact that they were not participating with the right kind of people. You can be had in an international meeting. We sometimes get outvoted if we do not have the right delegates.[218]

Again in 1973 the shipping container issue showed signs of life. In July, ISO Technical Division 4 (for distribution of goods) adopted a resolution instructing Technical Committee 22 (for road vehicles) to study the question of basing container sizes upon railway freight car dimensions vs. those for sea-going freight. That resolution was endorsed in September 1973 by the ISO Council. Presumably the issue could surface again in international negotiations, depending upon the committee's report.

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[217] International voluntary standards cooperation act of 1971, op. cit., p. 106.
[218] Ibid., p. 67.

SOME CURRENT PROBLEMS OF VOLUNTARY STANDARDS

The examination of the literature and the Congressional hearings incident to this review of voluntary standards in the United States and participation of U.S. interests in international standardization reveals a number of issues that appear ripe for further Congressional attention. The following 10 items are those which now appear timely in the light of legislation now before the Congress and the growing importance of international standardization to highly technological U.S. export trade.

The Lack of a National Policy for Domestic and International Standardization

Lacking in the United States is an identifiable national policy for standardization and for international standardization. Likewise, the United States is the only country taking part in international standardization activities whose representative body—ANSI—is not officially recognized by the government.

ANSI president Roy P. Trowbridge recently noted that every piece of legislation from Congress calling for mandatory standards intensifies the need for a national standards policy. There has been more such legislation in the past decade than in the entire previous history of standards in the United States. Some of the resulting new regulatory agencies work in the voluntary standards systems, others develop their own standards. As seen by Mr. Trowbridge:

> If this trend continues, there is real danger that American industry will find itself producing and purchasing to a host of mandatory standards that vary widely both in technical soundness and in their acceptability to the broad spectrum of producers, users, and public interests involved. As never before we need a strong consistent national standards policy that will, so to speak, set standards for standards.

The cornerstone of such a policy should be, as ANSI sees it, some form of governmental recognition of ANSI as the coordinator of voluntary standards development. Every other major industrial nation has such an institute with official status as *the* standardization body. "Only ANSI stands in sort of limbo between government and public."

ANSI seeks official status to strengthen the application of its standards in industry and its support from business, both in money and in personnel. ANSI's members tend to be concentrated in a few industries that provide most of the funds and do most of the work for standards. The cause of American voluntary consensus standardization "desperately needs a focal point of ". . . unquestioned and unquestionable authority. ANSI needs this designation if the voluntary consensus system is to survive and grow." [219]

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[219] ANSI reporter. Nov. 23, 1973, p. 3.

Uncertain Authority To Represent United States' Interests in International Standardization Activities

The case of voluntary standards for shipping containers highlighted the twin issues of existing government authority to take part in international standardization and the authority of private organizations in essence to act for the Government.

Of the first issue, the House Committee on Interstate and Foreign Commerce observed a standing legislative prohibition upon the executive from participating in any international Congress, conference or like event without first having specific authority of law to do so.[220] So if national interests indicate a need for more direct participation of Federal agencies in international standardization than at present, there may be a need for an explicit legislative charter.

Of the second issue, the Senate in its response to the shipping container issue would have prohibited private organizations from acting on behalf of the U.S. Government in any international Congress, conference or like event for the purpose of establishing standards. On this the Senate Commerce Committee said:

> Private organizations have established voluntary industrial and technical standards needed in domestic and international commerce since the earliest days of the industrial revolution. Their programs have contributed to the strength and diversity of our economy in many areas. However, in hearings before this committee, Government officials stated that voluntary standards with respect to length and height of cargo containers are binding on U.S. Government policy. If true, this would be a clear circumvention of congressional authority.[221]

While Federal agencies did not participate directly in the international negotiations which triggered the shipping container controversy, many Federal employees, often from the National Bureau of Standards, did participate in the international standards activities of the IEC and the ISO. The Senate Commerce Committee favored such participation, but underscored its position that such participation does not or cannot authorize a private standards organization to act on behalf of the U.S. Government.[222]

In the compromise between the House and the Senate for P.L. 90–268, the proposed Senate restriction was dropped. Nonetheless, the legislative history of this law calls attention to the lack of legislative guidance for private organizations that participate with representatives of other governments and their industries in the setting of international standards which can impact upon American trade.

The Adequacy of Consensus as a Basis for Voluntary Standards

Voluntary standards, both national and international, are agreed upon by a process of consensus. Viewed another way, this process may produce the most common denominator, the one least offensive to the

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[220] H. Report No. 991, op. cit., p. 6.

[221] U.S. Congress, Senate, Committee on Commerce. Development of cargo containers. S. Rept. No. 722, 90th Cong., 1st sess., Nov. 3, 1967, p. 3.

[222] On this point the committee wrote:

"The committee recognizes the wisdom of proper participation by Government agencies in both domestic and international standards efforts. The Government is often the largest "buyer" or "user" of goods and services and, in many instances, has detailed scientific and technical knowledge required for the development of sound standards. Therefore, Government employees should participate in domestic and international standardization efforts in a manner consistent with their legal authority. But such participation does not or cannot authorize a private standards organization to act on behalf of the U.S. Government. Accordingly, no Government agency is bound to follow or concur in the actions or decisions of a private standards organization, nor may any agency do so unless such is authorized by law" Ibid., p. 4.

various interests involved, and for that reason, the one that may represent the least progressive or advanced sector of the technology at hand. Recently with the increase in government use of mandatory standards in procurement and for safety, public health and protection of the environment, many government standards are being drafted not as a ratification of existing technology, but to set new goals for technologies that are deemed insufficiently advanced.[223] These two trends, consensus standards and goals standards are divergent in purpose and method of formulation. At issue for the 1970s are the respective roles of these two fundamentally different types of standards in the national and international economies. As a secondary question, should the evolution of each be allowed to proceed as it will, responding to forces and influences of the moment, or should Government seek to establish overall guidance for the future evolution of each. If government guidance is desirable in the national interest, how can this be best achieved?

A Need for Interagency Coordination of Government Standards Activities

The LaQue report in 1965 pointed out that coordination between Federal Departments on standards matters left much to be desired.[224] In response the Commerce Department established an Interagency Committee on Standards Policy. This committee spent about two years gathering detailed information about the standards policies and activities of the member agencies, including some 22 different agencies. However, the committee was allowed to lapse in June 1972 and at present there is no formal interagency mechanism for interagency coordination. The legislation now before Congress would reestablish this committee and give it a statutory basis.

With the proliferation of mandatory government standards for safety, public health and protection of the environment by many different agencies that may or may not follow a common approach to preparation and application of standards, it would seem that the need for an effective means of interagency coordination is growing.

The Lack of a Strong Coordinative Force in Voluntary Standardization

In principle the American National Standards Institute is supposed to provide a strong coordination force for voluntary standardization in the United States. However, according to at least one experienced participant, this is not so. The main reason is that the member bodies of ANSI are unwilling to give ANSI the power and support necessary to carry out its coordination role. As seen by William A. McAdams:

> . . . If two or more organizations want to work in the same standardization area, they go ahead and do so and we live with a duplication of work efforts and results. If the conflict is brought to ANSI's attention, the usual solution is to set up another ANSI committee with a joint sponsorship of the organizations most interested. ANSI does this because it is the easiest way out. Few of the

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[223] A good example of the use of standards to drive a technology rather than codify its current state is to be found in the regulations of the Consumer Product Safety Commission which appear in chapter 2 to title 16 of the Code of Federal Regulations. While these are not voluntary standards as such, the extensive opportunities for private participation in their formulation, their function of changing present technologies and products to increase safety in use illustrates the concept.

[224] Cf. LaQue report in Materials research and standards, op. cit., p. 188.

major standards-making members of ANSI are willing to give ANSI the power to study the capabilities of the competing organizations and to decide which should handle a particular piece of work.[225]

His solution is to give ANSI the power to decide which organization should do the U.S. standardization work in a particular field.

The Lack of a Set of National Standards in the United States

Most countries have one or a few organizations that produce standards with national recognition. In the United States there are many.

In addition to those approved by ANSI, there are the standards of the ASME, ASTM, NFPA, IEEE, SAE, and a long list of other organizations which are nationally and, often, internationally recognized. For the government and international worlds of standards, this is a confusing situation. It is hard to explain why a highly regarded ASTM standard is not an American National Standard.

The obstacle to a national system is seen in the standards approval system and a proposed solution is that the voluntary standards organizations other than the American National Standards Institute should use their influence to change the ANSI approval system in a way that will provide a single set of American voluntary consensus standards.[226]

Some Disadvantages of Standardization

Standardization, although it brings benefits, may also bring constraints. Nearly all standards are restrictive in the sense that they limit to some extent the designs of the manufacturer and the choices of the user. So far the benefits of voluntary standardization have been judged to outweigh the disadvantages of their constraints. Now some observers are questioning this balance:

> What is really distressing is the present trend in both government and the private sector to establish quality and performance standards on the basis of what a few people decide is best for all. I believe that what users want and need are not standards that set quality or performance at some arbitrary level, but those that provide product information defining quality and performance that will enable each user to make his own judgment relative to his own situation. This information can be provided by better performance characteristics of the product and the methods by which the performance is measured. If we do this well, there will be little need for setting quality and performance levels except where they are required for health and safety, interchangeability, and reduction in variety to achieve lower costs through mass production.
>
> * * * * * * *
>
> When we standardize too many quality and performance attributes, we destroy this right to choose.[227]

Inevitably, the initial introduction of standardization into an industry will "hurt" someone or work to their disadvantage. In 1966, Francis K. McCune, of the then United States of America Standards Institute, recognized this clearly in testimony before the House Committee on Science and Astronautics. He said:

> . . . Every time you promulgate a standard to some extent it "hurts" somebody. Such standardization, I am sure, in the early days as a screw base on a

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[225] William A. McAdams. "The four worlds of standards." op. cit., p. 56.
[226] Ibid.
[227] Ibid., p. 60.

lamp, that probably hurt somebody whose screw-base wasn't the size it chose. Lord knows who chose it, but that was standardized long ago. And this will always be the case, and the procedures . . . of the United States of America Standards Institute, are that you first establish some sort of a group who are representative of the parties at interest. Nevertheless, you do sincerely try to get the parties at interest, manufacturers, consumers, and so forth . . .[228]

To what extent the costs—economic and otherwise—of those who may suffer from standardization should be paid, if at all, by those who benefit, or by the government remains an open question. Likewise, to what extent those who may be adversely affected by standardization should have a veto power, or power to delay standardization remains open.

Another undesirable effect of standardization can be a tendency to freeze a technology at its current state and make further progress and innovation difficult because of the inertia of established standards and organizations which have a vested interest in preserving standards unchanged. In a rapidly evolving technological industry, a troublesome question is when to emphasize voluntary standardization, and how to do so without sacrificing the technological momentum of that industry. Innovations in organization and methods for standardization are needed to make standards more responsive to new developments and less a drag upon technological advancement.

Inadequacies of Voluntary Standards for Consumer Product Safety: An Example

An example of a modern issue for standardization is the role of voluntary standards for product safety. Voluntary product safety standards have had their critics. One was the National Commission on Product Safety which was established by Congress in 1967 [229] to make a comprehensive study and investigation of the scope, adequacy of measures to protect consumers against unreasonable risk of injuries from hazardous household products. One factor the Commission examined was the extent to which self-regulation by industry (through voluntary standards) afforded such protection.

The Commission reported in 1970.[230] It analyzed the standards and safety practices of industry and individual manufacturers and found them inadequate. Of this the Commission said:

> Many manufacturers conscientiously support the development of safety standards. They recognize that both the retailer and consumer are unable to judge the safety of a product made in a remote factory, to find short circuits in sealed compressors or structural flaws in step ladders.
>
> Nevertheless, safety standards are little more than paper exercises if they are not observed. Ordinarily, good business sense assures compliance, but a minority tends to observe only those safety standards that are backed by civil and criminal sanctions.
>
> Lacking the force of law, voluntary safety standards basically offer the manufacturer an opportunity to regulate himself.[231]

But, said the Commission, such self-discipline may be impossible when the competitive forces of the market drive manufacturers to cut costs at the expense of safety.[232]

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[228] International commercial standards activities, op. cit., p. 51.
[229] P.L. 90–146, 81 Stat. 466, November 20, 1967.
[230] U.S. National Commission on Product Safety. Final report presented to the President and Congress. Washington, D.C.: U.S. Government Printing Office, 1970, 167 p.
[231] Ibid., p. 48.
[232] Ibid., p. 48.

After reviewing more than 1,000 industry standards applicable in one way or another to safety characteristics of more than 350 product categories, the Commission found that the standards were chronically inadequate, both in scope and permissible levels of risk. The products standards, said the Commission, do not usually address all foreseeable hazards. They give insufficient consideration to human factors such as predictable risk-taking, juvenile behavior, illiteracy, or inexperience. The levels of allowed exposure to electrical, thermal and mechanical and other energy exchanges were frequently too high.

Of 44 categories of products which produce the highest annual number of injuries, 26 were not covered by any industrywide voluntary safety standard. Of 18 products covered by such standards, the Commission indicated seven were deficient in many aspects of safety.[233]

For these reasons the National Commission recommended that the proposed National Product Safety Commission have authority to develop and set mandatory consumer product safety standards where industry's own efforts were not sufficient to protect consumers from unreasonable risks of death or injury. Federal action is required, said the National Commission, when unreasonably hazardous products are marketed due to neglect of safety factors, or the inadequacy of voluntary standards, or the failure of some manufacturers to meet voluntary standards.[234]

Standards and Competition

The National Commission on Product Safety's Analysis.—That jointly established voluntary standards may restrain trade in violation of antitrust laws was a problem identified by the National Commission on Product Safety. It reported:

> . . . Where jointly-established standards are based upon the practices of the dominant group of manufacturers, the result may be to disadvantage competitors, drive non-conforming products from the market or deprive consumers of desired options. Such results may occur even though the standards are "voluntary" in the sense that no compulsory enforcement of standards is contemplated.[235]

The Commission inquired into the matter and pointed to the example of dangers of using standards activities as a cover for antitrust violations as in the case of *U.S.* v. *American Radiator and Standard Sanitary Corporation.*[236] In that case it was charged that, as part of a conspiracy to fix prices of plumbing fixtures, the manufacturers had agreed to seek and obtain revisions of the Department of Commerce commercial standard for enameled cast iron to exclude plastic-coated fiberglass.

While the risk of antitrust liability may be used by some industries as a convenient excuse for tolerating dangerous products, said the Commission, it may have deterred some manufacturers from participating in industry efforts to establish higher product safety standards. Thus the Commission identified as an important question whether the antitrust laws constitute a significant deterrent to industry efforts aimed at establishing high product safety standards.[237]

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[233] Ibid., p. 48.
[234] Ibid., p. 114.
[235] National Commission on Product Safety, op. cit., p. 58.
[236] 288 F. Supp 701 (W.D. Pa. 1968).
[237] Ibid., p. 58.

The Justice Department advised the Commission that there are ways in which companies participating in the development of safety standards could minimize their risk of antitrust liabilities. These included the following suggestions from Mr. Richard W. McLaren, the Assistant Attorney General in charge of the Antitrust Division at that time. His suggestions were:

> First, compliance must be voluntary. The imposition of sanctions by private parties is an unjustified assumption of public power which has been and should be discouraged by the courts.
>
> Second, a wide cross-section of interested parties should be invited to participate in developing a standard.
>
> Third, discrimination must be avoided. Testing procedures and certification should be made available on a non-discriminatory basis to all manufacturers.
>
> Fourth, undue restrictions on freedom of design should be avoided. Performance standards are preferable to material or design specifications, and grading systems have less competitive impact than a single standard for approval.[238]

Subsequently, in 1971, the Deputy Attorney General Richard G. Kleindienst advised the Senate Commerce Committee on antitrust aspects of voluntary international standards, writing:

> While the establishment of international standards for products, materials and processes can result in enhanced competition in both domestic and international commerce, the establishment of unnecessary or unnecessarily rigid standards can not only significantly disadvantage existing and potential competitors, but it may also serve to impede innovation. Manufacturers should have the greatest possible latitude in choosing among different materials, processes, and modes of production consistent with the objectives of needed standardization.[239]

An FTC Study.—The possibility that voluntary arrangements for formulating standards might have some undesirable effects upon competition was expressed in 1972 in an internal study by the staff of the General Counsel of the Federal Trade Commission.[240] While this staff report was not approved and issued by the Commission itself, the issues raised in it form a fairly complete catalogue of misgivings of some observers. The staff report singled out such alleged shortcomings as—

> lack of procedural safeguards to insure consideration of the viewpoints of all groups affected by a standard,
>
> lack of consumer participation and no veto power for consumer representatives,
>
> domination of the process by big industry,
>
> financial constraints on consumer and small business participation,
>
> use of the "consensus" principle,
>
> failure to review and update standards,
>
> reliance on design and construction standards rather than performance standards, and
>
> testing and certification of products by the manufacturers themselves or by organizations dominated by them.

Recent Advice From the Department of Justice.—In February 1973 the Bureau of Product Safety of the Food and Drug Administration, DHEW, asked the Department of Justice for advice on the antitrust implications of certain actions that the Bureau of Product Safety was contemplating for the match industry. An FDA study had indi-

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[238] Ibid., p. 59.

[239] International voluntary standards cooperation act, op. cit., p. 16.

[240] U.S. Federal Trade Commission. Preliminary staff study (precis) : self-regulation—product standardization, certification and seals of approval, 1972, 38 p. (processed).

cated that many accidents with matches which happen to children were related to defects in matches or in match container design. The Bureau mentioned several possible approaches. One was that members of the industry develop a set of voluntary safety standards. Another was that they might give technical information and advice to the Bureau for the latter to establish mandatory standards.

The letter was written because in June 1972 members of the match industry had declined to work together with the Bureau on these problems because of prohibitions contained in a 1946 antitrust Consent Decree.

Concerning the drafting of voluntary safety standards, the Justice Department's advice was as follows:

> . . . Section 1 of the Sherman Act prohibits concerted actions which may unreasonably restrain trade or commerce. Therefore, the critical question as to whether joint efforts by the match manufacturers to establish voluntary safety standards would violate the antitrust laws is whether the *actual* standards developed unreasonably restrained trade or commerce. Efforts by the match manufacturers to jointly *develop* safety standards, in and of themselves, would not violate the outstanding antitrust decree or the antitrust laws. However, until the standards are developed, it is of course impossible for us to determine whether the standards might unreasonably restrain trade. We can, on the other hand, venture certain suggestions which, if adhered to, would lessen the likelihood that the standards would raise serious competitive problems.
>
> The standards should not arbitrarily disadvantage any group of manufacturers. This danger may be lessened if all segments of the industry as well as interested persons outside of the industry are provided the opportunity to participate in the development of the proposed standard. Whenever possible, the standards should be drafted with reference to "performance" rather than design specifications. The use of "performance" standards allows manufacturers to innovate and seek more efficient methods of achieving the goal of the standard—in this case, improved safety. No attempt should be made to coerce compliance with any voluntary standard. Such action by manufacturers would amount to a private arrogation of public power in violation of the antitrust laws. Finally, it must be stressed that any attempt to use the voluntary standards as part of a price-fixing, market allocation, or other anticompetitive scheme would violate both the antitrust laws and the outstanding decrees.[241]

As for joint industry presentations of technical information and advice to the Bureau to assist it in developing mandatory safety standards, the Department advised that neither the antitrust laws nor the consent decree would prevent the match manufacturers from consulting jointly with a government agency. The Department advised, however, that the Bureau should discuss such matters with the manufacturers on an individual basis rather than with the industry as a whole.

Metrication and International Standards

The question whether the United States should convert to the metric system is closely linked to issues of U.S. participation in the drafting and application of international engineering and technical standards. Thus the U.S. metric study of the Department of Commerce looked into the role of the United States in setting international standards. Highlights of the metric study reports include the following:

The Summary Metric Report.—In the summary report to Congress,[242] Secretary of Commerce Stans recommended that "imme-

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[241] Letter of Thomas E. Kauper, Assistant Attorney General, Antitrust Division to Paul W. Hallman, Deputy Director, Division of Compliance, Bureau of Product Safety, March 28, 1973.

[242] U.S. Department of Commerce, National Bureau of Standards. A metric America: a decision whose time has come. Washington, D.C.: U.S. Government Printing Office, 1971. 170 p.

[243] Ibid., p. iii.

diate steps be taken by Congress to foster U.S. participation in international standards activities." [243]

The NBS report itself said:

> Increasingly, countries are adopting IEC and ISO Recommendations instead of first developing their own national standards. At the same time existing national standards can form a basis for agreement on international standards.[244]

After explaining the interrelation of units of measurement and the drafting of engineering and technical standards, the NBS cautioned that increasing world use of the metric system, particularly in the European Community and in Britain, would put U.S. standards at a disadvantage in world trade. The report said: [245]

> This problem is already with us and is becoming more troublesome. Imports of materials and equipment are increasing, and overseas subsidiaries of U.S. companies are having to develop standards programs that are independent of the parent company, because U.S. customary standards do not adequately meet their needs. Alluding to these complications, one participant in the U.S. Metric Study remarked that these are now "little clouds, no bigger than a man's hand", but they point up the urgency for the U.S. to strengthen its position in world standards-making before they grow much larger.

The NBS cautioned that international standards could impede U.S. trade, depending upon how they are applied and argued for U.S. participation in international standards activities as follows: [246]

> It would be economically beneficial for the U.S. to play a more vigorous role in the making of international standards. U.S. industry is already influential in the development of these standards. This is particularly true where U.S. technology has taken the lead—e.g., integrated electronic circuits, commercial aircraft, automobile wheels, computers, oil drilling machinery, videotape.
>
> Our opportunity to exert further influence is great. To date, relatively few international standards have been adopted. But in the next decade the number on the books is expected to multiply roughly tenfold . . . The international standards that exist today are but a few patches in a mosaic that an increasingly interdependent world will need for the exchange of products, materials, and ideas.

On the other hand, the NBS noted that through 1971 the effect of world standards development on U.S. trade seemed to be slight. Exporters viewed differences in measurement systems and standards as relatively unimportant. They put more emphasis on reliability, reputation, price, superior technology, and high quality of product.[247]

The International Standards Report.—In its report on international standards,[248] the NBS reported conclusions and recommendations that reflected a ". . . substantial concern about the need to strengthen the effectiveness of the United States in international standards activities".[249] Of nine NBS conclusions, six had to do with U.S. participation in setting of international standards.[250]

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[244] Ibid., p. 53.
[245] Ibid., p. 55.
[246] Ibid., p. 59.
[247] Ibid., p. 64.
[248] U.S. Department of Commerce, National Bureau of Standards, U.S. metric study report: international standards. Washington, D.C.: U.S. Government Printing Office, 1970. 145 pp.
[249] Ibid., p. 2.
[250] The six were:

Conclusion 3: If the United States wishes to see the maximum amount of its engineering practices and standards included in the coming international standards, it must, without delay, take steps for adequate and effective participation in international standards negotiations.

Conclusion 4: If the United States increases and makes more effective its participation in internatitonal standards-making activities, then the degree of incompatibility between

Of the four recommendations made by the NBS, three concerned U.S. participation in international standards formulation: [251]

The Engineering Standards Report.—In its supporting report on engineering standards [252] the NBS stated 21 conclusions of which five appear directly pertinent to U.S. participation in international standardization.[253] Of seven recommendations, the following four related to U.S. participation: [254]

(2) That international standardization be fostered in order to achieve the greatest economic benefit.

(3) That advantage be taken in any metrication program to effect through international standardization a reduction in number of product sizes, conservation of materials, and an improvement of product quality, by incorporating latest knowledge and technology, particularly in those instances where traditional practices have hindered change.

(5) That standardization of new practices and technologies which require standardization beyond the company level, begin at the international level in order to avoid the prohibitive cost of international standardization after national practices are well established.

(7) That special attention be given to the administrative process of standardization in order to assure adequate U.S. participation in groups drafting standards at the international level, and to the development and issuance of national standards required by the consumer, industry, and government.

U.S. domestic standards and international recommendations would be reduced, and a U.S. metrication program would be facilitated, should we take this course.

Conclusion 5: Relatively modest changes in the import-export pattern of measurement sensitive goods can have a serious impact on the U.S. balance of payments. Hence, the relation between standards, standards utilization and trade should be the subject of careful study to develop the policy basis for U.S. participation in international standards development and utilization.

Conclusion 7: Product certification emerges as a primary consideration in the utilization of standards.

Conclusion 8: Some product certification scheme for exports will probably be required to maintain a competitive position if European plans are successful. It can be either a plan compatible with those now developing in Europe or a distinctively U.S. approach, conceived to provide adequate assurance that U.S. export products meet a set of explicitly stated standards.

Conclusion 9: If the U.S. elects to certify the products in terms of IEC–ISO standards, it must recognize that the critical decade of standards development is here and take the necessary steps for participation.

[251] Ibid., pp. 3–4.

Recommendation 2: The Department of Commerce should devise, in concert with other interested Federal agencies and responsible standardizing institutions, a firm U.S. policy about participation in international standards activities, including what role the Government should play and provisions for furthering the public interest as well as the competitive position of U.S. industry in world trade.

Recommendation 3: If such a policy dictates increased participation, appropriate steps should be taken to see that such participation is sufficient to meet the rapidly increasing international standardization activities that have been predicted for this decade.

Recommendation 4: The Department of Commerce should, in concert with other interested Federal agencies, initiate action to determine whether or not the United States should participate in international product certification agreements. If adherence to such agreements is deemed desirable, an appropriate mechanism for certification within the United States should be developed. If adherence is not believed warranted, the United States should ensure that an appropriate alternative strategy is devised and followed.

[252] U.S. Department of Commerce, National Bureau of Standards. U.S. metric study intrim report: engineering standards. Washington, D.C.: U.S. Government Printing Office, 1971. 250 p.

[253] These four conclusions were:

(10) The compatibility of U.S. standards with IEC and ISO Recommendations is related to the degree of U.S. participation in the group drafting the recommendations; but approval of an IEC or ISO Recommendation by ANSI does not necessarily imply compatibility with corresponding U.S. standards.

(18) Currently, about 400 voluntary and government organizations issue engineering standards used throughout the United States which has resulted in duplication of effort and confusion; this uncoordinated system is not conducive to efficient functioning particularly at the international level.

(20) The critical decade in international standardization has begun; failure to act promptly is likely to be detrimental to U.S. foreign trade of the future.

(21) Standardization of new practices and technologies that require standardization beyond the company level should begin simultaneously at the national and international levels if the prohibitive costs of international standardization after national practices are well established are to be avoided.

[254] Ibid., pp. 7–8.

GLOSSARY

The following glossary of terms associated with standardization is drawn from definitions of the National Bureau of Standards, the LaQue Report and the International Standards Organization (ISO).

ABC—American-British-Canadian Conference on Unification of Engineering Standards

Accredited Laboratory

A testing laboratory that has been judged and formally recognized by an accreditation authority as maintaining specific testing functions in conformance with prescribed criteria of that accreditation authority and as confirmed by independent examination and audit of the testing activity. (NBS)

ACS—American Chemical Society

AESC—American Engineering Standards Committee

The predecessor of the American Standards Association.

ABC—American-British-Canadian Conference on Unification of Engineering Standards

Standards bodies of America, Britain, and Canada, with leading government representatives participating in meetings. Founded towards the end of the second world war to standardize certain basic engineering standards such as screw threads, limits and fits, drawing practice, of first importance both to military supplies and to industry.

American National Standard, Draft

A standard under development intended ultimately for consideration as a Proposed American National Standard. (ANSI)

American National Standard, Proposed

A standard which is to be considered by the Institute for recognition as an American National Standard. The name applies collectively to proposed American National Standards, regardless of origin, but does not apply to those portions of the publications not considered as part of the standard, such as the foreword, appendixes, etc. (ANSI)

American National Standards Committee

A committee, balanced among producers, consumers, etc., the membership of which is open to representatives or organizations and individuals having substantial concern and competence in standards within a given scope approved by the technical advisory board having assigned responsibility. (ANSI)

ANSI—American National Standards Institute Inc.

A private organization established in 1969 for coordinating the drafting of voluntary industrial standards by member professional

societies, trade associations and business organizations. Successor to ASA and USASI.

ASA—American Standards Association

A former national private organization for coordinating the drafting of voluntary industrial standards. Evolved into USASI and then into ANSI.

ASAC—Asian Standards Advisory Committee

Asian Standards Advisory Committee (ASAC)

Set up in 1966 under ECAFE auspices to promote coordination between existing national standards bodies in the region and to assist in the establishment of new ones.

ASTM—American Society for Testing and Materials

CCE—Commission of the European Communities

CE—European Communities

CEI—International Electrotechnical Commission

CEN—European Committee for Standardization

CECC—CENEL Electronic Components Committee

CEE—International Commission on Rules for the Approval of Electrical Equipment

CENCER—CEN's certification body.

CENEL—European Electrical Standards Coordinating Committee

CECC—CENEL Electronics Components Committee

Produces harmonization documents with which national standards can be brought into line, with built-in quality assessment. 12 working groups.

CENELCOM

The Common Market group with CENEL.

Certification

A system for attesting authoritatively to the public that products, materials, devices, equipment or systems comply with specified provisions of referenced standards or codes by identifying via listing, description, formal communication and/or by a mark (seal or logotype) attached thereto; also the state of being so sanctioned and identified. (NBS)

Code

A document setting forth requirements based on certain considerations, frequently health and safety, and the criteria and standards against which compliance with the requirements is measured. It is usually intended for impartial regulation of an area of activity. The most important codes are those promulgated by government (Federal, state, or local), thereby achieving the force of law. (LaQue Report).

Code, Regulation

A standard or other set of conditions and requirements made mandatory by government bodies. (NBS)

Compulsory Standards

There are perhaps three major classes of compulsory-type standards each of which is mandatory for use, but for different reasons. These include:

(1) Standards which are compulsory because of Federal, state or local laws, regulations or codes. These standards are generally developed with the assistance and inputs of the interested or affected parties, but are promulgated by some authoritative and legally constituted body. The use of these standards is legally mandatory and is monitored and policed.

(2) Standards which are compulsory because of economic suasion. In this case the user may or may not have a choice in the development of such standards. He is not forced by law to accept the standard and, hence, has no legal recourse in eliminating or modifying it, but nevertheless the economics involved necessitate his compliance.

(3) Standards which are compulsory through contractual requirements or organization edict. Standards used by the government, where contractual specifications demand use of the standard, represent a compulsory standard to the contractor—although adoption of the standard may be voluntary on the part of the Government. (LaQue Report).

Conformity With a Standard

A product is said to be in conformity with a standard if it fulfills the conditions laid down in that standard. (ISO)

Consensus

Substantial agreement of those concerned with the scope and provisions of a STANDARD as judged by a recognized or duly appointed authority. CONSENSUS implied much more than the concept of a simple majority, but not necessarily unanimity. (NBS)

In standardization practice, a consensus is achieved when substantial agreement is reached by concerned interests according to the judgment of a duly appointed authority. Consensus implies much more than the concept of a simple majority but not necessarily unanimity. (LaQue Report)

COPANT—Pan American Standards Commission
EC—European Communities
ECE—Economic Commission for Europe
Economic Commission for Europe (ECE)

An organ of the European Community. Acts to facilitate trade in European and notably prepares regulations associated with "E" mark certification (now operating for motor vehicle accessories).

ECOSOC—Economic and Social Committee of the United Nations
EEC—European Economic Community
EFTA—European Free Trade Association
EIA—Electronic Industries Association
European Committee for Standardization (CEN)

Founded 1960. Comprises national standards bodies of EEC and EFTA countries, with Greece, Ireland and Spain as correspondent members. Prepares European Standards which, if accepted by a significant majority of CEN members, are published without variation of text in the countries accepting them as the national standard.

European Communities (EC, CE)

The six European nations—Benelux (Belgium, Netherlands, Luxemburg), France, West Germany, and Italy.

European Economic Community (EEC, CEE)

The "Common Market" founded by the Treaty of Rome, 1957, Located in Brussels.

European Electrical Standards Coordinating Committee (CENEL)

Electrotechnical counterpart of CEN. Founded 1960. Comprises national electrotechnical committees of EEC and EFTA countries, with Finland as an associate member.

European Free Trade Association

The nine nations: Austria, Denmark, Norway, Portugal, Sweden, Switzerland, United Kingdom, Finland and Iceland.

Federal Specifications and Standards

Federal specifications and standards of a permanent nature, are prepared for use of two or more Federal agencies (at least one of which is a civil agency) for items of potential general application. They are promulgated by the General Services Administration and, if applicable, are mandatory for use by all Federal agencies, including the Department of Defense. (GSA)

Federal Standards

Federal standards establish the specific type of product best suited to satisfy the bulk of the Government's requirements. Federal standards are designed to achieve the appropriate degree of uniformity with due regard to commercial availability, adequate quality, and other related considerations.

By adopting standards, the Government reduces the number of types, sizes, colors, and varieties of items it procures. Federal standards are of three basic types:

(1) Limitation standards, which lead to the procurement of only the most essential and serviceable types, sizes, and varieties of items;

(2) test method standards, which provide assurance as to the quality of a product; and

(3) engineering standards, such as those standard engineering practices used in the development of clean room and work station requirements for facilities where controlled environment is necessary. (GSA)

GATT—General Agreement on Tariffs and Trade

GSA—General Services Administration

Harmonized Standards

Standards are said to be harmonized for a given purpose when their provisions lead to equivalent results for that purpose. (ISO)

IEC—International Electrotechnical Commission

IEEE—Institute of Electrical and Electronic Engineers, Inc.

Industrial Standards

Non-governmental documents prepared or developed by a group recognized by those affected as having the qualifications and authority to set a standard. (LaQue Report)

A non-government document which defines characteristics or measures of a commodity, item or process for broad range of application across the industry, and is prepared or developed by a group recognized by those affected as having the qualifications and authority to set the standard.

Implicit in this definition are the following characteristics—

(1) It is a published document.

(2) It is generally technical in nature.

(3) It is equally acceptable by producer or manufacturer as well as user or purchaser.

(4) It applies to a product, process or procedure with reference to one or more of the following: nomenclature; composition; constructional dimensional tolerances; safety; operating characteristics; performance; quality; rating; testing; and the service for which it is designed. (LaQue Report)

Interim Federal Specifications and Standards

Interim Federal specifications and standards are those which are potentially Federal in nature but which are issued in interim form by individual agencies for optional use by all Federal agencies. Interim Federal specifications and standards can eventually be changed to the permanent Federal type if sufficient interest in their use is demonstrated. (GSA)

International Commission on Rules for the Approval of Electrical Equipment (CEE)

Founded 1946. Comprises national electrotechnical committees of 19 European countries, with Australia, Canada, Iceland, Japan, South Africa, and the USA as observer members. "CB" certification body for domestic electrical equipment.

International Electrotechnical Commission (IEC, CEI)

The electrotechnical counterpart of ISO. Founded 1906. Comprises national electrotechnical committees of over 40 countries. Publishes Recommendations and Reports.

International Organization for Standardization (ISO)

Founded 1947. Comprises national standards bodies of over 60 countries. 2000 International Recommendations published. International Standards being published since January 1972 based on approval by 75% of member bodies, 146 technical committees; over 400 subcommittees; 500 working groups.

International Standard

Standard approved by an international standards organization. (ISO)

International Standards Organization

Organization whose membership is open to all countries of the world and whose principal function, by virtue of its statutes, is the formulation and publication of standards, and/or the harmonization of the standards of its members. (ISO)

ISO—International Organization for Standardization

Laboratory Accreditation

A system whereby a judgment and formal public declaration is rendered by a recognized authority that a testing laboratory has demonstrated qualifications considered necessary to perform specific testing activities. (NBS)

Mandatory Standard

A standard with which there is an obligation to comply by virtue of an action by government or by an authority endowed with the necessary legal power; called a CODE or REGULATION. (NBS)

Mandatory Standard

This term designates a standard to which an authority, legally empowered to do so, has applied administrative or other provisions to make application mandatory and, should the case arise, to penalize non-application. (ISO)

MIL—Military Specifications and Standards

Military Specifications and Standards

Military specifications and standards are those issued by the Department of Defense covering items, materials, and services necessary to the performance of the military mission. These specifications and standards are indicated by the symbol MIL. They may also be used by other Federal agencies. (GSA)

Model Code

A standard or other set of conditions and requirement that is recommended for adoption as a CODE or REGULATION. It is developed and promulgated with the intent that it can be adopted as a CODE or REGULATION. (NBS)

NAM—National Association of Manufacturers

National Standard

Standard approved by a national standards body. (ISO)

National Standards Body

A nationally recognized body whose principal function at the national level, by virtue of its statutes, is the formulation and publica-

tion of standards and/or the harmonization of the standards of its organizational members. (ISO)

NBS—National Bureau of Standards

OECD—Organization for Economic Cooperation and Development

ORGALIME

Organization for liaison between the European electrical and mechanical engineering industries, representing national trade organizations of the EEC/EFTA countries.

Pan American Standards Commission

Founded 1961. Comprises national standards bodies of USA and 11 Latin American countries. A coordinating organization concerned with the regional implementation of ISO and IEC Recommendations.

Proponent

An organization or group which proposes that some action in connection with standardization be taken by the American National Standards Institute. (ANSI)

QPL—Qualified Products List

Qualified Product

A material, component, device, equipment or system which has been tested and approved for inclusion in a qualified product list, whether or not the product has actually been so listed. (NBS)

Qualified Product Lists (QPL)

Lists of materials, components, devices, equipments or systems tested and approved under prescribed tests and procedures set forth in specifications that require assurance of requisite quality prior to purchase or award of contract. (NBS)

Quality Assurance

A system of activities whose purpose is to provide assurance that quality control is performed effectively and whose authority encourages initiation of corrective measures and improvements where necessary. (NBS)

Quality Control

An overall system of activities concerned with the quality aspects of specifications, production, inspection, servicing and usage for the purpose of establishing and maintaining a quality of product, material, device, equipment or system that meets the needs of users. (NBS)

Quasi-Mandatory Standard

A standard with which there is no legal obligation to comply, but which is required in practice or under certain conditions; such as a requirement of a marketplace or compatibility with other products. (NBS)

Recommendation

A set of recommended conditions and requirements which implies less authority and less acceptance than a STANDARD. However, Recommendations are issued by some organizations, e.g., IEC Recommendations are equivalent and essentially the same as Standards. (NBS)

Reference Laboratory

A recognized entity, equipped and/or staffed: to examine, audit, analyze and report the adequacy of the physical, performance and conformance characteristics of technical functions of testing laboratories; to advise testing laboratories regarding technical aspects of testing functions; to help identify for standards promulgators deficiencies in existing standards or criteria applicable to testing laboratories; and to assist evaluators and/or regulators to accredit or otherwise grade testing laboratories' capabilities to perform specific testing functions. (NBS)

Regional Standard

Standard approved by a regional standards organization. (ISO)

Regional Standards Organization

Organization whose membership is open to countries from a given region of the world and whose principal function, by virtue of its statutes, is the formulation and publication of standards, and/or the harmonization of the standards of its members. (ISO)

SAE—Society of Automotive Engineers

Secretariat

An organization which provides the administrative and secretarial services for a standardization activity, and coordinates and conducts a standardization program under their own procedures or the procedures and directives of another organization.

The Secretariat function may include the calling and arranging of minutes and resolutions, conducting, recording, and reporting letter ballots, control and circulation of official documents, conducting the business of the standards activity between meetings, and carrying out the official correspondence and transactions of the standards activity. (NBS)

Simplification

A form of standardization consisting of the reduction of the number of types, sizes or shapes of products, materials, devices, equipment or systems with a definite range to that number which is adequate to meet prevailing needs. (NBS)

Specification

A set of conditions and requirements, of specific and limited application, that provides a detailed description of a procedure, process, material, product or service for use primarily in procurement and manufacturing. Standards may be referenced or included in a Specification. (NBS)

A document setting forth in detail pertinent defining characteristics of a product, such as performance, chemical composition, physical properties, dimensions, color, etc.; giving or referencing the standards by which the correspondence to the defined characteristics is to be measured. (LaQue Report)

Sponsor

An organization or group which assumes responsibility for development and publication of its standards. (ANSI)

Standard

1. A prescribed set of conditions and requirements of general or broad application, established by authority or agreement, to be satisfied by a material, product, process, procedure, convention, test method; and/or the physical, functional, performance, or conformance characteristics thereof.

2. An object for physical comparison such as an NBS Standard Reference Materials (SRM) which is a well-characterized and certified material produced in quantity and used to develop reference methods of analysis and tests and to calibrate measurement systems. (NBS)

3. A document, or an object for physical comparison, to define properties, processes, dimensions, materials, relationships, concepts, nomenclature, or test methods. (LaQue Report)

4. A description which establishes engineering or technical limitations and applications for materials, processes, methods, designs, drafting room and other engineering practices, or any related criteria deemed essential to achieve the highest practical degree of uniformity in materials or products, or interchangeability of parts used in these products; and which may be used in specifications, invitations for bids, proposals, and contracts. (GSA)

5. Document available to the public, drawn up with the cooperation and consensus of all interests affected by it, embracing defined terminology or characteristics and the way in which characteristics are to be measured, based on the consolidated results of science, technology and experience, aimed at the promotion of optimum community benefits and approved by a recognized authority. (ISO)

Standards, Federal

A standard promulgated by GSA which is mandatory for use by all Federal agencies, including the Department of Defense. (GSA)

Standardization

One of the most effective means of securing the proper quality and economy in governmental supply operations is the standardization of supply items. Federal standards establish engineering or technical limitations and applications for materials, processes, methods, and designs, including any related criteria considered essential to achieve the highest practical degree of uniformity in materials or products, or interchangeability of parts used in those products. Standards are used primarily as reference in specifications. (GSA)

Standardization (Military)

The process of establishing by common agreement engineering criteria, terms, principles, practices, materials, items, processes, equipment, parts subassemblies, and assemblies to achieve the greatest practicable uniformity of items of supply and engineering practices, to the minimum feasible variety of such items, and practices, and to effect optimum interchangeability of equipment parts and components. (GSA)

Testing Laboratory

A place primarily equipped and staffed for determining and analyzing the physical, functional and performance characteristics of products, materials, devices, equipment or systems for the purpose of de-

termining their conformance to standards, codes or specifications. (NBS)

UNCTAD—UN Conference on Trade and Development

UNESCO—UN Educational, Scientific, and Cultural Organization

UNIDO—UN Industrial Development Organization

United States of America Standards Institute (1966–1969)

A private organization for coordinating the drafting of voluntary industrial standards. Successor to ASA.

UNSCC—United Nations Standards Coordinating Committee

USASI—United States of America Standards Institute

Validation

The process of determining the adequacy of a measuring device, including the marking of such device as indication of authoritative approval. (NBS)

Voluntary Standard

A Standard with which there is no obligation to comply. A voluntary Standard may become a quasi-mandatory, mandatory, or a CODE or REGULATION as a result of utilization of adoption by a regulatory authority. (NBS)

Voluntary Standards

There are two classes of voluntary standards. The first may be considered "voluntary without guidance." These types of standards are generally related to areas of mature technology and represent well established industry or technical practices. The benefits and advantages of such standards are widely apparent to the user. The second class of voluntary standards are those which are voluntarily accepted through agreement of the interested parties. This type usually involves a considerable amount of guidance, identification of mutual benefits to be derived through its use and quite often lengthy debate and compromise. (LaQue Report)

APPENDIX I

Recommendations of the Panel on Engineering and Commodity Standards of the Commerce Technical Advisory Board (The LaQue Report) as Published in the Magazine of Standards, vol. 36, April 1965, pp. 122–126.

4. CONCORDANCE OF RECOMMENDATIONS

1. To Government

It is Recommended that the Federal Government:

A. National

1.1 Through Congress, enact legislation to provide for establishment of an Institute [1] to serve as a national coordinating body for voluntary standardization in the United States, giving the standards promulgated by it designation as "USA Standard," [2] and official international recognition equivalent to that given national standards of other countries having recognized national standards bodies. In this connection preference should be given to reconstituting the existing national standards organization, American Standards Association, rather than the creation of an entirely new body. The Institute should provide organizational structure and staffing for an activity level substantially greater than that at which ASA is now operating. Responsibility of the various national technical, professional, and industry groups for the development of new and revised standards should continue as at present.

1.2 Encourage government departments and agencies, at Federal, state, and local levels, to make use of "USA Standards," and others developed by competent organizations, to the greatest possible extent in writing specifications, supply contracts, etc., and eliminate government activities and standards designations in areas which are redundant with those in the national voluntary standards program.

1.3 Through the Department of Commerce, urge all standard, code and specification creating organizations (government, industry groups, trade associations, technical societies) to examine existing procedures and methods of promulgation, cooperation, and coordination to expedite standards development and their recognition and designation as "USA Standards" to the maximum degree possible.

1.4 Through the Department of Commerce, urge the Institute to develop promptly the information system with which ASA is now charged, to provide, on a self-supporting basis, continuing and current information on existing and proposed standards, codes and specifications from all sources of standards writing organizations, national and international.

1.5 Develop a clear statement of policy, by the Secretary of Commerce in consultation with the heads of other interested Federal agencies, to facilitate:

1.5.1 participation of government agencies and experts in the development of standards by non-governmental organizations, and

1.5.2 participation of industry in the development of standards for particular use by government when separate government standards are necessary or desirable.

1.6 Establish an Interagency Government Committee on Industry Cooperation (or other appropriate organization) for the purpose of:

1.6.1 serving as a government communication center through which industry groups could inform Federal representatives (responsible for preparing govern-

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[1] Implementation of these recommendations to establish a "Standards Institute of the United States of America" on the basis of the existing American Standards Association would require that the recommendations regarding the Institute be applied to ASA as long as it continues to function under its present name and status.

[2] Recommendations on "USA Standards" to apply to "American Standards" if the latter name is retained in preference to the former.

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ment specifications) regarding industry standards and be informed regarding government requirements so that these requirements could be considered in the development and revision of industrial standards,

1.6.2 serving to promote adequate but not excessive government representation in industry activities of interest to more than one government agency, and

1.6.3 maintaining a directory of government membership on committees of national standardizing organizations.

1.7 Implement Recommendations 1.5 and 1.6 by *Executive Order(s)*.

1.8 Continue and extend governmental participation by appropriate departments and agencies, in voluntary national standardization through the Institute and other leading voluntary standardizing bodies, providing normal support through dues and other means.

1.9 Encourage and support individual participation by government employees in the voluntary standardization activities of organizations which can make effective use of the professional activities of the employee.

1.10 Upon request of the Institute, or other leading voluntary standardization bodies or technical societies, furnish from its department's personnel, competent technically and otherwise, to serve on pertinent committees and as delegates to national or international meetings.

1.11 By suitable contractual arrangements, employ the services of the Institute for particular tasks in those areas within its scope and of benefits to either the national or international interests, including international standardization.

1.12 Recognize, by its use and participation, and communicate on a continuing basis to United States industry and to the Nation the importance, to the economy, of supporting the voluntary standards program.

1.13 Through the Department of Commerce or the Institute, undertake or support a study directed toward determining the feasibility of developing and applying uniform measures for identifying, appraising, and evaluating the effectiveness and use of both government and industrial standards; and if found to be feasible subsequently undertake or support such development, and provide both government agencies and industry with the results of this effort.

B. Commodity Standards

1.14 Under the guidance of an ad hoc advisory committee that would be appointed by the National Academy of Engineering, revise the procedures used by the Commodity Standards Division of the National Bureau of Standards to bring them into line with, and make them as rigorous as, those employed by the principal private standardizing bodies employing the consensus principle for the development, acceptance, and promulgation of standards.

1.15 Arrange for an immediate review of all existing Commercial Standards and Simplified Practice Recommendations promulgated by the Commodity Standards Division of the National Bureau of Standards to improve their technical adequacy and bring them up to date where these actions are required. Provide for continual review of all Commercial Standards and Simplified Practice Recommendations at least once every five years.

1.16 Establish within the National Bureau of Standards an Office for Standards Services (under this or other suitable name). The functions of this Office would be primarily advisory, in providing technical assistance to producers, consumers, and those having general interest who may call for help and guidance in the development of a standard.

This Office would keep abreast of the needs for new or improved standards and would take the initiative in advising and stimulating the Institute and other voluntary standardization bodies accordingly.

1.17 Provide the National Bureau of Standards with adequate staff and funds for:

1.17.1 Implementation of Recommendations 1.14 and 1.15.

1.17.2 Organization and operation of the new activity, described in Recommendation 1.16, in performing the recommended functions.

1.17.3 Full participation by those of appropriate competence on the staff of the National Bureau of Standards in all appropriate national standardizing body activities and functions.

1.17.4 Appropriate scientific and technical assistance in the research programs of the national standardizing bodies in which they will participate.

1.17.5 Counseling and guiding those who come requesting standards assistance as to:

1.17.5.1 The appropriate national standardizing body, as the preferred route to preparing and promulgating a standard.

1.17.5.2 The available related technical information.

1.17.5.3 The feasibility, when appropriate and desirable, of establishing a Research Associateship, at the National Bureau of Standards, to develop otherwise unavailable information.

C. Systems of Measurement

1.18 Through the Department of Commerce, prepare additional educational materials and programs pertaining to units of measurement, designed to encourage:

1.18.1 Simplification of unit usage, particularly where units of two or more systems are intermixed, and elimination of unused or obsolete units.

1.18.2 Increased decimalization of all measurement units, both in preference to other fractions and to subdivision by use of subordinate units.

1.18.3 Maintenance of integrity of accepted USA product sizes, designs, and ratings in national and international standardization and trade activities in the spirit of STACO Resolution 5, and full support of industry efforts to this end by all federal interests and agencies.

1.18.4 Inclusion of International System of Units (SI) equivalents of values in Customary USA Units wherever appropriate in standards, drawings, specifications, and other documents.

1.18.5 Development of USA Standard conversion procedures to facilitate this practice.

1.18.6 Voluntary use of SI units in specifications for new procurement items wherever advantageous.

1.18.7 Broader and fuller knowledge of the significance and usage of both SI units and Customary USA Units, and their bearing on domestic and world relations.

1.18.8 Adherence to the dynamic USA tradition of freedom of usage in measurement and avoidance of coercion detrimental to the efficiency or interest of any company, industry or other group.

1.19 Through the Department of Commerce, prepare and make publicly available calculation tables of equivalents for widely used SI and Customary USA Units.

D. Codes and Related Standards

1.20 As a first step toward the attainment of a workable uniform national building code, assemble a highly authoritative panel, at the invitation of the Department of Commerce and with the advice of the model code organization, to extend the present investigation and to initiate appropriate action based on the present, and any new, findings needed to support the recommended establishment of a uniform national building code. The panel should:

1.20.1 Be provided with adequate staff and funds to ensure effective participation by its members.

1.20.2 Evaluate the "Seven Point Program" and other possible programs, making specific recommendations as to the basic philosophy upon which building regulations should rest, a program, and the implementation thereof.

E. Legal Aspects

1.21 Through the Department of Justice, in consultation with other interested Federal agencies and the voluntary standards writing organizations, define and recognize procedures and methods of adoption for standards, requiring the consensus of producer-consumer-general interests, that would serve as a guide to those participating in standardization activities whereby they might expect to avoid conflict with, and prosecution under, the laws on restraint of trade.

F. International

1.22 Recognize the Institute, in the enabling legislation, as a body responsible for the interests of the United States in international standardization through organizations such as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Pan American Standards Commission (COPANT), and liaison with United Nations groups. (This is not intended to interfere with standardization pursued between the Department of Defense and friendly foreign governments in the interests of mutual defense.)

1.23 Recognize by its use and participation, and communicate on a continuing basis to United States industry and the Nation the importance to the economy of supporting and of participating in international standardization even if international trade in a given commodity has not yet become significant.

1.24 Eliminate activities by U.S. Government agencies in the area of international standardization (except those subject to treaties or intergovernmental agreement) which are redundant with those of IEC and ISO, particularly in UN groups or others in which the U.S. Government is represented, directly or indirectly.

1.25 Exert its influence to secure the maximum practical utilization of standards of ISO, IEC, and COPANT by other international organizations wherever such standards are applicable, and to help assure the maximum practicable compatibility between international standards and standards recognized and used to a significant extent in the USA.

1.26 Provide liaison for communication between the Institute and government officials in the U.S. and abroad regarding needs for new and revised standards that may be of importance to commerce.

1.27 Through the U.S. Department of Commerce, if requested by Latin American countries, render assistance, through appropriate channels, in the establishment of national measurement laboratories for all countries which seek cooperation in setting up such laboratories. Assist in the organization of seminars on weights and measures in Latin American countries using, if possible, the excellent educational display pertaining to weights and measures prepared by the National Bureau of Standards.

G. General

1.28 Provide for broad publication of the principles and recommendations expressed herein throughout all civilian and governmental interests.

1.29 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

2. To Industry

It is Recommended that United States industry :

A. National

2.1 Proclaim full support for the proposed new standards program and Institute, and work for a smooth transition from existing procedures, both directly and through recognized industry groups, trade associations, technical and educational societies.

2.2 Organize educational programs, both through the trade associations and within companies, so that all levels of management are made aware of the importance of the national standards program, its internal working, and the individual company's responsibility to participate, in order to assure the program's success.

2.3 Provide manpower adequate to meet the needs for new and revised standards. A necessary part of this is to make a factual appraisal of the effect of standards activities on the normal work load, and to add staff to assure that standards work is a fully approved activity and not a by-product operation only when and if manpower and time are available.

2.4 Provide sufficient financial support to the Institute through payment of dues, or otherwise, to permit it to build up an adequate staff for its increased responsibilities in national and international standardization.

2.5 Encourage competent and representative industry groups, trade associations, professional societies, and other organizations currently preparing standards to continue their present work, and to accelerate their program for developing additional standards for which a need exists. Provide sufficient financial support and manpower to achieve these objectives. Encourage these organizations to promulgate their appropriate standards, existing and new, as "USA Standards" through the procedures of the Institute so that a common nation-wide program will be achieved. Those organizations responsible for fewer than 100 standards each should be encouraged to join their efforts with and seek help from other bodies of broader scope to reduce the number of sources of standards.

B. Systems of Measurement

2.6 Prepare for more extensive expression of measurement in the International System of Units (SI) to facilitate voluntary usage of those units by industries

or industry segments which may find it necessary or desirable to do so internationally, domestically, or both.

2.7 Include the SI equivalents of values in Customary USA Units wherever appropriate in standards, drawings, specifications, and other documents.

2.8 Voluntary use SI units in specifications for new designs wherever advantageous.

2.9 Foster increased use of decimalization of values of units, in preference to other fractions or subdivision by use of subordinate units.

C. International

2.10 Re-examine its position relative to international standardization, increase its participation to the work of ISO, IEC, and COPANT, and endeavor to prevent redundant effort in other organizations.

2.11 Provide and pay expenses for competent technical men for continuing service on USA national committees concerned with international standards and in delegations to international technical meetings.

2.12 Cooperate with and support the Institute in its responsibility for effective operation of the Secretariat of any technical committee of ISO, COPANT, or IEC which, on the basis of American competence or leadership, the USA is invited to accept.

2.13 By more active participation in our own national standardization effort, make certain that standards representing an American consensus are ready to provide bases for international recommendations.

2.14 Both financially and in manpower (from the industries related to the particular discipline), support technical societies in discharging the responsibilities of the USA in basically non-product international standardization activities. With such support from industry, the broad and impartial interest of each society would lead to selection of the most suitable representatives, and to administration of the activity in the best interests of the USA. Overlapping of discipline interests would require central coordination through the Institute to achieve the proper USA representation, now lacking, in international standardization on fundamental engineering concepts.

D. General

2.15 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

3. To the Institute

It is Recommended that the Institute:

A. National

3.1 Organize to serve adequately in its role in the United States standards program. As part of this program a major effort will be needed to insure that adequate funds are made available.

3.2 Review and streamline the normal procedures used by ASA, to accelerate and encourage recognition and designation of existing standards as "USA Standards," with special reference to those of the national standards writing organizations which provide balanced consumer-producer representation and whose voting procedures assure that their standards represent a national consensus.

3.3 Provide an educational program for American industry and consumers on the importance of standardization, and on the manner in which standards are developed and adopted, to gain increased confidence and respect for "USA Standards."

3.4 Provide a medium for communication on the development and existence of standards by various organizations, in order to eliminate duplication and overlapping effort, and speed up and expand the program. Special standards writing committees should be established only if no other organization is available for developing the needed standard.

3.5 After determining its feasibility and value, develop a USA Standard for classification of industrial and other standards by uniform group and class numbers, which would be compatible and coordinated with the Federal Supply Classification System.

3.6 Establish and maintain a national index of standards and standardization activities, coordinated, insofar as feasible, with recognized classification systems and data retrieval programs. It should contain a listing of all standards by number, title, and subject matter as well as a listing of all technical society, trade association, government, or other standardization committee activities,

including international, by subject and scope. The lists should be kept up to date by timely notification from all standards writing organizations, and should be searched for possible areas of duplication or parallel interest when new notices are received. Advice of apparent duplication should be sent to the organizations concerned.

3.7 On disclosure of overlapping standards projects, urge affected societies, associations, or agencies to initiate voluntary cooperative efforts toward resolving conflicts or duplications. When necessary, unresolved conflicts should be referred to the appropriate Board or Council of the Institute for decision.

3.8 Establish a centralized service for handling or relaying orders for, and distribution of, standards regardless of their source. This should be done in such a way as not to affect adversely the revenues now derived by various standardizing organizations from the sale of their published standards.

3.9 Keep abreast of needs for new or improved standards and take the initiative in stimulating their development through appropriate channels.

B. International

3.10 Organize to serve adequately the international standardization needs of the USA, providing specifically assigned staff and facilities for activities related to ISO, IEC, COPANT, and for liaison with other organizations engaged in international industrial standardization.

3.11 Provide increased communication to American industry on operations of ISO, IEC, and COPANT, their importance to international trade, and the dangers of failing to raise the present low levels of USA participation.

3.12 Improve procedures and services related to international standardization projects to assure more direct and timely technical exchange between responsible sponsor organizations and the international project secretariats. This will require Institute review of ISO, IEC, and COPANT procedures with suitable recommendations for improvement of such procedures to be referred to those bodies.

3.13 Arrange for better communication with and among the leaders and members of the various USA national committees for ISO and IEC, particularly to provide increased knowledge of the rules of operation and American policies, and to exchange information on means of solution of common problems.

3.14 Clarify and work for uniform observance of procedures for obtaining a USA consensus on international recommendations.

3.15 Expedite processing of documents, particularly in those cases where the USA holds the secretariat.

3.16 Provide increased competence for foreign language translation, where needed, to expedite the work in international standardization.

3.17 Urge ISO council action to provide ISO staff translation of documents originating with the General Secretariat, and review of Directives to expedite procedures.

3.18 Urge technical committees to so schedule international plenary and working group meetings that the travel costs and time will be minimized, and active participation will be increased.

3.19 Work toward the complete unification of ISO and IEC to obtain the benefits of a single administrative organization and eliminate much of the present confusion and growing redundancy of effort in international standardization.

3.20 Instruct leaders of USA delegations to international standardization meetings, and Institute staff members attending, to contact scientific and commercial attaches at U.S. Consulates to inform them of the purpose of each meeting and its importance to foreign trade.

3.21 Recognizing the special circumstances currently pertaining to the standardization movement in Latin America, support effective USA participation in COPANT but urge that COPANT should establish, as soon and as completely as possible, liaison with ISO and IEC. The Pan American Standards Commission should be urged to establish "Category A" relationship on all ISO technical committees in which COPANT has an interest and should make fullest use of ISO recommendations in writing Pan American Standards.

C. Member-Bodies

3.22 Seek the active support of potential Member-Bodies, particularly the present Member-Bodies of ASA, for the new standards program. They should work for a smooth transition from existing procedures, especially with respect to those recommendations affecting the Institute.

D. General

3.23 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

4. To Technical Societies

It Is Recommended that American technical, professional, and similar societies:

A. National

4.1 Conduct continuing campaigns within their memberships to encourage members who are qualified in the standards subjects of the society to contribute to the best of their ability.

4.2 Make management of industry, government, educational institutions and commerce aware of the importance of effective, knowledgeable participation by qualified professional people in development of the standards of the USA. Management should be urged to provide continuity of such participation in those standards projects which affect their organization's field of interest.

B. International

4.3 Organizations which have recognized the problem of financial support for USA participation in international standards activities, and have initiated programs directed at the solution, should accelerate their efforts to this end. Those societies and associations which have not taken any action to date should initiate efforts in this direction in cooperation with the Institute.

C. General

4.4 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

5. To Industry Groups and Trade Associations

It Is Recommended that industry groups and trade associations:

A. National

5.1 Continue active participation in standardization activities.

5.2 Continue cooperation with others, through organizations providing balance of producer-consumer-public interests, in the development of standards of broad interest.

5.3 Promote the establishment of properly planned and independently administered certification programs in order to promote confidence in the acceptance, by government agencies and others, of products produced in accordance with industrial standards.

B. International

5.4 Through the Institute, seek cooperation of organizations that can be helpful in programs for increasing the understanding by senior executives of the importance of USA participation in international standardization.

5.5 Urge related industries to implement recommendations on international matters (2.3 and 2.10 through 2.14) to insure both technical and financial support of the Institute.

C. General

5.6 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

6. To the National Community

It Is Recommended that civic and service organizations, consumer groups, and all segments of the national community, including interested individuals:

6.1 Join and support efforts to promote proper standards, regardless of the source through which developed.

6.2 Urge industry and Federal, state and local governments to continue and increase their reliance on the voluntary standards program for the purpose of developing standards.

6.3 Participate in the writing of appropriate standards. They can participate through the organizations that develop standards, and encourage and require consumer participation. Consumers should:

6.3.1 understand the standards program and its importance,

6.3.2 provide competent, qualified personnel for service on committees and as delegates to meetings,

6.3.3 provide financial support as members of national standardizing bodies,

6.3.4 establish lines of communication within consumer groups to get their support for participation in standards work.

6.4 Combine with industry, government (both Executive and Legislative), technical societies, etc, in coordinated efforts directed toward clarification of the legal status of standardization in this country, preferably by recognition of the consensus procedures by which "USA Standards" will be processed as protecting those engaged in development of standards by such procedures from being accused of acting in restraint of trade.

6.5 Recognize that, except where directed by law, the voluntary decision for use of a standard is, and should remain, a responsibility of the organization using the standard.

6.6 Examine the recommendations to other segments of the national community and offer active support and cooperation in their implementation, along with the foregoing.

APPENDIX II

EXCERPTS FROM "U.S. NONTARIFF BARRIERS." IN U.S. COMMISSION ON INTERNATIONAL TRADE AND INVESTMENT POLICY. UNITED STATES INTERNATIONAL ECONOMIC POLICY IN AN INTERDEPENDENT WORLD. PAPERS SUBMITTED TO THE COMMISSION AND PUBLISHED IN CONJUNCTION WITH ITS REPORT TO THE PRESIDENT. WASHINGTON, D.C.: U.S. GOVERNMENT PRINTING OFFICE, 1971, PP. 716–718.

STANDARDS

Statutory Basis.—A number of the many standards that have an impact on international trade are promulgated by agencies of the Federal Government under provisions of law. For example, the Department of Transportation issues standards for the construction of motor vehicles on the basis of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1381–1425) and the Food and Drug Administration issues standards on the basis of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 301–392). In such cases the legislation normally provides that foreign products that fail to conform with the applicable standards shall not be permitted entry into the United States. Domestically produced items that fail to conform to these same standards are not permitted to be sold in the United States.

Other standards are generally developed by non-governmental professional associations, such as the American Society of Mechanical Engineers, but often derive statutory force from incorporation into local governmental ordinances; e.g., building codes. In this instance there may technically be no barrier to the importation of a foreign product, but a purchaser would be unable to use it in particular local jurisdictions unless it complies with local regulations.

Implementation.—Determination whether an imported product meets applicable standards may be made in several ways. Samples of each shipment may be inspected at the port of entry, or, in some cases, during manufacture abroad. The inspecting agency in the United States may rely on a certification by the manufacturer or by a governmental or other inspection service abroad. In such cases there normally are additional checks to verify the assurance received from foreign sources and sanctions in the case of any discrepancies discovered.

Trade Impact.—Standards of the type under consideration are almost all designed to protect the health or safety of the users of the products concerned. The effect that such standards have on trade depends upon a number of factors: (1) conformity with similar standards in other jurisdictions; (2) stringency; (3) implementation. Standards can facilitate trade if they are generally accepted internationally but they can hinder trade if they vary significantly between the producing and importing countries. One way in which standards vary is their strictness. For example, U.S. pesticide residue tolerances are generally stricter than those in other countries, but for some products our standards are not as strict as those in certain other counties. The inspection and testing requirements are probably the most significant aspects of any standard as far as the effects on trade are concerned. If the procedures for obtaining approval for a product are cumbersome, time-consuming and expensive this can be a serious deterrent to imports. There are even some cases when the procedures effectively prevent importation. For example, the Coast Guard requires that lifesaving equipment be inspected during the process of manufacture by a Coast Guard inspector but refuses to send its inspectors overseas.

It is difficult to quantify the trade impact of standards because of the number and variety of these measures, some of which are beneficial or at least neutral in their effects on trade while others range from a bother to a nearly complete barrier to imports.

Prospects for Change.—The trade-hindering effects of certain standards could best be alleviated by international harmonization of standards and adoption of certification procedures whereby products tested and approved in one country could be accepted without further testing in another country. Several such schemes are under development among European countries today. The United States, however, is handicapped in its attempts to participate in such schemes because of the constitutional separation of powers between the federal and local governments and the lack of an adequate role for the Federal Government in voluntary product standardization. These handicaps can be overcome by legislative and administrative changes.

APPENDIX III

RECOMMENDATIONS EXCERPTED FROM U.S. CONGRESS. HOUSE. SELECT COMMITTEE ON SMALL BUSINESS. THE EFFECT UPON SMALL BUSINESS OF VOLUNTARY INDUSTRIAL STANDARDS. 90TH CONG., 2D SESS., 1968, PP. 79–81.

RECOMMENDATIONS

1. It is recommended that legislation be introduced for consideration by the appropriate legislative committee, providing:

That before any voluntary industrial standard, which will be used in interstate commerce, can be promulgated, it must be submitted to the Office of Standards Policy of the Department of Commerce together with an adequate description of the procedures followed by the body proposing the standard. The Office of Standards Policy shall determine whether a consensus exists, and whether the procedures followed are equivalent to those then currently utilized by the Department of Commerce in conjunction with its commodity standards program. If substantial deficiencies are found in the procedures, the standard shall then be returned to the sponsoring body to correct the procedural deficiencies. If the standard is found to be exclusionary in nature as regards competing materials or manufacturers, or users, or in other respects, then the Office of Standards Policy shall require evidence that both voice and vote have been extended to all parties or representatives of interests so excluded.[1]

The Office of Standards Policy shall also determine whether the proposed standard is against the public interest. If the standard is found to be against the public interest, it shall be returned to the body proposing to promulgate the standard with a statement of changes which must be made before it may be promulgated.

The bill should also provide for adequate consumer representation by competent technicians in the drafting and promulgation of the standard, and an appeal by any aggrieved party.

The bill should further provide that the National Bureau of Standards should consult with the technical staff of the body proposing to promulgate the standard to determine whether the standard is technically valid. Any deficiencies found would be required to be corrected prior to promulgation.

The proposed standard should also be required to be submitted for approval to the Federal Trade Commission as to whether the standard is deceptive to the consumer and whether it constitutes an unreasonable restraint of trade.

2. The Office of Standards Policy of the Department of Commerce should, at the earliest practicable time, review its current procedures for standards promulgation and make such amendments as may be required to insure that all affected parties are afforded equitable participation. Provision shall be made for notice, review as to procedures, appeal, and other similar factors essential to due process. They shall be drafted in a manner appropriate for use as guidelines by other standardsmaking bodies. Subsequent to this review, the rules of procedure shall be submitted to this committee for its review. Such submission shall be made not later than June 30, 1969.

3. It is recommended that all Federal agencies promulgating standards, including those agencies which promulgate specifications, such as the General Services Administration, or as in the case of the Federal Housing Administration, issue requirements that only material found to be "acceptable" may be used in construction or purchases financed by a federally guaranteed loan, shall develop due procedures affording equitable participation to all parties directly

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[1] The Office of Standards Policy was formerly the Office of Standard Review. The text of the Department of Commerce order changing the name and the mission of the Office of Standard Review appears at p. 102 of this report.

The new procedures for the development of voluntary product standards, proposed on Dec. 17, 1968, appears commencing on p. 103.

affected. Specifically, it is recommended that FHA issue regulations providing opportunity to be heard, as a matter of right, for both opponents and proponents of any material seeking approval. Parallel regulations should be adopted by all Federal agencies engaged in either standards promulgation or other activity, the substantial effect of which is the imposition of a standard.

4. It is recommended that there be a higher degree of cooperation between Federal agencies engaged in the standards writing and promulgation processes. It is recommended that the Office of Standards Policy of the Department of Commerce be charged with the mission of overseeing this coordination. If a dispute arises between two agencies, each of which seeks to promulgate, directly or in effect, different standards on the same subject, the Office of Standards Policy should have the power of decision as to which agency's views should prevail. In no event, unless there are overriding circumstances, should Federal agencies be allowed to add to the proliferation of standards.

Greater cooperation and coordination should also exist between Federal agencies and private standards bodies. This is particularly essential in seeking to avoid undue proliferation of standards for the same commodity. It is clear that it is counter productive for different standards for the same commodity to be promulgated. While it is less obvious, it would appear to be no less true that the promulgation of identical standards by two or more standards writing entities is an unproductive utilization of both funds and effort.

5. It is recommended that the Department of Housing and Urban Development require that each regional code writing body, or other entity promulgating or otherwise distributing a proposed national or regional building code, or code for plumbing, electricity, or other component parts of buildings, submit to the Department a step-by-step description of the procedures followed in the development and promulgation of the code. This should include a copy of the written regulations, bylaws, or other rules of the body specifying the procedures to be followed in developing the code; a list of all notices sent concerning meetings, including subcommittee meetings held to consider the code; and a list of those in attendance at each meeting.

The Department of Housing and Urban Development should then make a determination as to whether each code submitted followed adequate procedures designed to insure equitable participation by all substantially affected parties. If procedural deficiencies are discovered, the code should be returned to the body promulgating or sponsoring it, together with a notice that the Department will not recommend it to municipalities and other bodies, or accept it as a satisfactory code until such procedural deficiencies have been fully corrected. It is further recommended that the Department send to the committee within 1 year a report setting forth the procedures and actions taken in compliance with this recommendation.

APPENDIX IV

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