Standards development – a flashpoint of technical expertise and conflicting interests

Looking for how best to describe the world of standardization, the image that springs to mind is a gentlemen’s club where specialists coolly debate the state of the art and pass technical documents on the nod. Outwardly democratic – all interested parties are welcome – it is in reality mainly populated by the representatives of big industrial groups and public bodies. Trade unionists, environmentalists, consumer groups and small businesses find it very hard to gain entry.

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Technical standards permeate our daily lives. Printing and copying paper comes in standard sizes in many countries, identified by a letter and number. We talk of A1, A2, A3, etc., sheets without specifying the dimensions. They are laid down in a technical standard with an instructive history. It was a German scholar and writer of the Enlightenment, Georg Lichtenberg, who pointed to the immense value of having paper sizes defined by a mathematical rule. He suggested maintaining a consistent width-to-length ratio of a sheet such that a large size sheet when folded would each time be the size below. There were two benefits to this. Less waste in paper production – cutting a sheet in half would yield the size below – while standardized formats would make filing and storage easier.

The French Revolution turned these scientific musings into a law of the Republic – 13 Brumaire of the Year VII. The aims were to ease the task of compiling a national register of landed properties and to raise taxes through stamp duty on the registration of certain instruments. From the legal world, these sizes migrated to German industry. In 1922, they were enshrined in a national technical standard – DIN 476 – which was very soon taken up by other countries – Belgium in 1924, the Soviet Union in 1934, and France in 1967. In 1975, the ISO turned it into international standard ISO 216.

Or again: all photographers learn about using different silver nitrate films for different sensitivities, exposure times and light conditions. Traditional films were given a rising speed rating: ISO 25, 50, 100, 200, 400, etc. The higher the number, the more sensitive the film and the more suitable it is for low light or shorter exposure times. The development of digital cameras has obviously brought a seismic shift in the technical conditions. Instead of light-sensitive film, they use a sensor that detects a wider range of discrete tonal differences. ISO standard 12232 has laid down rules that define the technical properties of sensors by analogy with the speed rating of films. This allows photographers to decide between the different devices offered based on a scale developed in a completely different context.

**What is a technical standard?**

There is no single agreed definition of a technical standard, although some common elements recur in the different definitions: it is a written, voluntary document laid down by a specialized body on the basis of a consensus between experts appointed by the stakeholders. It may set out specifications for a specific physical object or one of its components or characteristics common to a set of objects. But it can also relate to non-physical things. It is meant to ensure the best achievable quality in given circumstances. Some standards define the terminology used in a particular field. Others describe processes and organizational arrangements. The ISO 9000 series of standards, for instance, purportedly guarantees the quality of production of particular goods or services. Some ISO standards deal with good laboratory practice or corporate social responsibility (see p. 29).

Some spheres seem to fall inherently outside the purview of standardization. A technical standard that defines the essence of a work of art, political case-building techniques, strike arrangements or how best to run a love affair is not readily imaginable. There is nevertheless a marked trend for standards bodies to engage in empire building and seek to make inroads in new markets. The ISO has published some 20,000 international standards. In 2012, CEN reported having adopted nearly 15,000 still-current instruments.

This tidal wave of activity can hold surprises. Technical standardization once seemed completely irrelevant to faith communities. Yet in 2009 the Austrian Standards Institute came up with a standard on halal food, i.e., foods that Muslims are permitted to eat. The debate spread to the European Committee for Standardization, which in 2010 set up a working group to analyse the feasibility of such a standard. A report was adopted in 2012. One of the key arguments for standardization was the existence of a market valued at €70 billion annually in the European Union. The debate went viral across the web. The discussions are likely to be reignited by the recent scandals over traceability in the food industry chain. Whatever else, they show that technical standardization and religion are not natural bedfellows. And yet since 2010, there has been a Standards and Metrology Institute for the Islamic Countries. It was established in Istanbul as an initiative by the Organisation of Islamic Cooperation. Its seven technical committees include one on halal food issues and one on halal cosmetic issues. The idea was first floated in 1984 and the delays show what hard going the compromises have been.

Defining what is a technical standards body is also problematic because they are such a mixed bag. Technical standardization activity taken in a broad sense has a long historical pedigree if it is taken as adopting technical rules designed to unify production activities. It tended to reflect a policy of centralization in order to steer the economy towards the central state’s objectives. In China, these age-old forms of standardization date back to the 3rd century BC when Emperor Qin Shihuang standardized weights and measures. In Europe, a rise in pre-technical standardization can be seen with the advent of fire-arms for the soldiery to ensure compatibility between the ordnance produced by different manufacturers.

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1. DIN is the German Institute for Standardization established in December 1917 under the name of NADI (Association of German Industry Standards).
2. ISO is the International Organization for Standardization established in 1947.
3. In addition to standards proper, CEN adopts technical reports, specifications, guides and workshop agreements which are variants of technical standardization.
Modern standards institutions emerged in the second industrial revolution on the cusp of the 19th and 20th centuries. The first international standards organization was founded in 1865 to establish standards for telegraphy, which had hitherto rested on different encoding techniques in each country. It gradually expanded its scope to telephony, then wireless telegraphy to become a specialized agency of the United Nations after World War Two. National non-industry bodies were established from the start of the 20th century, with the United Kingdom taking the lead in 1901. The First World War led to the creation of national bodies in most industrialized countries.

The common trend in Europe has been to create a single general purpose standards body like Germany’s DIN or AFNOR in France backed up by more specialized bodies in specific fields such as electrical equipment and information technologies. Most of these organizations have a legal status that gives them a pivotal role. Governments are represented in them, but they are based on broad participation by private sector stakeholders. Government has a more prominent role in the French than the German model, but the most salient feature of all general purpose standardization organizations in European countries is their hybrid nature. They did not open up to non-industrial or non-governmental stakeholders until later.

Standards in the Soviet bloc countries were developed by a state agency in close conjunction with the economic planning bodies. The output reflected the inability of the bureaucratic system to address quality issues in an economy that largely mimicked capitalist technology and work organization. Unlike the European organizations, the American National Standards Institute (ANSI) in the USA does not itself adopt standards, but provides coordination, information, and representation in the international bodies of a large number of different standards organizations.

Standards also fulfill many functions. Looking only at standards for equipment, two main functions are key. One is to ensure that equipment or components produced by different companies are compatible and interoperable. The other is to reflect a consensus on the state of the art to secure a fairly wide variety of safety, performance, usability, robustness and other requirements. All of this can bring conflicting agendas into play, notwithstanding the tendency to lump them all together under the near-indeniable term “quality”. Maximizing safety may result in a loss of productivity. Extending a market to non-professional users may detract from other factors, resulting in a less complex or cheaper but less effective or efficient product. Standards also help make significant communication savings. This is an obvious function for terminology standards, but is also true for some product standards. An electrician faced with fitting a piece of equipment into a complex system will, thanks to standardization, normally know from the start what its functions are.

Even if not overtly stated, the choices made are imbued by economic issues. As Olivier Borraz remarks, “even though a standard is the product of compromises on political, economic and social criteria, only the technical aspects are visible. Having the discussion focus on these aspects allows the other criteria to be excluded from the debates or, once a compromise has been reached on them, requires them to be turned into a technical document”.

Many standards encroach on fields beyond that of products. A comprehensive list of standardization’s interests is outside the scope of this article. Suffice it to mention a few major areas: metrology, safety performance testing techniques, “good laboratory practices”, purported quality assurance systems for a given activity (production of goods or services), etc.

Looking at inter-firm relations in subcontracting chains, standards to a large extent give effect to techniques that allow dominant work specifier groups to exercise substantial control over their subcontractors’ activities without necessarily incurring legal liability for them.

**State, law, standard**

Strictly speaking, technical standards are private property. Unlike legislation, they are not made freely available to the general public or even to specific users. They are saleable goods, and even big money-spinners for standardization bodies. Standards are also, in theory, voluntary, but in fact, only up to a point. Much legislation mandates compliance with certain standards. It refers expressly to them and leaves no choice but to apply them. Then, too, public bodies direct whole production segments through public procurement contracts which are tightly locked down by reference to standards. Finally, in EU law, the “new approach” (see p. 17) says that compliance with harmonized standards creates a presumption of conformity to the essential requirements imposed by Directives. A wide range of provision, therefore, militates for compliance with standards well beyond whatever mere interest their technical rationale (i.e., specifying the “best procedure” to follow) or market pressure might dictate.

Globally, the World Trade Organization requires its member states to use international standards as a basis for technical regulations, provided they deem “the standards appropriate for the fulfilment of legitimate objectives and for attaining the desired level of protection at domestic level”. France’s asbestos ban imposed in 1997 was challenged by Canada on grounds that it went beyond the health goals that could be achieved simply by applying ISO standard 7337 on on-site work with asbestos reinforced cement products.
Access to standardization therefore raises two issues of democracy. One is ensuring that standards development is transparent and that the inevitable conflicts of interest can be aired openly. Issues also arise about using standards once they have been drawn up. As standards are saleable goods, the only way to access them is to buy them. Another vexed issue is conformity checking. The general rule for placing goods on the market where work equipment is concerned is self-certification. By affixing the CE marking on goods, manufacturers are deemed to guarantee that they have complied with applicable laws, which may include referring to the standards derived under them. EU law requires some particularly dangerous equipment to be certified by a third party carrying out a number of checks. One problem frequently encountered here is that certifying organizations are in market competition, which can result in a less-than rigorous approach: an organization may be less scrupulous about compliance with a particular aspect in order not to lose a client.

Finally, no standard is destined to stay unchanged for ever. Technologies evolve. Data on the safety, health or environmental impacts of production build up over time. User expectations may also change. Feedback likewise, a standard's technical rationality may remain unimpeachable even though it has ceased to properly address other needs. A constant interplay takes place between technology and labour relations that standards bodies cannot tap into but requires a system of checks and balances.

At present, there is a clear trend for governments to step back from regulation. On the face of it, standardization may be seen as akin to effectively privatizing regulation by allowing private players to replace public bodies. There are good reasons why it should not: regulation in this way is less transparent and accessible than formal legislation and the zeal demonstrated by standardization bodies in all areas is the focus of discussion (see interview p. 33). A more forensic analysis shows this not to be a uniform trend. Standardization can also become a sort of backdoor way for public authorities to create a real or apparent consensus on issues where they feel unable to act by regulatory instruments. Legislation always involves choices between conflicting interests and blueprints of society. Standardization offers a method of regulation whereby these choices are no longer overt. It talks only in technical terms, even when indirectly making value judgements and ruling on conflicts.

Cross-currents

Every stakeholder brings different interests to standardization. While these differences can be fairly easily puzzled out, the bigger picture is that they are all jockeying against one another for position. Big industrial groups see the choices lying between confidentiality of trade secrets, money-spinning patents and other intellectual property rights, and the competitive benefits to be had from entrenching a production technique as standard. Which one they go with will be dictated by circumstance. For public authorities, even the choices may be at odds: standardization may be made an industrial policy instrument; or it may become an unstated protectionist

The main standardization bodies

The national standards bodies are DIN in Germany, BSI in the UK, AFNOR in France, SIS in Sweden, NBN in Belgium, AENOR in Spain, UNI in Italy, etc. Their involvement in CEN’s work makes these organizations key players in developing European standards.

CEN (1961): the European Committee for Standardization links together standards organizations from across Europe – currently from 33 countries. The standards produced by CEN are identifiable by their EN prefix. In addition to the national standards bodies, CEN accepts associate (non-voting) members representing different stakeholders (unions, employers’ organizations, consumer and environmental protection organizations). Stakeholders who join CEN must pay an annual fee. Participation in the CEN technical committees that draw up draft standards is a costly business (travel, time consuming, access to documents, etc.).

CENELEC (1973): European Committee for Electrotechnical Standardization. It prepares standards related to electricity, electronics and allied technologies.

ETSI (1988): European Telecommunications Standards Institute: its output includes the GSM standards that are now the benchmark for 90% of mobile phones worldwide.

There are also international standards bodies working in the same areas as these three European organizations. The international equivalent of CEN is the International Organization for Standardization, more commonly known by its acronym ISO. A total of 19,573 international standards and prescriptive documents had been published at 31 December 2012.

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barrier; or it may be put to work for consumer protection, workers’ health or environmental policies.

In political terms, standardization may be seen as a threat to public bodies’ technical jurisdiction, or conversely as a resource to tap into private companies’ knowledge bases. Trade unions have a clear interest in breaking into the hermetic sphere of technology due to its many implications for the labour force (health and safety, working conditions, job skills, employment, etc.). There is also a danger that standardization may ultimately pare down other areas of regulation where unions are more able to defend the interests of workers through collective action or where they feel they have political “ins”. While a strike to get amendments to a draft technical standard seems remote, it is quite clear that a standard could improve or worsen working conditions.

Consumer, environmental and small and medium-sized business lobbies are in a similar quandary: how to engage with standardization without jeopardising other forms of regulation or endorsing interventions they see as unreasonable? On top of that, these broad brush choices are further complicated by the sheer variety of standardization bodies (industry, national, European, world), where stakeholders do not enjoy the same opportunities for involvement and influence at the different levels. So, evidence of the tobacco industry’s clinching influence in the development of ISO standards on its production is visible in everything from the methods used to measure nicotine content to air quality standards. There is no easy answer to these dilemmas. From the author’s own experience of union intervention in highly specific areas (mainly work equipment), three conclusions can be drawn:

1. Union participation is wholly effective only if linked to methods for feeding back workers’ own experience of their working conditions. It is a knowledge source for which there is no substitute. This is a precondition, but does not in and of itself guarantee success because the technical language of standardization has a subtext that needs constantly translating. Technical standards are so drafted as never to spell out the interests being defended or the compromises being made. The impression given is that the state of the art inevitably led to the solution adopted when in fact choices were made;

2. Taking part in standardization bodies means forming alliances with diverse objectives. All non-traditional players in standardization, including small and medium firms, obviously want more transparency. Health and safety at work is an aim generally consistent with what consumer and environmental protection groups are after, although choices as to priority standards may clearly differ. The point and value of experiential feedback and better market supervision are also seen by the public authorities, and especially labour inspectorates. Setting European standards that ensure high levels of safety is a goal that can be shared by manufacturers concerned about competition from cheaper but less safe equipment;

3. Where unions need to step in is in multidisciplinary expertise, because standards throw up many issues. Many different disciplines play into a social/labour assessment of technology choices. This is certainly a big ask to meet due to the limited resources available, but it is also a precondition for having effective, long-term influence.

Further reading


Search tool on all European harmonized standards: http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/

The site http://www.kan.de/ has extensive documentation in German, French and English.
### Half a century of European standardization

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<tr>
<th>Year</th>
<th>Event</th>
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<tr>
<td><strong>1958</strong></td>
<td>The European Economic Community is founded. One main objective is freedom of movement of goods between Member States. Import and export taxes, and restrictions on the quantity of imported goods, are scrapped. The Treaty of Rome also prohibits “measures having equivalent effect”. This general wording covers all measures that might hinder trade, particularly technical regulations to protect human or animal health, protect consumers, preserve the cultural heritage, etc. But the Treaty allows Member States to regulate their domestic market by reference to these concerns, so that the Community market remains fragmented by national regulations.</td>
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<td><strong>1958</strong></td>
<td>The European standardization process is set up for the purpose. It organizes cooperation between trade union experts to speak up for workers' interests. The European Trade Union Confederation (ETUC) or its affiliated body, the Trade Union Institute in Brussels, speaks on behalf of workers. ETUI includes trade unions, defending workers' rights. The European standards bodies must ensure that standards are adopted. It recognizes the role of employers, including business associations, in the standardization process. It also involves representatives of consumers, environmental organizations, etc. It is set up with the European Commission.</td>
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<td><strong>1958</strong></td>
<td>First European directive referring to harmonized standards for the free movement of goods. It relates to low voltage equipment.</td>
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<td><strong>1985</strong></td>
<td>The European Union adopts the “new approach” of harmonizing basic rules through directives. These are limited to laying down essential principles, leaving the technical specifications to be spelled out afterwards by European harmonized standards. These standards are adopted by private standards bodies working under a mandate from the European Commission (see box p. 15).</td>
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<td><strong>1989</strong></td>
<td>Machinery Directive* adopted based on the “new approach”. There is a close link between this Directive, which is intended to regulate the market, and the Framework Directive which sets going a process of harmonizing health and safety at work rules. The European Trade Union Confederation steps into the standardization process in order to speak up for workers' interests. The Trade Union Technical Bureau (TUTB) is set up for the purpose. It organizes cooperation between trade union experts to improve the safety and ergonomic design of work equipment. It is an associate member of CEN and participates in various technical committees or working groups. It is subsumed into the European Trade Union Institute in 2005.</td>
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<td><strong>1990</strong></td>
<td>The European Commission publishes a Green Paper on standardization which is highly critical of and proposes reforms to CEN and CENELEC. Criticisms include the time taken to adopt standards, and the lack of direct access for consumer organizations and trade unions.</td>
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<td><strong>From 1998</strong></td>
<td>An increasing number of EU laws refer to European technical standards in a wide range of fields such as information and communication technologies, chemicals, the environment, medical devices, postal services and toy safety. Hundreds of mandated standards are adopted each year.</td>
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<td><strong>2003</strong></td>
<td>The interinstitutional agreement on better law-making propounds alternative regulatory instruments (other than Community laws) such as co-regulation and self-regulation. It does not address the thorny issue of the representation of conflicting interests in the forms of self-regulation. Standardization becomes a form of self-regulation because it is driven mainly by industry.</td>
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<td><strong>2004</strong></td>
<td>Communication from the European Commission on the integration of environmental aspects into European standardization.</td>
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<td><strong>2006</strong></td>
<td>Revision of the Machinery Directive. The changes include an explicit reference to ergonomics.</td>
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<td><strong>25 October 2012</strong></td>
<td>A comprehensive Regulation on European standardization is adopted. It recognizes the role to be played by “societal stakeholders” which includes trade unions, defending workers’ rights. The European standards bodies must ensure participation by these “stakeholders” who at European level can benefit from EU funding. A new role is assigned to all these societal partners: keeping the standardization process under active review and intervening when they identify problems whatever the standards concerned. The practicalities of Community support for these new activities should be spelled out sometime during 2013.</td>
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