



Standards Markets? The Free Market Response To Regulation

Standards Markets? The Free Market Response To Regulation

transcript of a talk by
Professor Michael Mainelli, Executive Chairman, Z/Yen Group
at
Gresham College, Barnard's Inn Hall, Holborn, London EC1N 2HH
on
Monday, 16 October, 2006 at 18:00

recording available at
<http://www.gresham.ac.uk/event.asp?PageId=4&EventId=513>

Good evening Ladies and Gentlemen. I'm delighted to see so many of you choose to take a chance on this evening's lecture – I do hope it's up to standard. If you were expecting some flag-waving and heraldry, may I suggest that this is the wrong lecture and you may wish to move down the road to the College of Arms. If you were expecting a thrilling discussion about electricity and quality systems, then you're in the right hall.

I'm also pleased to introduce the Chief Executive of the United Kingdom Accreditation Service, Paul Stennett. Paul will make some remarks at the close of this talk about the importance of standards to the UK.



Outline

- Standard gauge?
- Standards, standards everywhere...
- Appellation d'Origine Contrôlée
- Reinheitsgebot
- Trade
 - relevance
 - competence
 - independence
 - competition
 - innovation
- Confidence & trust



"Get a detailed grip on the big picture."

Chao K'i Ning

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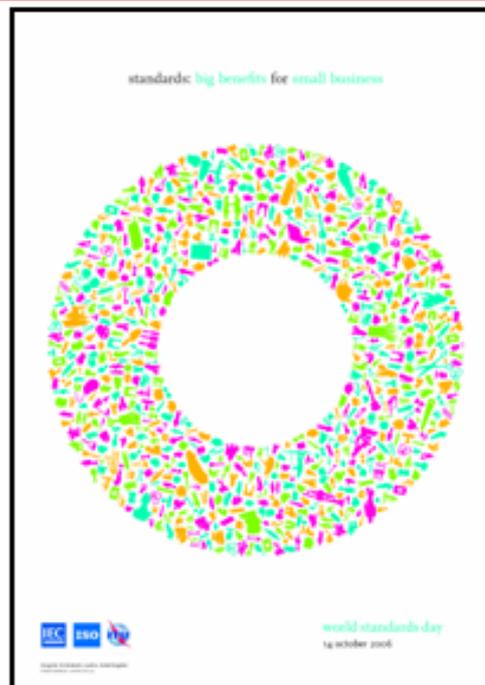


Standards Markets? The Free Market Response To Regulation

Because of my accent, I'm going to start with pronunciation standards. Because the name of the International Organization for Standardization (ISO) would have different abbreviations in different languages (IOS in English, OIN in French), it was decided to use a language-independent word derived from the Greek, *isos*, meaning "equal". Therefore, the short form of the Organization's name is always ISO – "I-S-O" - and ISO follows the "z" spelling as in "organization" and "standardization". Is that clear? ISO's recommendation on their website is to pronounce their name whichever way comes most naturally. "So, you can pronounce it "EZO", "EYE-ZOH" or "EYE-ESS-OH", we don't have any problem with that."



37th World Standards Day



Now today's lecture is timely. For 37 years The International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU) designate a standard day, this year 14 October 2006, as World Standards Day to recognize the thousands of experts worldwide who collaboratively develop voluntary international standards that facilitate trade, spread knowledge and share technological advances. ISO officially began to function on 23 February 1947, but 14 October was chosen because on that day in 1946 delegates from 25 countries met in London and decided to found ISO. Of course, in the spirit of standards, this year India, Ghana and others celebrated World Standards Day on 13 October. Nigeria celebrated from 12 to 14 October. The United States celebrated on 11 October. Need I say more?

Well, as we say in Commerce – “To Business”.



Standard Gauge?



Standard Gauge?

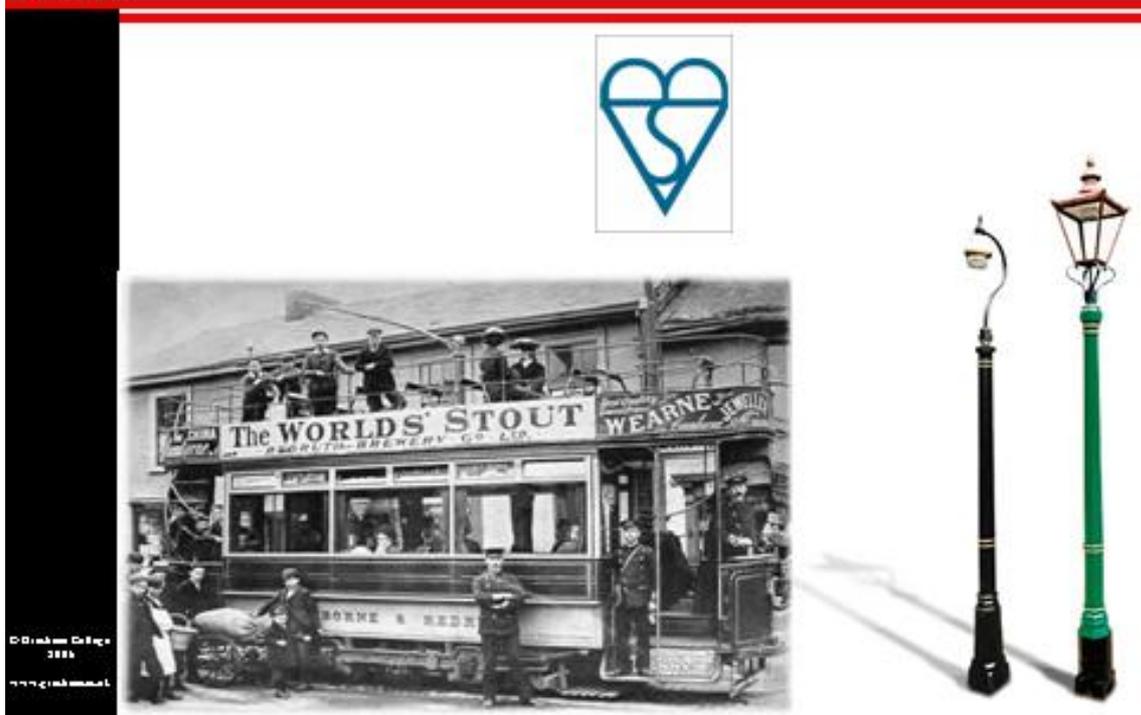
There is a lovely story supposedly connecting the space shuttle with Roman chariots. The two rockets attached to the sides of the main fuel tank of the space shuttle are solid rocket boosters, or SRBs. SRBs are made in Utah by Morton-Thiokol. According to the story, the engineers who designed the SRBs might have preferred to make them a bit wider, but the SRBs had to be shipped by train from the factory to the launch site. The railroad from the factory to Cape Canaveral runs through tunnels. The SRBs had to fit through those tunnels. The tunnels are slightly wider than a US standard railroad gauge of “4 feet 8.5 inches”. Why is the standard distance between railroad rails in the USA “4 feet 8.5 inches”. Because that’s the English gauge. Why? Because that’s the gauge of wagons used in England before the railroads. Why? Because English wagons had to fit the ruts in the roads that were, on average, “4 feet 8.5 inches”. Why? Because the ruts were made by Imperial Roman chariots that needed to accommodate two horses. The story concludes by pointing out that the dimensions of two major components for what is arguably the world’s most advanced transportation system, the space shuttle, were originally determined by the width of a horse’s arse.

Sadly for this tale, there are many things moved by US railways that are much wider than “4 feet 8.5 inches”. In fact, an SRB is 12.17 feet in diameter, so it’s more likely that some ancient, mythical Roman tunnel specification for giant aqueduct parts dictated the standard.

Even more sadly, moving back in time, the urban-legend-debunking websites conclude that this tale has existed since World War II, thus cutting out the space shuttle entirely. Moving forward in time, some people point out that it was hand-pulled carts that made the original ruts, not chariots, and even that Roman chariots tapered back from the horses, so “4 feet 8.5 inches” is narrower than two horses’ backsides. While you have to question the lengths to which some people will go to demolish a good tale, it is clear from this tale about the chariot-space gauge that we have a strong desire to believe tales about the persistence of specifications and bureaucracies.



The Progress of History



‘Straw Man’ Extremes – The Progress of History

Whenever the public perceives risk, standards start to emerge. The risk may be as simple as finding common parts that need to fit together for railways, or as complicated as specifying safety procedures for the latest nanotechnology. Standards have existed since the dawn of commerce. The Bible records measures such as the cubit, mina, bath or cor. Some researchers go so far as to try and recreate standards that may have existed, such as the megalithic yard, a theoretical unit of prehistoric measurement first suggested by the Scottish engineer Alexander Thom in 1955 and popularized in a number of books [see Lomas and Knight, 2001, or Knight and Butler, 2004].

Let’s look back less than a century. By 1914 London had over seventy power stations. That variety of power created a standard problem in risk. To quote Peter Ackroyd:

“The variety of lighting supplies at first had the effect of turning London into an unevenly lit city; each of its twenty-eight boroughs made their own arrangements



Standards Markets? The Free Market Response To Regulation

with the suppliers of electricity, which meant that a car travelling at speed in the 1920s might pass from one street bathed in a very high light intensity to one shrouded in comparative darkness. ... The many accidents in the 1920s, however, created a demand for a level standard of illumination, which in turn led to a standardisation of lamp-posts with columns 25 feet high and 150 feet apart. It is one aspect of London life which even the most knowledgeable citizens scarcely notice, and yet the uniformity of lighting in the major streets is perhaps the most significant aspect of the modern city.” [Ackroyd, page446]

When a risk reaches the point of public perception that “something must be done”, two extreme points of view tend to emerge. Government economists trot out, almost by rote, “Regulate It”, the justification for government intervention being “market failure – externalities, information asymmetries and agent problems”. As said before, these charges can be laid at any market. Almost any market has externalities, there is never perfect information symmetry and markets of any scale typically require agents to function. When things are regulated, then the Law of Unintended Consequences, Goodhart’s Law, Ashby’s Law of Requisite Variety and several other well-honed observations seem to recur.

Market economists trot out, almost by rote, “Leave It Alone”, the justification being that the costs of bureaucracy, the stifling of innovation and the inability to regulate organisations or people who will operate outside the regulated market. When pushed, people in markets fight for self-regulation or publish codes of good practice. What both sides often seem to overlook is that markets can evolve to develop their own, more effective regulation.

Quality and certification were originally thought of as almost solely product standards. The first meetings of the Engineering Standards Committee in 1901, where the number of gauges of tramway rails was reduced from 75 to 5, brought such savings that by 1903 foundations were laid for the world’s first national standards organization. The British Standards Institute (BSI) was a voluntary body, formed and maintained by industry, approved and supported by Government, for the development of technical standards. The need to show buyers that goods were ‘up to standard’ led to the British Standard Mark – now known as the Kitemark and first registered as a trade mark for tramway rails in 1903.

Numerous areas of commercial life seek to ‘regulate’ without legislation and succeed through the use of standards markets, for instance, ISO9000/ISO14000 or credit card IT security or test laboratories or the various television standards, NTSC, PAL, SECAM. Standards markets are also used successfully by the environmental and ethical communities, e.g. the Marine Stewardship Council or Fairtrade or Social Accountability International.



Standards, Standards, Everywhere ... And Not a Stop to Think?

- Financial



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- Scientific



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Standards, Standards, Everywhere ... And Not a Stop to Think?

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- Health & Safety



PART 1815 - OCCUPATIONAL SAFETY AND HEALTH STANDARDS
Subpart A - General
 1815.1 Scope and purpose
 1815.2 Authority
 1815.3 Methods for the issuance, amendment, or repeal of a standard
 1815.4 Amendments to this part
 1815.5 Identification of standards
 1815.6 Organization for reference
 1815.7 Definition and requirements for a nationally recognized testing laboratory
 1815.8 OSHA control numbers under the Paperwork Reduction Act
Subpart B - Adoption and Extension of Established Federal Standards
 1815.11 Scope and purpose
 1815.12 Construction work
 1815.13 Powered amphibious
 1815.14 Lifting and lowering devices
 1815.15 Effective dates
 1815.16 Changes to established Federal standards
 1815.17 Federal processes for an incorporation
Subpart C - (Reserved and Repealed)
 1815.20 (Reserved) or (Repealed)
Subpart D - Walking - Working Surfaces
 1815.21 Outfalls
 1815.22 General requirements
 1815.23 Guarding floor and roof openings and holes
 1815.24 Floor industrial stairs
 1815.25 Ladders and scaffolds
 1815.26 Scaffolding and ladders

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Standards, Standards, Everywhere ... And Not a Stop to Think?

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- Management, Processes & Quality



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- Environmental, Social And Ethical



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A Swift Audit of Audit – Appellation Controllee

Professor Persaud notes that “In the past 35 years, we have basically moved from a nationalised economy to a regulated economy.” But I believe that the estimates of the amount of effort spent on standards and regulation are woefully incomplete. Now tonight’s talk is about standards markets and many of you are probably wondering what they are. Well, everyone thinks that they know standards in their own area, but as you look around you begin to see the scale of standards, specifications and auditing everywhere. The breadth of standards can take your breath away. For example:

- ◆ financial - audit, actuarial, fiduciary, credit ratings, listing requirements;
- ◆ scientific – laboratories, calibration, testing and the entire fascinating area of scientific measurement, metrology;
- ◆ conformance – manufacturing, parts, components;
- ◆ health and safety – fire, food, working practices;
- ◆ communications and information technology – electrical specifications, transmission standards, formats, content, even the global positioning system;
- ◆ management and quality standards – design, production, installation, inspection, testing;
- ◆ environmental, social and ethical standards – fish, forestry, trade, child labour, recycling.



Standards Markets? The Free Market Response To Regulation

So how incomplete might this estimate of effort be? In the UK we have 3,000 to 4,000 new regulations every year from nearly 700 recognised regulators. The Better Regulation Task Force estimated the cost of these regulations as 10% to 12% of GDP, i.e. over £100 billion in the UK. The new Better Regulation Commission is trying to move the UK along two themes. First, to adopt the “Dutch” model of measuring, costing, targeting and reducing the regulatory burden and, second, to operate a “one in, one out” policy for regulations whereby any new regulation must displace at least its equivalent burden in existing regulations – a sort of “Archimedes Principle for Regulation”.

In addition to the regulations, totting up to 10% to 12% of GDP, we have some 20,000 EU regulations for the common market’s 25 countries and nearly 500 million people. Every year in just the UK we now issue over 2,000 standards, up from less than 100 per year before the end of World War I. In 2000 the German Institute for Standardization, DIN, estimated that 84% of exporting companies needed standards for trade.

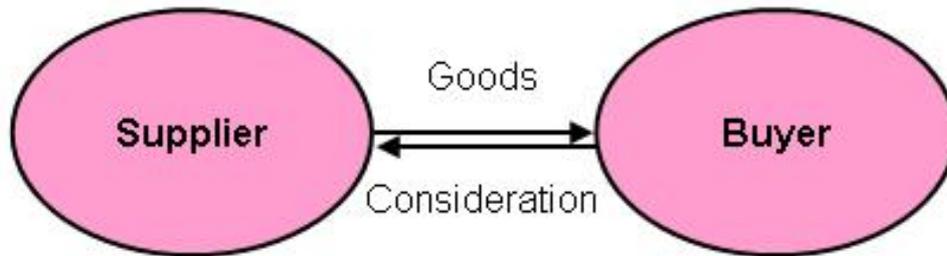
And then we have standards that fall outside direct regulations or the obvious international and national standards structures. Take financial services. The top 50 accounting firms in the UK employ 50,000 people in financial audit alone billing £2.4 billion per annum of their total firms’ turnover of £6.7 billion. We start to classify a significant proportion of that total turnover as standards-related if we throw in tax services and other compliance services that are non-audit, bringing us up to about 0.5% of GDP in financial audit standards alone.

We don’t have the time to look at other standards-based financial services such as credit rating agencies or actuaries. We don’t have the time to look at standards for shipping, aviation, the oil industry, buildings, etc. Basically, there is no sector of the economy, public or private, that is not subject to regulations and standards, and there is a pressing need to compile better figures on the scale of effort. In 1987 Boeing estimated that 39% of all engineering data and 38% of all manufacturing data in aerospace derived from standards set by close to 150 different standards-developing organisations in aerospace.

If I had to estimate the scale of effort devoted to regulation and standards in the economy, I believe that a case could be made for anything from 20% to 40%. If you find 20% to 40% absurd, think about where the time goes in your organisations, your private life, the forms you fill in...



Commerce Needs Standards



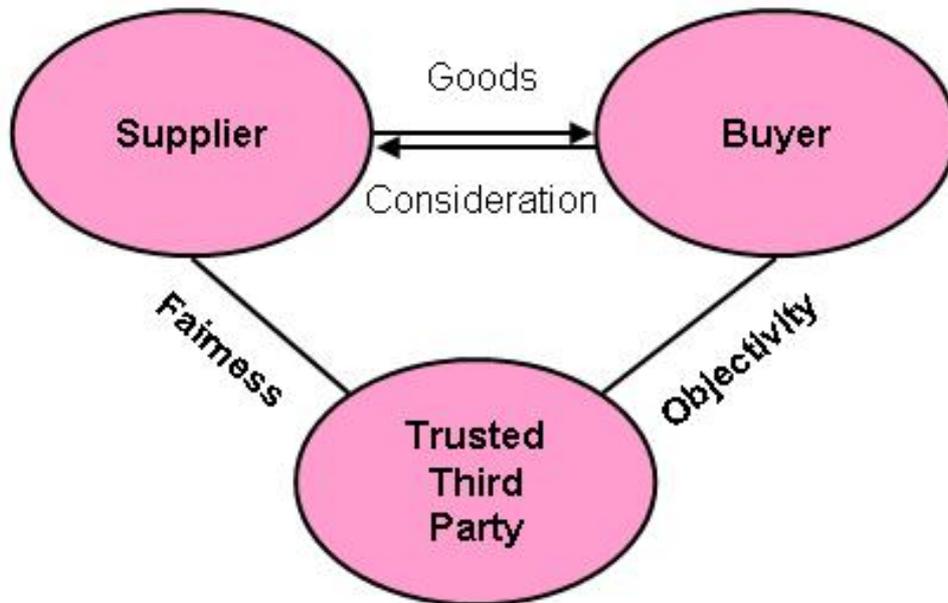
Commerce Needs Standards

A 'standard' is an authoritative principle, rule, model, pattern or procedure used for guidance in assessing something, by comparison with which the quantity, excellence, correctness, or other criterion of the thing is assessed. Some definitions of 'standard' include the idea of a universally agreed set of guidelines for interoperability. The military emphasise usability, such as this NATO definition of standards – “The development and implementation of concepts, doctrines, procedures and designs to achieve and maintain the required levels of compatibility, interchangeability or commonality in the operational, procedural, materiel, technical and administrative fields to attain interoperability.” Related concepts include benchmark, criterion, gauge, measure, comparison, touchstone or yardstick.

However, standards exist in a richer environment. Arguably, the key distinction should be that a regulation is imposed and typically controlled by a quota of time or resource, while a standard may emerge from market choice. Standards are part of markets.



Trusted Third Party



Standards have existed since the dawn of commerce. Whenever we hand goods or services over for consideration, there is risk. The buyer may not get what he or she wants or needs. The seller may not get paid. These problems may not be due to deception or delusion, perhaps just miscommunication. So commercial transactions frequently introduce a trusted third party. With what the third party is trusted varies. In commodities trading, certain standards specify how a third party defines a commodity or the delivery of a commodity. In trade finance, the third party typically releases funds when goods or services of an appropriate quality have been exchanged. The trusted third party must be seen to be objective and fair.



Benefits?

Category	Positive Effects	Negative Effects	Necessity for standard to be public?
Compatibility (or interface)	network externalities	monopoly or security	monopolisation if <i>not</i> public
Minimum quality (or quality discrimination)	correction for Gresham's law; reduced transaction costs	regulatory capture; "raising rival's costs"	essentially a public or co-operative activity
Variety reduction	economies of scale; building focus and critical mass	reduced choice	not necessary
Information standards (or measurement compatibility)	facilitates trade; reduced transaction costs	regulatory capture	essentially a public or co-operative activity

(adapted from Swann 2000, page 8)

An interesting survey by Swann [the next four bullets summarise freely, Swann 2000, pages 4-8] categorises standards into four types:

- ◆ **compatibility (or interfaces)** that reduce switching costs and increase network effects, the benefits that follow from being part of a network of users, i.e. if we all use the same telephone system or petrol pumping systems we have a better network than if we are divided. Of course we have the danger of getting 'locked-in' to inappropriate, inferior or antiquated standards, sometimes described as "an *un*common tragedy". When it is a proprietary standard, the owner may develop undesirable monopoly power, e.g. Microsoft Windows;
- ◆ **minimum quality (or quality discrimination)** that help to avoid the traditional interpretation of Gresham's Law that "bad drives out good". By helping to lower information asymmetries between buyers and sellers, e.g. distinguishing high quality from low quality before purchase, some power is transferred to the buyer, and consequently the likely demand will rise as the search costs (e.g. what is safe?) and the transaction costs (e.g. time spent validating safety equipment) fall;
- ◆ **variety reduction** that minimise the wasteful proliferation of minimally differentiated models. Reducing variety can also reduce the risks faced by suppliers - even if this also means they face more competition;
- ◆ **information standards (or measurement compatibility)** that help transmit information about what is to be sold (e.g. petrol grades). The user benefits from knowing that things are interchangeable. The supplier meets a norm that reduces the risks of compensation or litigation. Certified measurement helps reduce transaction costs.



Standards Markets? The Free Market Response To Regulation

The German government believes that “standardization is a task undertaken by its stakeholders that benefits everyone in one way or another” and represents an annual benefit to the German economy of around 1% of the German GNP. Likewise, the DTI estimates that from 1948 to 2000, during a period of average per annum GDP growth for the UK of 2.5%, standards were responsible for 10% of that growth, i.e. 0.25%, or 13% of total productivity improvement over those five decades.

Swann notes that “Standards also protect third parties - as for example in the case of environmental standards”. The Marine Stewardship Council and the Forestry Stewardship Council are two NGOs that use standards to help promote sustainability. Many standards help to communicate from producers to consumers, but these two accreditation bodies, and others, focus on harnessing informed consumer power to alter producer behaviour. Jared Diamond believes “the conclusion that the public has the ultimate responsibility for the behaviour of even the biggest businesses is empowering and hopeful ... Businesses have changed when the public came to expect and require different behaviour, to reward businesses for behaviour that the public wanted, and to make things difficult for businesses practicing behaviour that the public didn’t want ...” [Diamond, 2005, page 485]



Appellation d'Origine Contrôlée



Standards and Structure – Appellation d’Origine Contrôlée

It would be too easy to wander around aimlessly and cite numerous examples and even more numerous variations on a theme, so let’s spend a moment drawing some lessons from a single standard mark, the French Appellation d’Origine Contrôlée (AOC). When one friend heard about this talk, he wrote to me:



Standards Markets? The Free Market Response To Regulation

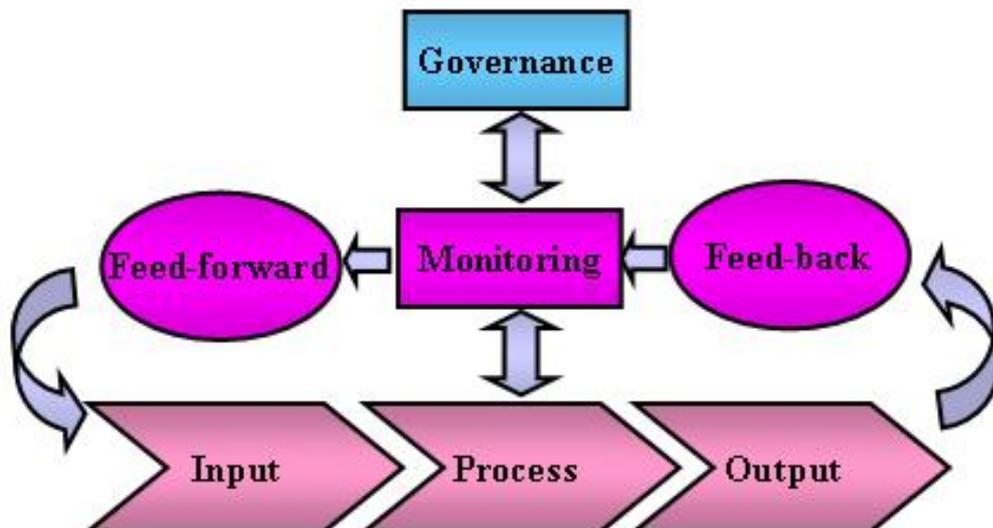
“It’s obvious that the Free Market response to regulation is to privatise the regulators. Set regulators targets based on standards to be achieved, but also on minimising overall financial cost to the nation, flexibility in terms of restricting innovation, and on adaptability for the future. As far as European/International regulation goes, there should be a UK Regulation Regulator, whose function is to decide how rigorously specific regulations should be enforced within the UK. Rubbish regulations will be given lower enforcement priorities than good ones. This is effectively how France works, anyway.”

This may be how France works in some fields, but the French do take wine standards seriously. Strictly, the AOC is a mark that something originates from where it says it does. Other countries have similar systems such as Italy’s Denominazione di Origine Controllata and Denominazione di Origine Controllata e Garantita, Spain’s Denominación de Origen, South Africa’s Wine of Origin or Germany’s Qualitätswein Bestimmter Anbaugebiete.

AOC can trace its roots to the 15th century, when Roquefort cheese was regulated by a parliamentary decree. The first modern law was enacted in 1919 - the Law for the Protection of the Place of Origin - specifying the region and commune in which a product with a given name must be manufactured. In 1935, the Institut National des Appellations d’Origine (INAO), a branch of the French Ministry of Agriculture, was created to manage the administration of the process for wines. The standard is clearly there to help commerce, albeit French commerce. So, let’s examine the contents of a wine bottle.



A Standard System?



The AOC standard implies some kind of guarantee of quality from a trusted third party, the French Government. It’s not a guarantee you could use to get a refund, but it is a guarantee you hope to rely on. What do you expect lies behind the guarantee? Well, you expect a well-thought out system. Now, you may remember from a previous lecture, “Perceptions



Standards Markets? The Free Market Response To Regulation

Rather Than Rules: The (Mis)Behaviour of Markets” (<http://www.gresham.ac.uk/event.asp?PageId=4&EventId=443>), that most systems consist of seven basic components. We expect to find the same seven components in AOC too:

- ◆ input - you expect to see some criteria for inputs. In the case of the AOC, input criteria include the acreage acceptable for a vineyard in the region and the grape varieties;
- ◆ process - such things as the number of vines per hectare, pruning techniques, fertilization methods and wine-making practices are defined;
- ◆ output - permissible yield is defined, as large yields decrease the grapes' quality, so one way to improve calibre is to restrict the crop, in conjunction with a specification of minimum alcohol content which in turn means that the grapes must reach a certain ripeness;
- ◆ monitoring - you expect some kind of inspection of the output. Since 1979, official tasting panel validation of the wine's quality has been a requirement for AOC. You also expect to see enforcement; that miscreants are punished for claiming they come from somewhere they don't;
- ◆ feed-back - the standard provides a certification mark worthy of noting on the label;
- ◆ feed-forward – you expect that the standard is at least adjusting to changing conditions such as new techniques or bottling or, even better, improving quality.
- ◆ governance - you expect to see someone at least partially independent applying some criteria, in this case a branch of the French government.

The French AOC demonstrates something the UK DTI believes - when applied correctly, conformity assessment:

- ◆ provides purchasers with confidence in the suppliers, products or services they use;
- ◆ helps businesses be competitive;
- ◆ facilitates trade;
- ◆ creates market advantage;
- ◆ provides a visible link between standards and the market.

However, if applied incorrectly, conformity assessment can:

- ◆ be a burden on business;
- ◆ create barriers to trade;
- ◆ inhibit innovation;
- ◆ confuse the market.

Not So Standard?

So that's that. Wine is easily standardised. Well, not so fast. Let me draw your attention to some problems with each element:

- ◆ input – what do the French actually do when it turns out that the AOC label is so valuable that the country exports more wine than it could possibly make from the amount of grapes it produces?
- ◆ process – are these specified techniques just impeding innovation from New World winemakers and either acting as trade restrictions or harming French producers' ability to compete globally?
- ◆ output – what about novel 'lite' wines that don't need the higher alcohol levels? must they compete without AOC support?
- ◆ monitoring – who chooses the tasting panel? who sets the grades?

- ◆ feed-back – who determines the name of the region? its extent? what about the shape of the bottle? the colour of the glass?
- ◆ feed-forward – how open is AOC about its plans and aspirations?
- ◆ governance – who controls the French government? is this system ripe for special interests?



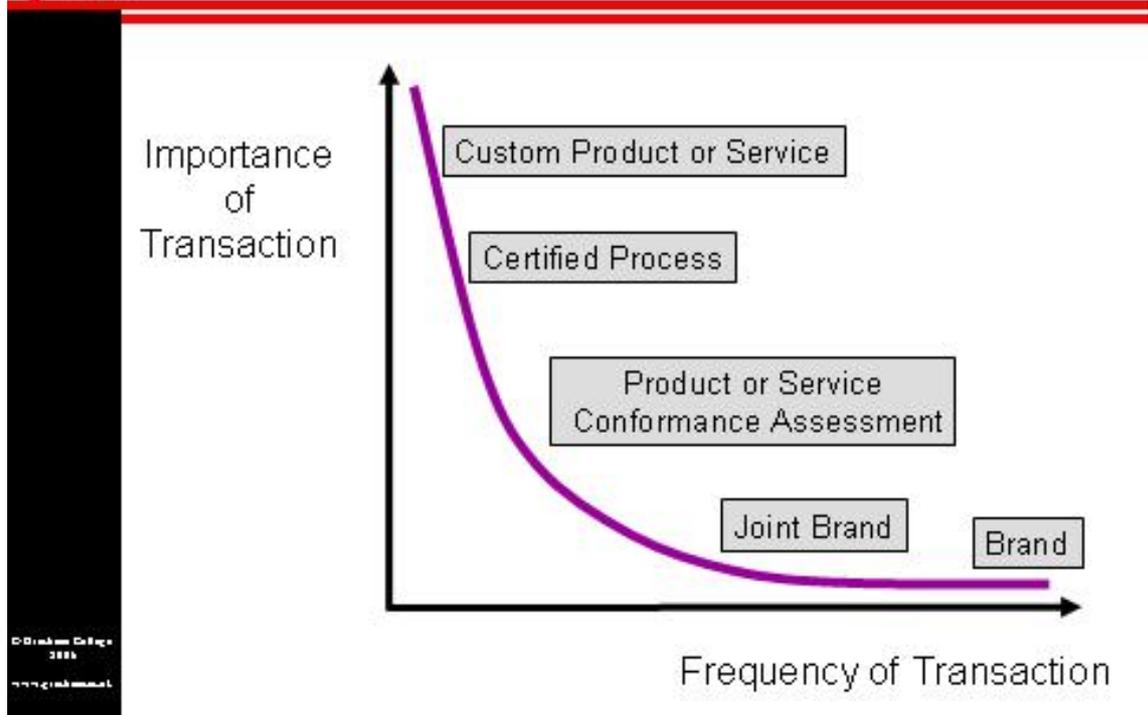
A Load Of Old Goats' ...?



Just to show the complications that can arise over something as basic as the shape of a bottle, listen to the tale of the 'Bocksbeutel'. One Portuguese wine started life in 1937 as Faísca and was renamed Lancer's in 1944, the name supposedly derived from Velázquez's painting Las Lanzas. Lancer's has an iconic earthenware bottle and sold well. In 1942, another Portuguese wine house began, Sogrape, founded by Fernando Van Zeller Guedes. He too sought an iconic bottle and, claiming that he was inspired by World War I foot soldiers' flasks, he launched Mateus Rosé in 1944. But he may have borrowed the shape of the wine bottle from a region in Germany called Franken, just north of Würzburg. That shape is called a bocksbeutel, possibly meaning "goat scrotum" or "pilgrim's bag", and that shape has been used in the Franken region for many centuries, perhaps before the pre-Christian era. Frankens feel that the shape is characteristic for their better white wines and 'protected' by a 1728 decree from Würzburg. They feel a bit aggrieved about the shape being appropriated, particularly as Sogrape estimate that Mateus Rosé has sold over one billion bottles. Franken feelings led to a gentle dispute within the EU culminating in 1983 with the decision that while the shape is characteristic of some Franken and Portuguese wines, it is not protected.



Standard Brands



Standard Brands

In many ways, a standard results in a common, mutual brand that is bigger than any individual organisation. By working to a standard, suppliers mutually reinforce the standard's familiarity and expectations about the type of standard it is. A successful standard attracts 'counterfeits', i.e. people who claim to have the standard and don't, 'free riders', i.e. people who claim to follow the standard but not bother with the expensive processes (a bit like someone who says I'm really a lawyer, I just didn't get round to sitting my bar examination), and 'grey markets', i.e. people who sell something into the market that may not quite be the same. For instance, some groups of fish food companies have launched 'industry label' schemes for sustainable fish that are much easier to get (or even just handed out) than independent, audited schemes.

This in turn leads to the question of whether a standard is better when it is "deep but narrow", or better when it is "shallow but wide". Basically, we can have a gold-plated, but difficult-to-achieve standard that appears to exclude all but the best or most traditional firms. Likewise, we can have an easy-to-achieve but inclusive standard that begins to appear almost meaningless.

If our "deep but narrow" standard is attractive enough, enough organisations may decide that the cost-benefit equation is worthwhile to attract consumers. If our "shallow but wide" standard is too shallow, no one will bother to make the effort to attain it as it is worthless to consumers. On the other hand, if our "deep but narrow" is too difficult to attain, competitors will undermine it, while our "shallow but wide" might just get a movement going that permits us improve the standard year-on-year.



Reinheitsgebot



Trading Problems – Facilitator or Barrier?

Many people worry about standards being barriers to trade. Sticking with drinks, a good example is the German Reinheitsgebot. This law, a “purity requirement” for beer, originated in the city of Ingolstadt in Bavaria in 1487, and took effect in 1516. Originally it specified that beer could only contain water, hops and barley, yeast being unknown till Pasteur discovered its importance in fermentation in the 1800’s. Of course there were counterfeit beers, from Belgian or English brewers, who protested that the Reinheitsgebot was a trade restriction and that they were not counterfeit, rather they were innovators using better techniques and new ingredients. There were free riders for the Reinheitsgebot, including Weizenbier brewers who claimed they adhered to the three key ingredients, but just used wheat instead of barley, or Roggenbier brewers who just used rye or Dinkelbier brewers who just used spelt. There were grey markets of people importing things from other countries labelled as “beer” but not beer according to German law. In 1987, the EU allowed other beers to be sold as “beer” in Germany while also allowing beers brewed according to the Reinheitsgebot to have special treatment as a “traditional food”. The Reinheitsgebot illustrates the difficulty of evolving standards and harmonising standards.



Brands



Quality is now a widespread European expectation. Third party conformity assessment services have been steadily growing in response to the increasing need for impartial and transparent demonstration of the conformity of products and services exchanged in the European market. Regulators, industry and society place confidence in these services particularly through meeting the requirements of European Directives and Regulations. A Council Resolution (2003/C 282/02) on 10 November 2003 acknowledged the importance of New Approach and Global Approach directives that place much more reliance on conformity assessment as opposed to regulation, along with the need for clearer framework for accreditation and conformity assessment. This is a big move. The EU recognises that standards markets are superior to regulation wherever they are possible, and it will recognise standards as acceptable in place of legislation.

Standards Developments

Things have moved forward a bit since the 18th century. A lot of work has gone into moving from the specification of product to the specification of the process, i.e. from rigidly setting inputs and outputs to standards for evolving systems. Much of this work is seen in quality standards such as ISO 9000, Investors in People or the European Foundation for Quality Management, as well as environmental systems such as ISO 14000. Formal quality process standards began life soon after the Second World War. The US and UK governments devised AQAPs (Allied Quality Assurance Procedures) as a means of standardising and controlling military supplies. This proved to be a very successful means of control and appealed to large commercial businesses as a mechanism for controlling their suppliers. The task of drawing up a quality assurance standard that had universal application proved onerous; it was not until 1979 that BS 5750 was first published, becoming ISO 9000



Standards Markets? The Free Market Response To Regulation

in 1987. Today it is a standard that looks at how things get done more than the result. "...eventually he saw that Quality couldn't be independently related with either the subject or the object but could be found *only in the relationship of the two with each other*. ... Quality is not a *thing*. It is an *event*." [Pirsig, 1974, page 215] People talk of "process over output". So now we have standards for services (the author was a director of one of the very first financial services firms to obtain ISO9000 in the City of London in the early 1990's) that look at how, not what.



Trade Facilitator or Barrier?

- Relevance
- Competence
- Independence
- Competition
- Innovation

Pascal Lamy, Director-General of the WTO, in a speech to the 29th General Assembly of the ISO noted that international standards have facilitated trade and brought cost-savings for exporters. However, he warned that poorly designed international standards can "end up hurting trade", discriminate against certain products and erode confidence in international standardisation. Lamy stressed the need for transparent standard-setting processes involving all stakeholders to ensure effective standard setting, as opposed to purely expert-driven processes. ISEAL states, "The credibility of a label is derived from the relevance of the standard used for assessment, the technical competence of the body undertaking the assessment and its independence from external influence." I would like to examine these five issues further – relevance, competence, independence, competition, innovation.

Relevance – Only Competition Keeps Standards On Track

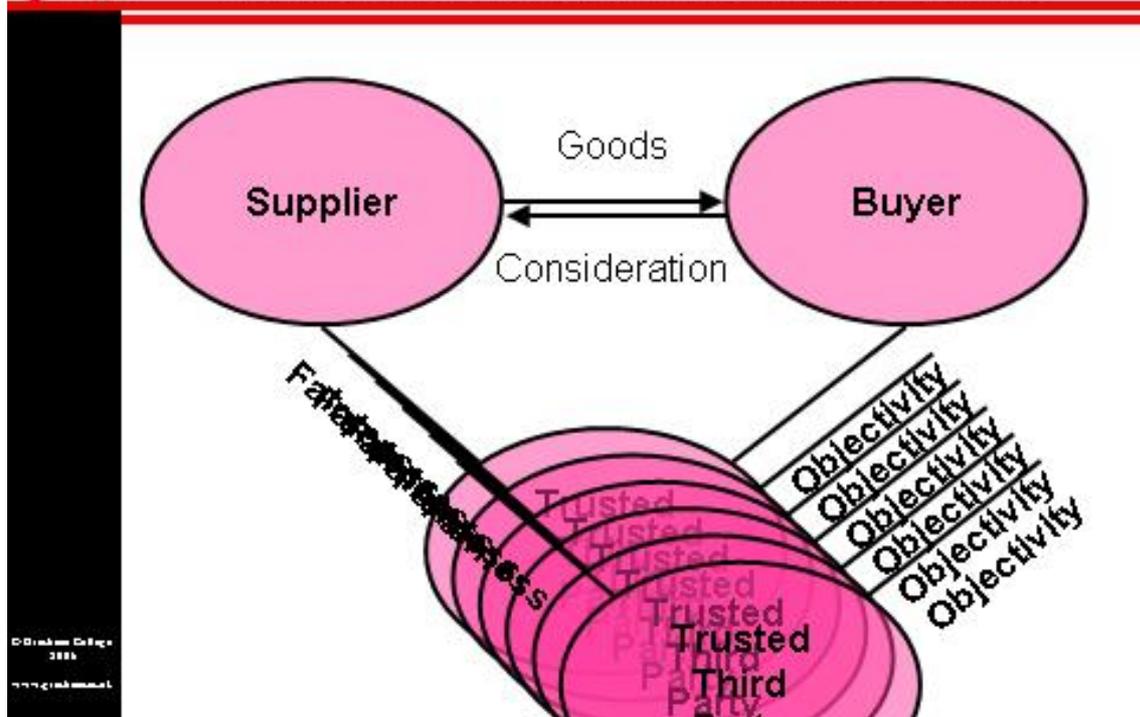
Another apocryphal quality control tale about relevant standards says that a western company had some components manufactured in Japan in a trial project. In the specification to the Japanese, the company said that it would accept three defective parts per 10,000. When the shipment arrived from Japan, the accompanying letter stated something

like: “as you requested, the three defective parts per 10,000 have been separately manufactured and have been included in the consignment. We hope this pleases you.”

One of the great things about standards markets is that if the standard is not relevant, it is hard to sell. Standards markets need competitive certifiers. These certifiers, e.g. BSI, Det Norske Veritas or Lloyd’s Register, to name a few, compete on the cost of certification for things like ships, oil rigs, quality systems or environmental systems. They promote the standards jointly, in order to build their markets. They must promote appropriate improvements to the standards, or users will find them irrelevant or too onerous for the information or risk involved. Certifiers can be flexible about local interpretations of the standard, but cannot be too flexible or users will not value their certification over their competitors. Poor certifiers, those who are too strict or too loose, have to lower charges. Standards markets self-focus on relevance.



Competence Quis Aestimat Ipsos Aestimatores?



Competence – Quis Aestimat Ipsos Aestimatores?

Just as Juvenal wondered who guards the guards, we have to wonder who certifies the certifiers. Strangely, there is a case for monopoly here. In most standards markets a distinction is drawn between accreditation and certification:

- ◆ certification: third-party attestation related to products, processes, systems or persons;
- ◆ accreditation: third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.

So basically, an accreditor is a certifier of certifiers, but who accredits the accreditors?



Standards Markets? The Free Market Response To Regulation

James Madison and Alexander Hamilton remarked in The Federalist Papers, "... what is the government itself but the greatest of all reflections on human nature? If men were angels, no government would be necessary. If angels were to govern men, neither external nor internal controls on government would be necessary." Their argument continued further to justify the separation of powers as only in God's hands might it be safe to vest the power to create, legislate, execute and judge. "In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself."

Screaming Lord Sutch (David Edward Sutch) asked a sublime question, "Why is there only one Monopolies Commission?" In many cases the distinction between certification and accreditation is not clear. Too many examples exist where government regulation could be performed by competitive bodies, whether publicly or privately owned (competition is more of a driver for efficiency than ownership – "Goldilocks Government and Market: Not Too Little, Not Too Much, But Just Right" - <http://www.gresham.ac.uk/event.asp?PageId=4&EventId=447>).

Professor Michael E McIntyre advances an interesting argument from which I draw heavily. He points out that society seems to promote unthinkingly the principles of fairness, objectivity, and prudence. Fairness – treat everyone equally. Objectivity – measure things to a standard. Prudence – err on the side of caution, and don't trust people who say that they audit themselves. McIntyre states, "It's a brave soul who dares to question any of these principles in public today, at least as ideals to be aspired to." Yet he points to two implications. First, "infinite regression, and infinite cost. The auditors of the auditors of the auditors ... must be audited."

Independence – Accreditation Versus Certification

One is reminded of Jonathan Swift's ditty:

So, naturalists observe, a flea
Has smaller fleas that on him prey;
And these have smaller still to bite 'em;
And so proceed ad infinitum.

(Jonathan Swift (1667–1745), "Poetry, a Rhapsody")



Competence Accreditation versus Certification



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Second, anything that can't be measured can't be rewarded, "such as professional ideals and ethics, ambition to do one's best, eagerness to understand something in depth, willingness to share information freely, etc. ... Even the professional ideals and ethics of the auditors themselves can't be rewarded!" As Pirsig said, "I think there is such a thing as Quality, but that as soon as you try to define it, something goes haywire. You can't do it." [Pirsig, 1974, page 184].

As an example take the Maritime & Coastguard Agency (MCA). The MCA are the sole source for UK ship safety inspections, a monopoly provider. We could imagine an MCB that competed as a certifier on level terms. The introduction of competition between MCA and MCB would be likely to increase efficiency, drive innovation and enhance the application of sensible standards. However, while a competitive market might reduce our concerns that standards were being applied in an inefficient or unnecessarily heavy-handed way, we would still need an accreditation body to ensure that MCA and MCB were operating a credible inspection and certification system; we need auditors of the auditors.

Likewise we could see Passport Agencies (plural) or competing identity card providers that certify identity, but beneath a light accreditation body. Of course, Screaming Lord Sutch would certainly question the right of any single body to accredit, and this leads us to perhaps draw a line. Certification must be competitive in order to enhance economy, efficiency and effectiveness, but accreditation need not be competitive.

The EU has a similar view – "Where Member States decide to operate accreditation, they shall establish or have established and maintained under their jurisdiction a national accreditation body. Where accreditation is not operated by the public authorities themselves, Member States shall entrust the national accreditation body with the operation



Standards Markets? The Free Market Response To Regulation

of accreditation as a public authority service and grant it formal recognition on behalf of government, authorising it to operate accreditation under the authority of the public authorities. Considering the added value of accreditation to serve as the last and authoritative level of control of conformity assessment activities with regard to technical competence in order to create mutual confidence, Member States shall ensure that accreditation operates free from commercial competition and shall entrust its operation to a single national accreditation body.”

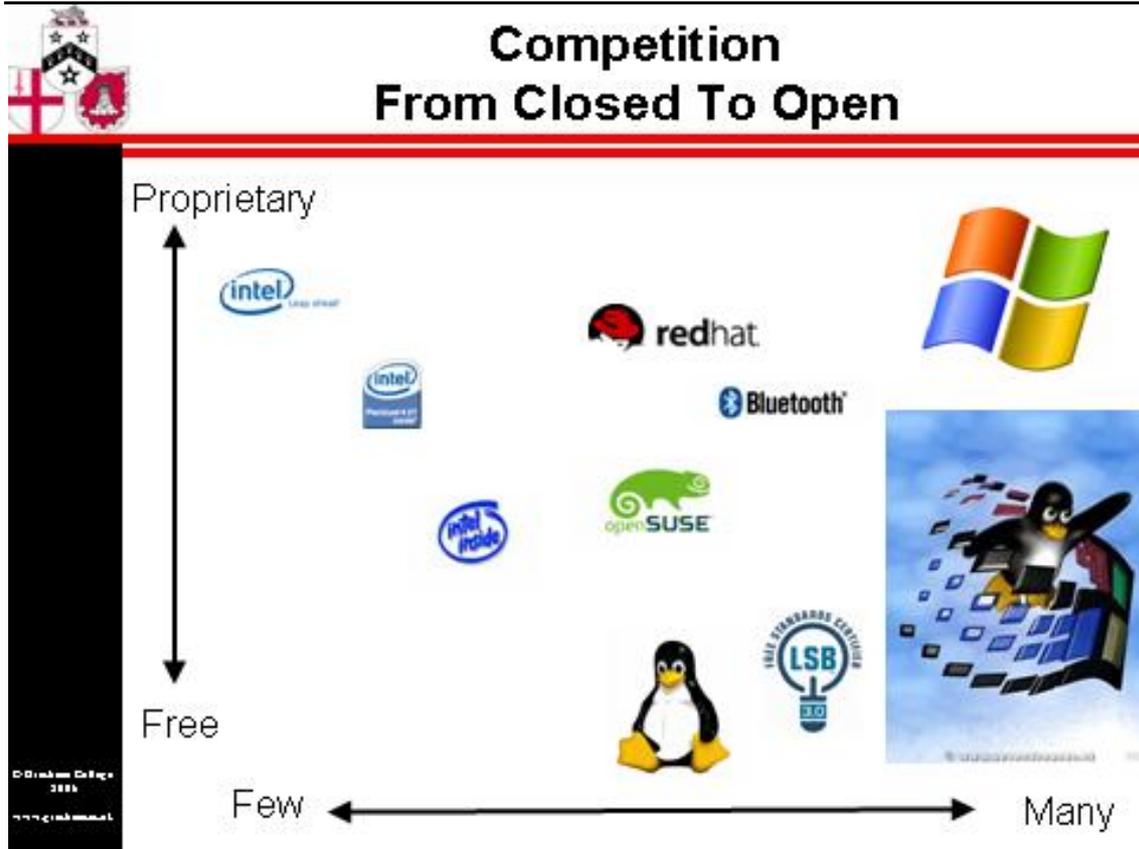
Accreditation will in future provide the basis for the recognition of conformity assessment bodies attesting conformity to the requirements of European Directives and Regulations. The European Commission’s New Approach is that accreditation will be defined as a service of general interest, representing the last authoritative level of control of the conformity assessment services delivered both in the voluntary sector, and in the future, in the regulated sector.

The European Commission expects increased transparency, coherence and cooperation in both the regulatory and voluntary areas for New Approach directives. The EU is trying to minimise competition at the accreditation level, while encouraging it at the certification level. Of course, the European Commission expects accreditors to undertake peer reviews of quality (which already occur among EA members). Further, there is still competition for accreditation services among firms working in numerous markets (e.g. the BSI could choose from numerous accreditation agencies) or from firms willing to look outside their home market for an accreditor.

New Approach directives are based on the following principles:

- ◆ harmonisation is limited to essential requirements;
- ◆ only products fulfilling the essential requirements may be placed on the market and put into service;
- ◆ harmonised standards, the reference numbers of which have been published in the Official Journal and which have been transposed into national standards, are presumed to conform to the corresponding essential requirements.
- ◆ application of harmonised standards or other technical specifications remains voluntary, and manufacturers are free to choose any technical solution that provides compliance with the essential requirements.
- ◆ manufacturers may choose between different conformity assessment procedures provided for in the applicable directive.

Independence matters, but is hard to ensure. Economic literature is replete with articles on the subject of ‘regulatory capture’, the concept that some producers in certain sectors lobby so skillfully that they persuade certifiers to interpret standards in the interest of the producers. Examples of regulatory capture include airlines, transport companies or telcos that lobby to restrict competition based on excessive safety requirements or restrictive standards. Likewise, the agricultural industry in many countries seems to be able to get regulators to prefer its interests over those of consumers based on notions of safety when keeping out imports, or public confidence when trying to sell sub-standard product.



Competition – Closed or Open Standards

Standards matter on the battlegrounds of commercial generals. If your standard is widely-accepted, you can make a lot of money. For example, Dolby is a standard owned by Dolby Laboratories. A standard can also be a process, for instance the Professional Association of Diving Instructors (PADI) has a cash-generating licensed standard for training and certification. Giving your standard away may also make commercial sense. If you have invested significant monies in research & development for one standard, it will harm your competitors if their competing standards are not adopted. If you sell services or products based on other standards, you have a major job managing your relationships. A typical consumer electronics company, take Apple, lists on its website over a hundred of its own trade and service marks, plus dozens of other companies' trademarks and standards.

These days, classic standards approaches are contrasted with the increasingly popular 'open standards' of information technology. In its "European Interoperability Framework for pan-European eGovernment Services" (Version 1.0, 2004), the European Union set out the following criteria for 'openness':

- ◆ "the standard is adopted and will be maintained by a not-for-profit organisation, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision, etc.);
- ◆ the standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee;
- ◆ the intellectual property - i.e. patents possibly present - of (parts of) the standard is made irrevocably available on a royalty-free basis;
- ◆ there are no constraints on the re-use of the standard."



Standards Markets? The Free Market Response To Regulation

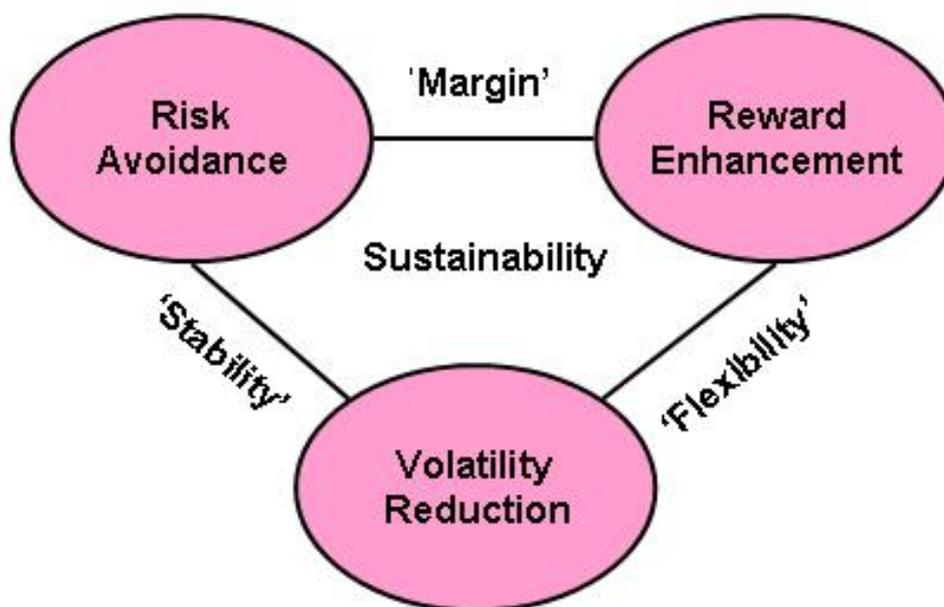
Competition in standard adoption is often called 'standard wars' and is common. Edison fought the introduction of George Westinghouse's alternating current, preferring his own direct current standard. He even tried to popularize the verb for electrical execution as "to Westinghouse" and voluntarily electrocuted a condemned prisoner for the state of New York using alternating current in order to popularize the dangers of AC. Standards wars have been especially visible to consumers of electrical products over the past century. Anyone still owning an LP record player, an eight-track tape player or a videodisc player knows the problems. Another example of standard wars comes from the 1930's. US television standards began to arise within the Radio Manufacturers Association under the eye of the Federal Communications Agency. At that time, RCA was presumed to be, and probably was, using standards to enhance its market position.

As Pirsig realised, "The dictum that Science and its offspring, technology, are "value free", that is, "quality free", has got to go." [Pirsig, 1974, page 231]. To quote from an article about the development of NTSC (the National Television System Committee) by Fink:

"Casual observers of technical progress often assume that the basic forces at work are merely those of new science and improved technology. But seasoned veterans of the technical wars know that many other forces are also at work. Prominent among them are the pride and prejudice of technical, industrial, and political leaders; the pursuit of power and profit; the rivalry for command of patents and markets; as well as the forces of government: inertia, misunderstanding, and, occasionally, foresight."



Innovation Risk/Reward



Oxford College
2006



Standards Markets? The Free Market Response To Regulation

No matter how rapidly a standard is developed, it isn't standard to have little paperwork - in just nine months the first NTSC had 168 committee and panel members, devoted 4,000 man-hours to meetings, with an official record of 60,000 words, leading up to its March 1941 proclamations. Of course the standard allowed commercial television to flourish, but adhering to those NTSC, PAL and SECAM standards today requires "backward compatibility", hampers moves towards revolutionary improvements in high-definition television, and slows new standard adoption. Yet technological progress requires standards.

Innovation – From An Uncontrolled Flow To A Standard Trickle

U-matic is the name of a videocassette format developed by Sony in 1969. It was one of the first video formats to contain the videotape inside a cassette, rather than being open-reel. Sony made a lot of money from U-matic. Then in 1975, Sony introduced Betamax, technically superior to a consortium standard of VHS. The VHS format's defeat of the Betamax format became a classic marketing case study, where a proprietary technology format is conquered by a format allowing multiple, competing, licensed manufacturers. Sony's proprietary strategy clearly backfired when Matsushita, the parent of JVC, chose VHS over Betamax in order to avoid a U-matic re-run where Sony dominated. By 1984, forty major companies complied with VHS format in comparison to Betamax's twelve. Sony admitted defeat in 1988 when it began producing VHS recorders.

Standards evolve and the standards competition takes familiar forms. Proponents claim that Betamax was superior, yet home users appeared to like the fact that VHS could record longer, about the length of a feature film. Similar superiority tales surround the adoption of Christopher Scholes' QWERTY keyboard versus August Dvorak's keyboard, where the Dvorak keyboard showed advantages over the QWERTY keyboard in tests conducted by Dvorak, yet users weren't fussed. Nevertheless, there are morals to learn about 'early lock-in to bad standards' and 'angry orphans' or 'enraged by pace-of-change consumers'. Today, consumer electronics and PC companies have formed the Blu-ray Disc Association (BDA), spearheaded by Sony, to promote a new digital video disc standard. Blu-ray competes with the HD-DVD format for the next generation optical standard, similar to the videotape format war between VHS and Betamax. Neither format has yet supplanted the current home video standard, DVD.

One of the great tensions in standards is whether they accelerate or inhibit innovation. We will go into this in more detail at a lecture on innovation in February, "Too Unimportant To Fail? Innovation And Competitive Selection In Markets". When standards supposedly take five years to adapt, at first glance standards markets seem to favour stasis over change, long-term signals over short-term signals. Yes, standards markets reduce variety in the neighbourhood of the standard. Yet, competitive evolution in standards is simultaneously constrained locally and freed universally. Paradoxically, standards can increase innovation. By pruning unnecessary or non-advantageous competition, standards markets improve innovation by forcing it to focus on areas of competitive advantage.

The great question is whether the same innovation via standards can be achieved through simple regulatory oversight, or whether a standards market is superior. William Ross Ashby's law of requisite variety is "the larger the variety of actions available to a control system, the larger the variety of perturbations it is able to compensate". My son, Nicholas, uses a shorter term, 'capacitability'. From discussion with the Santa Fe Institute I talk of 'resilience' as the ability to handle extremes within the same systems, or 'robustness' as the



Standards Markets? The Free Market Response To Regulation

ability to use the same system in different environments. Basically, when we use market forces rather than regulatory forces we have a larger variety of actions and a more resilient, if not more robust, system.

Professor McIntyre argues that over-auditing leads to loss of competition and lack of diversity. The story about the chariot-space gauge highlights the tensions society faces when it either specifies exactly what it wants or lets standards evolve that tend to dictate what society gets. The story creates a character – a standard that evolves through the ages with or without government support, a benchmark against innovation. Professor Michael Power sees a continuum from the audit explosion of the 1980's to the risk explosion of the 1990's and 2000's. He recommends a “new politics of uncertainty [that] must generate legitimacy for the possibility of failure.” I agree, but also wonder whether forcing indemnity to matter might actually inject a pricing mechanism for uncertainty.



Confidence & Trust



From Information to Indemnity

One danger is over-standardising, with the consequent result of not just stifling innovation and productivity [Conway et al, 2006; Griffith et al, 2006] but also destroying trust in society. There seems to be a huge drive to audit everything. Baroness O'Neill in the 2002 Reith Lectures pointed out that too much auditing can undermine trust; too much emphasis on “open government” can increase deception. She argued that the pursuit of ever more perfect accountability and trustworthiness has gone badly wrong and called for a radical re-examination of traditional approaches to accountability, transparency and press freedom.



Standards Markets? The Free Market Response To Regulation

“If we want a culture of public service,” she said, “professionals and public servants must be free to serve the public rather than their paymasters.”

A 1979 issue of the Harvard Lampoon had a spoof letter from a psychologist to a college dean assessing a student that ended with, “He can conceivably endure a college career under such conditions or he may be on the roof with a rifle tomorrow. Who is to say? Please remember that I told you so.” In many ways this exemplifies today’s circulation of professional opinion. We commission opinion, but Truman’s ‘buck stops here’ boomerangs on the commissioner as the professionals are unable to do anything other than prevaricate.

The economic solution to over-standardising and over-auditing is to require indemnities and publication of the fees. One of the curiosities in the indemnity discussion is that insurance cost reductions have yet to be strongly correlated with standards compliance and certification. If certifiers and auditors had to stump up capital to back their opinions, then things might change.

When one looks at the balance sheets of most certification and audit firms, many of them partnerships, it is clear that financial backing of their opinions is not significant. In fact, the amount of indemnity purchased for a certain amount of opinion is a good indicator of risk. Rather like an insurance policy that was public, if a certifier had to state the amount paid for an opinion and the amount forfeit if (under specific circumstances) that opinion were erroneous, market forces would surge. This approach has already been suggested for financial audit at precisely the time when financial auditors seek caps on their liabilities (see Ronen and Mainelli, 2005).

Confidence & Trust

Risk is an increasingly popular theme in public sector management resulting in some sensible, albeit basic, statements such as “Principles for Managing Risk to the Public” [Cabinet Office, 2002] which sets out five criteria:

- ◆ openness and transparency;
- ◆ involvement;
- ◆ proportionality and consistency (I would note that “competition”, where possible and sensible, is a key element in arriving at proportionality and consistency;
- ◆ evidence;
- ◆ responsibility.



Discussion

1. Is standards evolution an oxymoron?
2. Is a monopoly for accreditation sensible?



“Get a big picture grip on the details.”
Chao Ki Ning

So what have we learned? Standards and regulation together are enormous and ubiquitous. We need to compete on standards and certification, less so on accreditation. Standards markets need to adhere to those criteria and work best with:

- ◆ openness and transparency - there is an open standard available to all. Many standards do not wholly fulfil this as they frequently charge significant fees for a copy of the standard, e.g. ISO affiliates such as the BSI typically charge three figures for short documents;
- ◆ involvement - development of the standard is an open, structured, inclusive process involving interested stakeholders, while conflicts of interest are identified and managed;
- ◆ proportionality and consistency:
 - standards should be allowed to compete with one another for attention and brand recognition, and evolve;
 - certification bodies should compete to provide audits, thus encouraging rational interpretation(s) of the standard and controlling cost and quality via reputational risk and competition;
 - accreditation bodies should be independent from commercial conformity assessment activities and, unless the system is seriously flawed, accreditation is probably best left to a sole entity, i.e. non-competitive.
- ◆ evidence:
 - comparators are made available, outputs such as certifications and grades awarded are published;
 - ideally some benchmarking on the degree of pass or fail is given to participants;
 - the system can prove exclusion, e.g. do certifiers actually mark down organisations that fail to meet the standard;
- ◆ responsibility:



Standards Markets? The Free Market Response To Regulation

- there is an authorised, responsible accrediting body for certification agencies, e.g. the United Kingdom Accreditation Service (UKAS) for the UK's ISO implementations or the Marine Stewardship Council in the case of sustainable fish, that helps to ensure proportionality and consistency; accreditors ensure the separation of standards development from the commercial elements of implementation and review; accreditors regulate the market;
- ideally the certifier bears some indemnity and that indemnity amount is, with the price paid by the buyer, publicly available;
- accreditors can sanction certifiers, for instance ensuring that certification is separate from improvement, e.g. there are no conflicts of interest where firms sell consultancy services to attain a standard alongside certification services for that standard;

Standard Futures

“Romantic Quality was the present, the here and now of things. Classic Quality was always concerned with more than just the present. The relation of the present to the past and future was always considered. If you conceived the past and future to be all contained in the present, why, that was groovy, the present was what you lived for.”
[Pirsig, 1974, page 223]

Society reacts to risk by wanting to eliminate or control it. Societal over-reactions can impair or even ruin markets. Standards markets are huge, but better than regulation. Standards markets can help the public to make better choices through markets, rather than imposing onerous regulation or spouting unenforcable principles. Many new societal goals can be achieved better with innovative standards markets that bridge the market-government divide.

Thank you.

We shall continue with our discussion in a few moments, but may I now hand over to Paul Stennett for some further insights into the importance of standards to the UK.



Standards Markets? The Free Market Response To Regulation

Further Discussion

1. Is standards evolution an oxymoron?
2. Is a monopoly for accreditation sensible?

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Standards Markets? The Free Market Response To Regulation

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Standards Markets? The Free Market Response To Regulation

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Thanks

My thanks for thoughts behind this lecture go to Ian Harris for much joint work on standards, to Brendan May of the Marine Stewardship Council for getting me involved in all the richness of standards, to Patrick Mallet of ISEAL for helping me to think through some of the deeper philosophical issues, to Rupert Stubbs for lightening affairs deeply, to Nicholas Mainelli-Barre for "capacitability", and to the team at the United Kingdom Accreditation Service, particularly Lord Jamie Lindsay, for helping to educate me on the economic importance of standards.

Disclosure

Professor Mainelli is a non-executive director of the United Kingdom Accreditation Service (UKAS).

"UKAS' role includes promoting the use of standards where they will help improve economic performance. Trust is essential whether in the high street, the supermarket or buying as a business. Consumers seek assurances that products and services match the claims made about them. Standards markets can ensure that consumers, suppliers, purchasers and specifiers can have confidence in the quality of goods and in the provision of services throughout the supply chain."