

# The Yardstick

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## 2010: The Tide is Turning

BWMA and its friends are winning the argument in London and Brussels over the need to retain supplementary non-metric indications beyond 2010.

Following the meeting between British industry and the Department of Trade and Industry on 9 November 2006, the Parliamentary Under-Secretary of State Lord Truscott told the House of Lords: "The Government think that there is a strong case for extending this permission [for supplementary indications] beyond that date and, perhaps, permanently".

And according to European Commission Services on 22 December, the 2010 deadline could "... backfire if really carried out. A metric-only EU would force US exporters to re-label all products they export to the EU. This would be a strange way of thanking the US for adapting their state and federal laws to conform to internal standards. By requiring metric-only labelling, the EU would be imposing a new barrier on trade to products from the US".

Commission Services went on to say that: "It would seem that there is reason to indefinitely extend the period of allowing supplementary markings on products in the EU market. This would allow all imports marked with the correct SI-marking to circulate freely on the EU market".

The battle is not yet won, but we are winning.

John Gardner, Director

## Annual General Meeting & Conference

Saturday 19th May 2007

Victory Services Club, 63 Seymour Street, London W2 2HF

Tel: 020 7616 8305

(off Edgware Road, just north of Marble Arch)

AGM 10.30 for 11.00am

Conference 1.30 for 2.00pm

**FURTHER DETAILS TO FOLLOW IN YARDSTICK 30**

BWMA is a non-profit body that exists to promote parity in law between British and metric units. It enjoys support from across Britain's political spectrum, from all manner of businesses and the general public. BWMA is financed by member subscriptions and donations.

Membership is £12 per year. Cheques or postal orders payable to "BWMA", 41 Greensleeves Avenue, Broadstone, Dorset BH18 8BJ

## **Report on the meeting between British industry and the Department of Trade and Industry on “supplementary indications”, 1 Victoria Street, 9 November 2006, 10.0am**

John Arnott, Deputy Director of Consumer and Competition Policy, introduced the meeting. Also present were Lynnette Falk, Assistant Director and Paul Cole. Mr Arnott gave a summary of the EC Directive on supplementary indications and said that the European Commission was shortly to produce a consultation document.

The attendees spoke in turn:

**British Weights and Measures Association - John Gardner, Director:** Raised the issue as to whether “metric-only” in 2010 was necessary in view of the Directive’s 1995 requirement that only metric be recognised in terms of law. If non-metric was already de-authorised for legal purposes, then the supplementary use of non-metric would constitute additional information only, meaning any ban would be both unnecessary and restrictive. BWMA’s view was that the EC should withdraw the ban entirely.

**Bicycle Association – Phillip Darnton, President; Philip Taylor, Vice-President:** The Directive would cause a problem that was on a global scale; it would affect both UK and EU exports to the world market. Costs would be passed onto consumers from increased inventories and capital cost (e.g. remoulding). Concerns are likely to be shared by their EU umbrella body.

**Association of British Healthcare Industries - Mike Kreuzer, Technical and Regulatory Director and Clive Powell, Technical and Regulatory Manager:** While industry has no objection to metric use, there is a matter of patient safety. Units such as the Charrière gauge, the Needle gauge, wire diameter and the notation used to size sutures and ligatures, are not metric and so need a supplementary indication. There was also a threat to international trade; smaller companies rely on export to the US and would be hit by a ban on the non-metric indications.

**Tyre Industry Federation - John Dorken, Secretary:** There are two aspects. First, tyres show both lb/in and bar, thereby giving consumers the choice as to which system they use. It is detrimental to customers not to have this choice. Second, tyres have a standard layout of information (width, ratio, diameter) which is moulded onto the tyre. This is an international standard which would have to be re-negotiated globally, and moulds would need to be changed. Was the Directive necessary?

**Dairy UK - Peter Dawson, Policy Director:** Concerned about the restriction on customer information. Most milk is sold using the 1-pint, 2-pint and 4-pint range. Customers use this information as a guide to purchasing, and the Directive would deprive them of that information.

**Food and Drink Federation - Michael Hunt, Manager, Food Law & Labelling:** There is a need for consumer information. Flour and sugar are used for recipes; therefore, supplementary indications may be needed. Imperial units sometimes determine the quantity inside a package, as in frozen foods.

**Inveresk - David Doorbar, General Manager and Director:** Artists’ paper is a traditional industry, and imperial units are what customers want. Imperial units are the ‘driver’. The market is not only UK, but US and far-east. Metric-only would increase costs of export due to duplicated packaging, inventory, etc.

**Association of Suppliers to Clothing Industry - Malcolm Ball, Acting-Chairman:** Textile has used metric for a long time, although China has increased the use of imperial recently. The relevance for retailers is that consumers use inch-sizes. Metric is secondary. Saville Row does not use metric. The effect of a ban on inch labels would be enormous for retailers and consumers, and on certain techniques used within the industry. Export would also be affected. ASCI’s view is that change should happen naturally; a deadline is not necessary.

**Association of Manufacturers of Domestic Appliances - Stuart MacConnacher, Technical Manager:** Deals in ‘white goods’, and has both a domestic market and an export market, including the US and Australia. It was important not to increase barriers. One box, dual marked, could go anywhere. The industry did not want duplicated warehouses. The Directive restricted information that manufacturers could provide to people outside the EU.

**Federation of British Hand Tool Manufacturers - Roger Markham, Association Director:** Tools are made to imperial standards which are used worldwide. Pipe threads, and air-conditioning and refrigeration pipes, are inch-based. It was difficult enough fighting off far-east competitors. Most companies are small, and having ten years worth of stock is not uncommon. Many export to the US.

John Arnott said that what struck out about the feedback was the global theme and the implications internationally. It was fantastically difficult for one or two EU countries to change an EC Directive, and therefore it was important for UK interests to mobilise EU counterparts or members. He added that the

EC had, in fact, already been lobbied by EU trade organisations.

Mr Arnott said that the EC consultation was likely to last around three-months, and the DTI would ensure that copies are circulated among the interested parties. In response to a question, Mr Arnott added it would be unlikely that, at this stage, the EC would do a regulatory impact assessment. The viewpoints expressed would have greatest leverage if made by way of an EU or international contribution.

In response to a question as to the DTI's formal position, Mr Arnott said that the DTI could see a very strong case for the extension of supplementary indications and was open to views. The UK Metric Association was the only group who wanted supplementary indications removed.

John Gardner made some additional comments, relating to the implications of the Directive for public sector bodies such as the police and health service, and for regulatory agencies.

Meeting closed at 11.20am

***Dairy UK statement, 10 November 2006:***

“The Department of Trade and Industry (DTI) sees a very strong case for the extension of the EU derogation that permits the continued use of imperial measures as a supplementary indication of measurement.

The Commission is due to issue a consultation on whether the derogation in the EU metric regulation, which permits the use of supplementary indications, should be extended. The derogation has been allowed to lapse and unless reinstated the use of any imperial indications in economic transactions, including consumer packaging, would be banned. This would mean that dairies could not use combined measurement indications such as 568ml/1 pint on packaging from 2009. Instead only the metric measure could be used.

The DTI's statement of support for the renewal of the derogation was made at a meeting held in London on the 9th November. The meeting had been called by the British Weights and Measures Association, which defends the use of imperial measures, and pulled together trade associations from several sectors that might be affected.

The biggest concern expressed was that without the derogation, exports to destinations using imperial measures would require separate production and stocking channels which could add significant cost. As the USA still uses imperial indications, then this could major disruption.

Dairy UK will, of course, be responding robustly to the Commission's consultation when it is issued”.

**Hansard, House of Lords,  
27 Nov 2006,  
EU: Non-metric Terms**

**Lord Pearson of Rannoch** asked Her Majesty's Government:

*Whether they support the European Union's proposal to make the commercial use of non-metric terms a criminal offence from 1 January 2010.*

**The Parliamentary Under-Secretary of State, Department of Trade and Industry (Lord Truscott):** My Lords, the use of imperial units alongside metric units is permitted by current legislation until 31 December 2009. The Government think that there is a strong case for extending this permission beyond that date and, perhaps, permanently. We await with interest a consultation paper from the European Commission, which is expected to address this issue.

**Lord Pearson of Rannoch:** My Lords, my pleasure at finding myself in agreement with one of Her Majesty's Government's initiatives is almost too great to bear. Do the Government therefore agree that trade associations in this country, and all over Europe, are very disturbed by these proposals, as indeed is the United States of America, which shares our system? Further, is the noble Lord aware that the commissioner, Martin Bangemann, in 1996 revealed that the reason for this unfortunate measure was that the United Kingdom shared that common system of weights and measures with the United States and thereby enjoyed an unfair competitive advantage? Would the noble Lord care to comment on that? It perhaps gives the flavour of so much of the legislation coming our way from Brussels.

**Lord Truscott:** My Lords, I thank the noble Lord, Lord Pearson of Rannoch, for that question. First, I confess that when metrication was introduced to this country through Parliament, I did not follow the debate very closely—partly because I was six years old at the time. I do not believe that the dual labelling of cauliflowers will lead to the end of civilisation as we know it. Having said that, the Department of Trade and Industry is well aware of the attitude of industry, particularly on metrication. We have had useful meetings with representatives of a wide range of sectors, and we are very up to date with their views. Currently, most transactions are dealt with through metric units. Of course, we are aware that there are countries such as the United States, for example, that do not use the metric system.

**Lord Dykes:** My Lords, can the Minister be a little bit bolder on modernisation, bearing in mind the Labour pride in past modernisation? Is he not aware that metrication is wanted by the vast majority of trade associations in this country and in the other

member states, including some of the new ones? Why do we not press ahead with it, allowing for the consultation and bearing in mind that even the youngest school child understands the metric system in this country perfectly, unlike the noble Lord, Lord Pearson of Rannoch?

**Lord Truscott:** My Lords, of course there are arguments on both sides. There are those who support the metric lobby and there are others, not necessarily the youngest people, who are more comfortable with imperial measurements. We need to take both strands of opinion into account. The European Commission is looking at the area, so we should await its consultation before holding our own in this country.

**Lord Howe of Aberavon:** My Lords, is the Minister aware that the decision to proceed to metrication in this country—

**Lord Stoddart of Swindon:** My Lords, is the noble Lord aware that, when in 1799 compulsory metric measures were forced on France, the system was so badly received by the populace that the old measures remained in use? Napoleon in 1812, when he had more pressing problems on his mind, authorised the usage of what he called *mesures usuelles*, which re-legalised traditional French measures. They are still in use in France today. With that historical lesson in mind, will Her Majesty's Government tell the European Commission that they will not criminalise the use of non-metrical measures?

**Lord Truscott:** My Lords, I do not want to go back in history quite so far as 1812, bearing in mind that we are in 2006. The noble Lord has a point, but the Commission will look at the issue. It has already granted one extension on the regulations on dual labelling that came in in 1989, which have been reviewed and extended until 1999 and then again to 2009. The Commission is looking at a further extension of the use of dual labelling, and even a permanent derogation, so it is too early for me to comment on the issues that he raises.

**Lord Waddington:** My Lords, is it not important to hammer home the point that this is nothing whatever to do with the merits or demerits of metrication? What possible public benefit would follow from the likes of me being deprived of the right to know whether I was buying a shirt with a 15 and a half-inch collar? How will the banning of those so-called supplementary indications hamper free trade or the completion of the single market?

**Lord Truscott:** My Lords, far be it from me to deprive the noble Lord of his size 15 and a half shirt. However, supplementary indications or dual labelling help the consumer to make an informed choice and allow for proper price comparisons. That is sensible.

**Lord Howe of Aberavon:** My Lords—

**Lord Monson:** My Lords—

**Lord Taverne:** My Lords, leaving aside the question of the confusion caused—

**The Minister of State, Department for Environment, Food and Rural Affairs (Lord Rooker):** My Lords, it is the Cross-Benches' turn, to be honest, and a Cross-Bencher did stand up.

**Lord Monson:** My Lords, I declare an interest as a patron of the BWMA. Is the Minister aware that, unless something is done, in just over three years it will be illegal to sell not only the shirt with a 15 and a half-inch collar to which the noble Lord, Lord Waddington, referred, but a pair of size 9 shoes? It will be illegal to advertise a car that does 50 miles to the gallon or an executive jet that cruises at 30,000 feet above the weather. Moreover, what will happen about bicycles? The Minister may not be aware, but they are sold with 26 or 28-inch wheels all over Europe, not merely in the United Kingdom.

**Lord Truscott:** My Lords, as I said, the Commission is looking at that. We have already had two reviews that have extended the use of dual labelling, and we may well have further extensions or a permanent derogation of the scheme, so I do not think that the noble Lord's fears are justified. After all, we still use the mile, the yard, the foot, the inch, the pint, the troy ounce, the acre and other imperial measurements, so perhaps he is being too doom-laden in his warnings.

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***Message of support from the U.S. National Association of Manufacturers, 8 November 2006:***

"We are raising this issue at every opportunity with our U.S. Commerce Department and with our contacts in European business associations. The German Industries Federation (BDI) told us they were particularly interested and would be communicating their support for a change in the directive to the European Commission. UNICE [the Confederation of European Business] has also taken a position in favor of changing the requirement. We have raised the issue with the Confederation of British Industry as well and will be contacting other European industry associations to seek their support. We are pleased to learn that you are meeting with DTI to discuss the matter. Let's keep in touch and feel free to provide advice on how we can best work from here to influence a favorable decision by the Commission and EU members to change or permanently revoke the metric-only requirement.

*Best regards, Bill Primosch, Senior Director, International Business Policy, National Association of Manufacturers, Washington DC"*

***BWMA consumer survey, November 2006;  
Report and comments by Warwick Cairns***

You'd think that a law would have a benefit of some kind, wouldn't you? And before the authorities pass a law making it illegal for a producer to tell a customer that a 227g metric pack of coffee weighs 8oz, and before the government drags people through the courts for disobeying, you'd have thought someone might have checked to see whether that would be a helpful sort of thing to do.

And in a country where there's something called a 'Consumers Association', set up to "put consumers into the debate" and to "...provide access to clear, impartial information to guide people's choices", you'd have imagined that someone might have asked the British people whether a law like this is what they want.

But it seems not. It seems that that no-one asked. So BWMA has done it for them. In November 2006, we commissioned the British Market Research Bureau to ask over a thousand people of all ages from around the UK how they preferred to measure, and what they thought of the idea of a law banning imperial measures as supplementary indications. Here's what we found.

When it comes to the way people prefer to measure, metric-only is the *least* popular option for all ages, favoured by just 19% of the population. Nearly twice as many (38%) prefer imperial-only, and the biggest group (41%) prefer a choice from both systems to suit the job in hand. This is true even amongst the very young, with just 22% of 16-24 year-olds saying they use metric-only.

When it comes to what people think of the proposed law banning supplementary measures, the results are overwhelming. A solid three quarters of the British public say they disapprove of it – young and old, male and female, north and south. Only one person in every ten actually thinks it's a good idea.

What's particularly striking is that when you separate out the metric enthusiasts – the people who say they measure in metric-only – and when you look at what they think of the proposed law, only 29% of them actually agree with it, while 46% of them disagree with it.

So – European Commission and British Government take note – this proposed legislation will inconvenience far more people than it will help; and no-one wants it anyway, not even the people who prefer the metric system.

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***Chamber of Shipping, London, email to BWMA, 3 January 2007:*** "Thank you for drawing this matter to our attention. We, of course, believe it absolutely fundamental to keep the exemptions allowed under Article 2b, so as to allow for the navigation of ships using the existing and conventional units of nautical measurements such as the 'international nautical mile' and the 'knot'; and we are further obliged to do so to remain in compliance with International Maritime Conventions. We will consult with other EU ship owner associations and then respond direct to the Commission. Thank you again for your prompt and helpful notification".

***Garton Group, Manchester (importer and exporter of fasteners), email to BWMA, 20 December 2006:*** "Thank you for making contact. I have forwarded your message to our trade association the Confederation of British Metalforming who are against this EU directive and are lobbying through the Engineering and Machinery Alliance".

***Engineering and Machinery Alliance and Picon (the latter representing UK suppliers to the printing, publishing, and papermaking industries), press release, 3 January 2007:*** "Working on behalf of their members, many of whom are small and medium mechanical engineering firms, Picon and the Engineering and Machinery Alliance (EAMA) have asked the UK Government's Industry Minister, Margaret Hodge, to fight the possible ban on the use of imperial measures in literature and on products. The potential ban, which could come in to effect from 2010, would apply to products destined for both European Union (EU) and non-EU markets.

Having joined the Europe-wide engineering lobbying organisation Orgalime, EAMA is already lobbying on the issue in Brussels. Picon chief executive John Brazier said: 'We had an extremely sympathetic hearing from the minister and were able to discuss ways to mitigate some of the unintended consequences of policy on our members'".

**Ashley Mote MEP** said on 28 November, "Smoke signals from the [EC] administration suggest they are getting really fed up with the barrage of criticism on metrication. We won the argument long ago, now we might also be changing the decisions". Ashley's extensive correspondence with the Commission is available to read on his website [www.ashleymote.co.uk](http://www.ashleymote.co.uk)

**British Coatings Federation, 24 August 2006:** "Although none of our members put imperial units onto their paint or ink cans, some do use imperial units on drawings and these are exchanged with the USA in particular. Also, there is some internal use of imperial units for machinery. We therefore oppose the ban on non-metric units".

**American Motor & Equipment Manufacturers Association, 24 Oct 2005:** "The European Union's directive on requiring metrics-only labeling will go into effect on Jan. 1, 2010. The program would raise the cost of marketing for many U.S. products in Europe because the U.S. Fair Packaging and Labeling Act requires that certain categories of products are labeled in both U.S. and metric measurements. Under the program, companies would be required to re-label products being sold within the EU and incorporate separate marketing tools that use only metric measurements. Many European companies that export consumer products to the United States undoubtedly also are expected to find the EU metrics-only labeling requirement to be inconvenient and costly. To address these issues, MEMA's Washington office is currently working in a coalition with other manufacturers to support a change in the directive to continue the current practice of allowing metric-only and dual labeling..."

### ***A Guide to Customary Weights and Measures – new and enlarged edition***

Vivian Linacre enjoyed such positive feedback following publication in 2001 of the handbook, *A Guide to Customary Weights and Measure* (copies still available directly from 21 Marshall Place, Perth, Scotland, PH2 8AG at only £3 for 1 copy, £6 for 3 or £9 for 6, including p&p), that he started working on a much enlarged version -- the definitive guide to the imperial system -- which is now to be published under the title *The General Rule; A Guide to Customary Weights and Measures*, in a beautifully designed and lavishly illustrated format of 224 pages, at a price of £12.99, by John Martineau of The Squeeze Press, Glastonbury, Somerset.

As part of our Conference programme at the Victory Services Club in London on 19 May (just one week after delivery from the printer!), Vivian will make a presentation of the book, accompanied by the publisher. A few copies will then be available -- and orders can be taken -- at the pre-publication price of £9.00.

**Hierarchy of Acts again denied by Government.** On the domestic front, the legal basis on which Steven Thoburn was convicted for using pounds and ounces – the creation of "constitutional Acts", enabling the European Communities Act 1972 to override the later Weights and Measures Act 1985 - has been disputed by the Department of Transport. On 6 January 2006, BWMA wrote to the Home Office, referring to an article by Christopher Booker:

"The article says that the ruling by the Divisional Court in 2002 identified the existence of 'constitutional' Acts. Lord Justice Laws ruled that constitutional Acts can only be repealed if done so explicitly. In other words, a later Act must expressly state that its purpose is to abrogate the fundamental rights laid out in the constitutional Act. If later legislation does not meet this test, then it gives way to the earlier constitutional Act. In its judgment, the Divisional Court [also] named the Bill of Rights 1689 as a constitutional Act. In the attached article, Mr de Crittenden is saying that parking penalties are now illegal ... because the Bill of Rights Act 1689 declares all fines and forfeits before conviction 'illegal and void'. Although the Road Traffic Act 1991 aimed to remove the need for conviction before imposing financial penalties, it did not explicitly name the Bill of Rights. Consequently, according to Mr de Crittenden, the Road Traffic Act 1991 is overturned or negated by the constitutional Act ... What is the Home Office View on this? Is Mr de Crittenden right?"

In a reply dated 22 November 2006, Policy Advisor Darwin Gunewardena stated: "The 1689 Bill of Rights provides no basis for challenging the legality of a statute enacted by Parliament which allows for penalties to be imposed outside the Courts. **If, and to the extent that, a modern statute clearly provides for such penalties, it is a necessary implication that any provision in any earlier enactment to contrary effect does not apply. Courts and tribunals are obliged to implement the modern statute**". So, where does this leave the conviction of Steven Thoburn, convicted under a 1972 Act in the face of a 1985 Act that allows pounds and ounces?

**UK Metric Association targets market stall holders.** The following is a quote from UKMA's website [www.metricviews.org.uk](http://www.metricviews.org.uk): "Some fruit and vegetable sellers around the UK are failing to comply with metric trading regulations. Two examples of this failure are the markets in Redditch town centre and the Portobello Road in London. Despite several requests to Trading Standards officers, they are not enforcing the regulations. The law requires that items sold by weight must have a metric price shown. If an imperial price is shown the imperial price must not be more prominent than the metric price. The Prime Minister has been made aware of this problem".

***From the Archives: “Measuring v. Making” by Frederick Halsey, New York. This is the second of three parts of an article that appeared in BWMA’s annual report of July 1905.***

The measurements which result from scientific observation form the data on which calculations are based; while the constructor's dimensions are the results of his calculations, these calculations being undertaken in order to obtain them. To this rule there are some real and more apparent exceptions, but, broadly speaking, it is true that scientific measurements enter calculations at the beginning, while the constructor's dimensions appear only at the end of his calculations. To simplify calculations the arithmetical notation in which the former are expressed is, therefore, a matter of large importance; while for purposes of calculation the notation in which the latter are expressed is of very small importance, and this is increasingly evident when we consider again the result of this exercise of choice; for the constructor seldom uses the exact results of his calculations. He must choose between a six and an eight-inch pipe, as he must choose between a ten and a twelve-inch I-beam. For smaller work the English system constructor chooses the nearest eighth or sixteenth of an inch, as the metric system constructor chooses the nearest tenth or fifth of a centimetre. Now just how calculations are to be simplified by choosing the nearest tenth in preference to the nearest eighth—the choice being made after the calculations are finished—has never been satisfactorily shown.

"The primary object of a system of weights and measures is to weigh and measure," not to facilitate calculations, and if we were charged with selecting a set of sizes for use in manufacture, our first consideration would be their suitability for the purpose—the arithmetical notation in which they are expressed being entirely secondary. The series of sizes resulting from the binary system of division is in the highest degree satisfactory, while the series resulting from the decimal system is unsatisfactory. Regarding these two systems of division simply as giving systems of sizes and without regard to any system of notation, the binary scale is distinctly superior, while the binary system of fractions is entirely satisfactory, so long as we are at liberty to choose for use the sizes which they express, but no longer. So long as we are at liberty to choose one-half, one quarter, one eighth, and their multiples of an inch or of a pound, so long do the fractions  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ , their multiples form an entirely satisfactory system of notation, far more so than their decimal equivalents; but the instant this power of choice is removed and we have to deal with miscellaneous divisions, these fractions become hopelessly impossible. Hence, the constructor who has this power of choice keeps these fractions, while the scientific man, who is without it, discards them.

It should be noted, however, that the binary scale is unsatisfactory for scientific use, not because of any inherent defect, but because it is yoked to our decimal system of notation with which it is out of harmony. We presume there are few persons who do not know that as a basis of notation ten is an unfortunate choice—better than 9 or 11, but not to be compared with 8 or 12. When dealing with all possible fractional values the first requirement is conformity of the system of division of units with the established system of notation, regardless of its merits or demerits, and in his choice of decimal divisions the scientific man does not pass upon the fundamental merits of decimals, his decision being due to the necessity for this conformity. The same necessity for conformity would be felt were our notation based on 9 or 11.

The metric party has frequently turned to the fact that the civil engineer divides his foot into tenths as an example of the confessed superiority of decimal divisions, but this citation, like most others, turns against them when properly examined. The civil engineer divides his foot into tenths for purposes of surveying, that is, measuring. For purposes of construction he divides his foot into inches like everybody else.

For an explanation of this, go back to the illustration of the chemist and the grocer. The civil engineer divides the foot of his levelling rod into tenths because, when using that instrument, like the chemist he measures things as they happen to be; he must be prepared to measure all possible fractional dimension; his measurements are primary measurements which enter his calculations at the beginning. They are thus subject to all the conditions of scientific measurements. On the other hand, he divides the foot of his construction scales into inches because when using those instruments, he, like the grocer, uses but few fractional sizes, which are subject to deliberate choice. He has deliberately changed the divisions of his measuring scales because he has found it advantageous so to do, and he has just as deliberately left his construction scales unchanged because he has found no advantage in the change. If a case had been made to order to illustrate the points, it could not possibly be more apt than this.

Of course, what these things show is that things are out of joint; that it would be idle to deny. We have this perfect binary system of sizes yoked to our very imperfect system of decimal notation, and hence we find that usage vibrates toward or away from the use of decimals, according as conformity with our system of notation, regardless of its merits or demerits, is or is not of paramount importance. Were our notation based, on eight instead of ten, what is now discord would become harmony, and in the last analysis the metric system is an attempt to secure harmony, but an attempt made through the sacrifice of the essentially good to the essentially bad.

*Concluded next issue*

## THE METRIC MATHS MYTH

*By David Chan*

It is often said in support of the metric system that, "The metric system is a decimal system of measurement. Metric calculations are easy, because to convert between units, one only need move the decimal point."

But metric calculations often have awkward, non-decimal conversion factors. And, sometimes, they can actually be harder than non-metric ones. For example, a kilogram is 1000 grams. And a kilometre is 1000 metres. Simple. And an hour, accepted as part of the International System (the scientific base of the metric system) is, er, 3600 seconds. And 50 km/h is ... 13.89 m/s. And 60 watts for one day is 5.184 megajoules.

For one thing, nobody uses decimal time (save the odd astrophysicist); we use minutes, hours, days, months and years, instead. Instead of numbers like 10, 100 and 1000, time calculations usually involve conversion factors like 60, 3600 and 86,400. This is true in metric and non-metric systems alike.

Awkward conversion factors sometimes happen to cancel each other out, and sometimes this works better in a non-metric system. Here is one example: if you drive at 30 mph, and leave a two-second gap, then the car in front is 30 yards away, give or take a few inches. At 40 mph it is 40 yards; at 50 mph it is 50 yards; and so on. So, UK drivers can easily judge their distance, which is an important part of safe driving. This does not work in the metric system: 50 km/h is a distinctly unmemorable 14 m/s, or about 28 metres in two seconds. Presumably this should weigh against road metrication.

Non-decimalised time "taints" a huge number of other metric units derived partially from time: speed, acceleration, frequency, power, electric charge, "voltage", radioactivity, pressure, and so on. Besides these, other common units are non-decimal; for example, 10°C is not ten times hotter than 1°C; and a circle is divided into 360 degrees (for good reason; see *Another slant* below). If any of these units are used, awkward conversion factors can appear in calculations - it is not enough just to "move the decimal point".

All in all, of the twenty-nine units which are named in SI, the majority are completely or partly non-decimal. Only three quantities (i.e. 10%) have fully decimal units in everyday use: length, mass and current (the metre, kilogram and ampere).

The metric system has real merits; e.g. as an international standard in science. However, it should not be promoted for everyday use based on the idea that it always makes calculations easier: it often gives no benefit, and in important cases, like road safety, it can actually make things worse. It is important that legislators and decision-makers are aware of this.

*Another slant:* throughout the world, angles are measured with 360 degrees in a circle. The decimal "grad" has never really caught on. This is not surprising: decimal angles make calculations hard. For example, on an incline of 30°, which is a twelfth-slice of a circle, you rise exactly one foot for every two feet travelled. In contrast, for a tenth-slice of a circle, the figure is one foot for every 1.7013016 feet travelled (or 1 metre for every 1.7013016 metres, if you prefer). Real-world quantities do not typically group into tens (unless you are counting toes); and when they do not, decimalised units can make calculations more complex.

*David Chan is a Technical Strategist at Clockwork Software Systems, and a Cambridge University mathematics graduate.*

### Website conversion to from kilometres to

**miles:** Our friend Stuart Newby received the following email on 4 August 2006 from [www.havenholidays.com](http://www.havenholidays.com) after he pointed out that their website used kilometres and not miles: "Dear Sir, thank you for your email. I have looked into your query and have spoken to the Internet Marketing Team. I can confirm to you that the Web design team are looking into having the distances in miles for our 2007 website which will be launched towards the end of the year. We do appreciate your comments and feedback regarding our website".

**Metric signs changed:** Patrick Carroll reports, "I have managed to get a number of metric signs, both road and pedestrian, changed to imperial. At present, I am pursuing another batch of metric pedestrian signs erected by Waverley District Council. I am pleased to say that I have the Council's promise to have them changed".

*(Please note our address  
replaces the PO Box)*

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