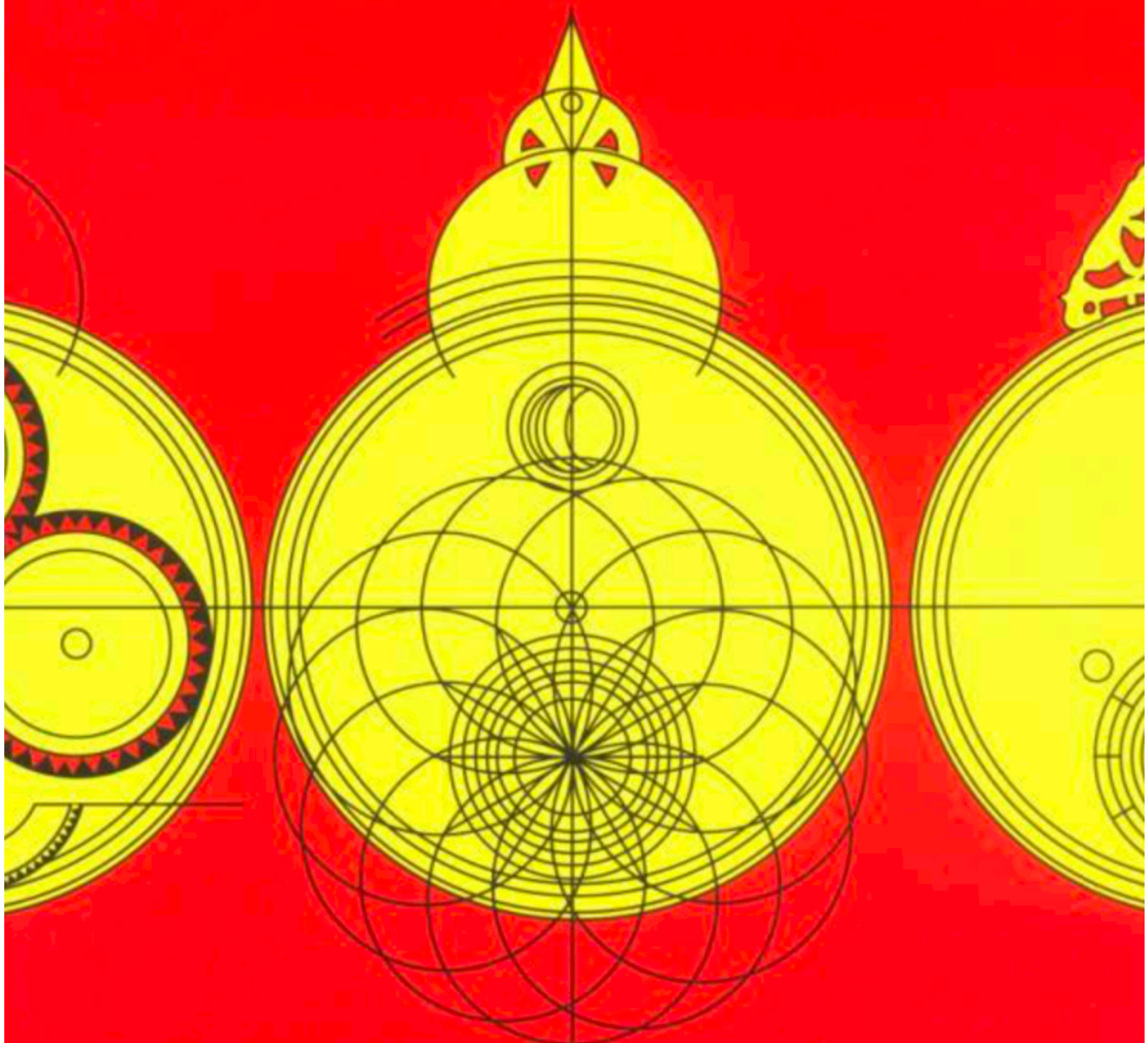


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A RANDOM WALK IN SCIENCE

An Anthology compiled by
R L Weber and edited by R Mendoza



IoP

When does jam become marmalade?

H B G CASIMIR

A speech delivered
by the author at a
dinner of the
Institute of
Electrical
Engineers, 1965.

I should like to speak to you for a moment about the problem of two cultures so eloquently formulated by C P Snow and more specifically about jam and marmalade.

A few years ago I visited Istanbul. I was staying at the Hilton Hotel, one of those places that are now all over the world setting a rather high standard of what I consider a rather inferior way of living. One morning at breakfast a very British lady was sitting at a table next to mine. 'Waiter, can I have some marmalade?' she asked peremptorily. A smiling Turkish waiter appeared with a huge tray heavily loaded with some thirty or forty kinds of fruit preserve. The lady looked at them, her face expressing both unbelief and disgust and then said contemptuously: 'Oh, no, those are jam, not marmalade, we never eat jam for breakfast.' It may strike you as funny that this struck me as funny. The point is that in the Dutch language jam is considered to be a very general genus of which orange marmalade is just one subspecies. The strongest statement a Dutchman could possibly make would be: 'The only jam I take at breakfast is orange marmalade' and that is much less categorical. Now it is a curious fact that what may appear to be an arbitrary linguistic convention has a strong influence on our way of thinking. Ask a Dutchman and he will patiently explain that marmalade is made like any other jam by boiling crushed or cut up fruit with sugar, that its taste is both sweet and sour, that it is viscous and sticky. Ask an Englishman and he will equally patiently explain how a particular taste and texture make marmalade a very different thing.

Perhaps it is the amazing richness of the language which tempts the English to make distinctions where others look for general concepts. Let me give a few examples. There are circumstances when it may be very impolite to call a hound a dog or a pony a horse, and a man may not care for billiards but enjoy an occasional game of snooker. I once read an amusing article—by an Englishman of course—on common American misconceptions about England. There was a passage that went roughly as follows: '(A common misconception is) that our beer is sour, flat and lukewarm. On the contrary our beer is bitter, still and served with the chill off. It is served that way because that is the way to serve it. There exists a stuff called lager so tasteless that it can be cooled without damage and so unsubstantial that a few bubbles make no difference. But we don't drink lager, we drink beer.'

A more serious example. We continentals interpret the word 'Europe' to include the British Isles; the British usually do not. I

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once saw side by side the French and English versions of a book on birds, one being a verbatim translation of the other. The French book was called 'Les oiseaux Européens,' the English version: 'Birds of Europe and the British Isles.' I hope that this linguistic habit will not lead us to emphasize differences and to forget how much we all have in common in historical and cultural background and in the roots of our languages and civilization.

Now I should like to suggest that the so-called difference between the two cultures is largely a case of jam and marmalade. There exists in Dutch, in German, in the Scandinavian languages, a word *Wetenschappen*, *Wissenschaften*, *Videnskaber* that includes all branches of learning. In English *science* usually refers to the natural sciences only. And true enough: what happened with marmalade happens here. We Dutchmen will emphasize the common elements in all *wetenschappen*: the collecting and systematic arranging of data, the search for general principles and for relations between initially unrelated subjects, the willingness to dedicate one's efforts to the pursuit of objective knowledge and so on. A scholar and a natural scientist are both 'wetenschappelijk' because they accept similar criteria, have in many ways a similar attitude. On the other hand, just as the conventional use of English tends to strengthen the differences in appreciation for jam and marmalade or for beer and lager it also leads to overemphasizing the differences between the two branches of learning. But whereas the lady who refuses to eat any kind of jam at breakfast is only mildly ridiculous, the scholar who says he detests any kind of science is not only ridiculous: his attitude is decidedly harmful. Harmful because it encourages those who are responsible for decisions that may determine the fate of mankind to be intentionally ignorant about the material background against which their decisions should be taken. Harmful also because authors and scholars, while gladly using modern commodities, fail to see the philosophical implications of science and tend to deny scientists and engineers their legitimate place in culture.

But we, scientists and engineers, we know that we have not only created material things and above all we know that we contribute to better relations between nations and peoples. For us it is easy to have understanding of and objective appreciation for the work of others, and from there it is not difficult to arrive also at human understanding and appreciation.

Kipling has said that 'there is neither East nor West, Border nor Breed nor Birth, when two strong men stand face to face, though

they come from the end of the earth.' I do not hold with that: I profoundly distrust those strong men. But replace 'two strong men' by 'two competent electrical engineers' and though you slightly mar the rhythm you considerably improve the content.

In defence of pure research

J J THOMSON

From *JJ Thomson and the Cavendish Laboratory in His Day* by G P Thomson (New York: Doubleday) 1965 pp 167-8.

[The following is from a speech Sir J J Thomson made on behalf of a delegation from the Conjoint Board of Scientific Studies in 1916 to Lord Crewe, then Lord President of the Council.]

By research in pure science I mean research made without any idea of application to industrial matters but solely with the view of extending our knowledge of the Laws of Nature. I will give just one example of the 'utility' of this kind of research, one that has been brought into great prominence by the War—I mean the use of x-rays in surgery. Now, how was this method discovered? It was not the result of a research in applied science starting to find an improved method of locating bullet wounds. This might have led to improved probes, but we cannot imagine it leading to the discovery of x-rays. No, this method is due to an investigation in pure science, made with the object of discovering what is the nature of Electricity. The experiments which led to this discovery seemed to be as remote from 'humanistic interest'—to use a much misappropriated word—as anything that could well be imagined. The apparatus consisted of glass vessels from which the last drops of air had been sucked, and which emitted a weird greenish light when stimulated by formidable looking instruments called induction coils. Near by, perhaps, were great coils of wire and iron built up into electro-magnets. I know well the impression it made on the average spectator, for I have been occupied in experiments of this kind nearly all my life, notwithstanding the advice, given in perfect good faith, by non-scientific visitors to the laboratory, to put that aside and spend my time on something useful.

[G P Thomson says that he has heard his father use another example, that if Government laboratories had been operating in the Stone Age we should have wonderful stone axes but no-one would have discovered metals!]