

## **UMBALA**

### **A Polemic Against Jargon-Addiction in Modern Physics**

*by*  
Viv Pope

#### *Verbatim*

I once heard Patrick Moore tell a joke on TV. Forgive me if you've heard it, but I want to use it here to make a philosophical point. So far as I recall, it went like this:

A man was invited by an old college friend to visit him. The friend had moved abroad and settled in a district of the African continent where he had become a highly placed Government official. When the visitor arrived he was met at the airport by his friend, who was immaculately dressed in white suit and hat, in a shiny stretch-limo driven by a uniformed chauffeur. On the way out of the airport and at villages along the way to the official residence, the road was lined with crowds of people, who would not allow the car to continue until the official got out and addressed them in their native tongue. On each such occasion, after he had finished speaking to them, the crowd waved and shouted 'Umbala! Umbala!'

The visitor was much impressed by this, and no less impressed by the opulence of his friend's place when they arrived. Eventually, after they had fed and rested, his friend said to him 'Tomorrow you must see the sights, and first I will take you to see the famous Temple of the Sacred Bull.'

As the day dawned, the visitor asked a servant to advise him what he should wear for the occasion 'Wear what you like,' said the servant, 'But, be sure to put on some knee-length wellington boots.'

'Why is that?' the visitor asked.

'Well,' said the servant, 'the place will be knee-deep in umbala!'

Now that introduces, in as delicate a way I can manage, what I want to talk about here, which is the accumulation, in modern theoretical physics, of sheer 'umbala'. In the jealous scrabble to present more and more exciting new ideas, our common understanding has become lost, to the extent that any talk of truth or reality is now an embarrassment – notice how often, in

scientific texts, these words 'true' and 'real' have to be put in quotes to forestall inquisition.

This is particularly so in relation to the subject of space and time in the context of Special and General Relativity, where dissonance is even now increasing over the question of how, in these relativistic terms, distance-separated bits of matter are supposed to interact. But of course, there is no law of man or of nature that can prevent us from peopling the void with all sorts of mythical creations held responsible for what goes on between the various bits of matter in order to make them behave in the way we observe. In fact, our students of physics, of late, are encouraged to develop that kind of 'creativity'. The physics visions of the past, they are told, were too restricting, and that what we need now, to meet the increasing demands that new experimental evidences are thrusting upon us, is a new kind of sophistry, a freedom for genius to do 'just what the hell it likes'.

And so, released from the plodding necessity for maintaining that logical integrity of language which used to be called commonsense, scientific ingenuity has responded by picturing the *void* – literally the *nothing* – as possessing the same sorts of properties, qualities, dimensions and so on that are normally ascribed to ordinary, hands-on, material objects. A prime case of umbala is the notion we seem to be lumbered with, but which, from a linguistic analysis point of view cannot survive a moment's inspection, is encapsulated in the illustrious phrase 'constant velocity of light *in vacuo*.' Now what on earth can that possibly mean? How can anything have a velocity, constant or otherwise, *relative to a vacuum*? A critic once yelled at me 'NO! What it means,' he said, 'is IN a vacuum, not RELATIVE TO a vacuum!' Now this is a nice example of conceptual hedging. How, I asked my critic, can you distinguish 'in a vacuum' and 'relative to a vacuum'? If I say that the speed of sound *in water* is so many feet per second, then that is the same as saying that it is the speed of sound *relative to water*; and if I say that the terminal velocity of a certain falling body in the atmosphere is – whatever it is – then I am saying that that is the terminal velocity of the body *relative to the atmosphere*. So what possible objection can there be to the variant phrase 'relative to a vacuum' if not that it reveals the absurdity of the '*in vacuo*' statement!

But confront a modern physicist with this sort of scepticism; ask him how a vacuum, which is literally a *nothing*, can, in itself, act as a reference-frame for a velocity, constant or otherwise. He is not likely to reply 'Gee, I never thought of that!' and then go back conscientiously to question the statement at source. What he will do – what these teachers have traditionally

done – is hedge like crazy. The 'void', he may say, is not really a *nothing*; it is a *something* – a 'field', an 'ether', a space-time 'substratum', you name it. He can say things like that without it bringing the police knocking on his door. So alright, then, you say to him, why not fill the void with 'ectoplasm' or 'virtual angels' beating 'virtual wings'? What difference can there possibly be, objectively speaking, between these outright mystical creations and 'field' or 'ether', since there is not the slightest chance, in either case, of detecting anything of such a purely speculative nature?

So what makes us feel that in physics conferences we are free to write and talk with equanimity about 'ether', 'fields', 'photons' and so on and yet remain coy about suggesting 'ectoplasm' and 'angels'? What other answer can there be but that the one just happens to be fashionable in physics, right now, and that the other isn't?

There are, moreover, two academic premiums on creating this kind of nonsense. These are the professional jostling for scholarly preferment and the need to preserve one's name for posterity. These have created a conceptual slum in which just about every *ad hoc*, higgledy-piggledy theory gets academic planning permission to block the streets for future intellectual progress. To return to our original simile, we have created a veritable lake of umbala in which we are going down for the third time in a welter of pure jargon. And what is so amazing is that so many people seem to be happy with that! They talk for instance, with complete equanimity about 'wave-particles' travelling at a constant speed in the void with the mass and momentum of a projectile but with the resonant properties of a wave, which it is absolutely impossible to interpret literally or even consistently to imagine. Or they may talk about 'the ether' as though it were something familiar, that exists in itself, independently of matter, as though it were something primordial and enduring, to be described as 'curved', 'expanding', 'turbulent', 'sponge-like' ... or whatever. It is nothing, for instance, to hear physicists talking glibly, in conferences, about 'the beginning of time', about moving bodies 'dragging space-time around with them', and to see popular books on modern astrophysics displaying glossy pictures – *in colour*, would you believe! – of 'singularities' called 'black holes' from which no light can emerge! Indeed, to talk like that may even be regarded as obligatory, nowadays, in order to pass exams and get published.

To any honest, commonsense thinker there is plainly no objective difference between this so-called 'scientific' account of nature and the traditional stories about the doings of elves and pixies – except, of course, that it is understood by most people that elves and pixies are creatures of

good honest fiction, whereas we are conned into believing that the 'singularities' of the scientists are somehow true representations of things that are, in some altogether indescribable sense, real – but of course, not in any sense of 'true' or 'real' to which these scientists can be pinned down. And it is a well-known weakness of course, of the ordinary trusting person that he can be sold this 'umbala' by anyone in vested authority – in the same way that the priests of the Middle Ages sold the serfs assurance of a place for their souls in heaven.

Now one is by no means saying that all long and complicated, unfamiliar science words and phrases are 'pure jargon' (umbala). Words like 'indeterminacy' or phrases like 'quantum interaction', 'thermodynamical equilibrium', 'myelinisation', ... and so on, may sound unfamiliar and barbarous to some people, but they are scarcely longer or more complicated than words like 'wheelbarrow'. And in the same way, they have a perfectly clear and concise literary meaning which can be explained to anyone who is reasonably conversant with the language and who has gleaned at least some intimation of the areas of special knowledge in which these words are used. 'Jargon', on the other hand, is some form of usage which, even when fully explained to someone proficient in the language – indeed, especially to someone proficient in the language – makes no literal sense. Take, for instance, a phrase like 'expanding universe.' Ask the user of that phrase what on earth it means. Ask him, into *what* is a *universe* supposed to be expanding if not some other universe or space which is already there. And if there is *nothing* of that sort into which it can expand, then how can it expand? And take a phrase like 'the beginning of time', as relished in contexts of modern cosmology. This sounds poetic and profound. But since the word 'beginning' signifies a commencement *in* time, then the time in which that beginning began had to be there to begin with, which is just nonsense. Ask any one, as I once did at a conference, 'What time was it when time began?' and you will immediately be overwhelmed with sheer umbala.

By rights, however, any honest and forthright person should say to anyone who tells him that the universe is expanding that that is just pure nonsense. And if the reply is that you are some kind of ignoramus because all the evidence points to it as a 'fact' then you must dig your toes in and say that you're not falling for that old 'emperor's cloak' kind of guff, that neither observational evidence nor mathematics can prove something that is so logically absurd. The onus is then on whoever hands you that kind of garbage to modify his description of what he believes, so that you can

understand what he says. And if he can't do that, then you should tell him to push off and seek someone more gullible.

In short, then, what one is saying is that high-level, properly used language, is one thing and that jargon is another. Unfortunately, such plain speaking, especially among gatherings of those who are captivated by it takes nerve, like standing-up and challenging the vicar in Church. So we are socially conditioned into thinking that those who dispense these stilted forms of language, and who savour them in contexts of science like a kind of poetry or secular psalm-singing, that the fault is ours if we fail to understand the 'explanations' that are offered us. So anyone who is socially 'streetwise' knows that to kick against this sanctimonious nonsense is to ensure that no science-journal will print what you say. So if your aim is to get into print or on television you have to con the media moguls into thinking that as a respected professor of physics you have discovered 'twisticons' or massless 'nonexistrons', that 'the void' is Paisley-patterned, with the texture of Harris-tweed, or that quasars are cosmic mushrooms, you will immediately capture the media interest. You may declare, without a blush, that space is interspersed with time-wells into which falling particles exist backwards or sideways, and that if you fall into one you will come out in another. Everyone will sit up and take notice. That way, you may become as famous in physics as some obvious charlatans have become in art. But 'Umbala baffles brains', honest people will quietly judge, after you have said your piece and sailed grandly out of the room.

However, unless the development of our understanding of nature is to be dictated by the same rules that apply in art and fashion, then those of us who are involved in science must do our best to broaden the democratic dialogue. That is to say, we must do our best to explain and get our colleagues to explain what we mean, *in ordinary commonsense terms* that intelligent people outside our own subjects can understand, not in terms that only we and our closest colleagues will settle for. And the editors of journals should cease pandering to this intellectual in-breeding of ideas and insist – as, indeed, more and more editors now seem to be doing – that their contributors explain themselves in the way they would be forced to do in front of a jury in a court of law. And if such plain explanations prove impossible, then those contributors should be advised to take another good critical look at what they are saying, so as to make sure that in using arguments which go 'over our heads' they are not simply fooling themselves.

What increases the confusion most of all, however, is that there are socially influential people in physics nowadays who believe, in the name of

'intellectual freedom' that what is true or false in the subject is something which anyone is free to judge for oneself, and that such personal judgements should be treated as sacrosanct. This turns the history of thought full circle. The Sophist Protagoras, in ancient Greece, used to claim that 'Such as appears for you *is* for you, and such as appears for me *is* for me.' This was the attitude which spurred thinkers like Socrates, Plato and Aristotle into analysing this dictum, which they identified as what has since become known as 'sophistry'. And it was in opposition to this that they developed objective logic, dialectical discussion and philosophy – and, of course, that philosophical spin-off we now call science. As these thinkers analysed it, the sophistic claim that 'nothing is really true but only in opinion' cannot be taken as true without contradiction. In other words, what the Sophists were selling was whatever, at the time, would have been the Greek equivalent of 'umbala'.

Logically, then, since it cannot be true that nothing is true, something or other *has to be* true, even though we may not know, *a priori*, what that something is. This, of course, does not mean that truth is always simply a matter of honest speaking or that in science it is there to be discerned by plain inspection of statements made purely on the basis of direct and/or instrumental observation. As perception-psychologists confirm, even the very best and plainest cases of observation are *interpretational* and are, in most cases, culturally and subjectively conditioned by the conventions of our time. But at least we are logically assured that objective truth is there, not only because denying it creates a contradiction but also because we can definitely discover error, and to admit that there is error is meaningless without admitting that there is truth. In other words, true and false are correlatives. The one can no more exist without the other than an inside can exist without an outside or an up without a down.

This is not to say that discovering an error is the same as being apprised of an absolute and incorrigible truth. It may be no more than to discover that, as a consequence of finding the error, that there is something we know which is *more true* or *less erroneous* than what we thought before. Unearthing truth in that way is the painstaking method of eliminating error, that led to the sort of SCIENCE which, in its rational heyday, its famous exponent, T.H. Huxley, described as 'trained and organised commonsense'. It was simply, by careful observation and experimentation, to seek out new phenomena and interpret these, as conscientiously to oneself as to anyone else, in the plainest language available – that is to say, a form of language

which, even if entirely new, aims to be as organically connected and consistent with the common language as can be managed.

This, of course, also means the gradual winnowing-out of purely poetic descriptions of observation such as 'black holes', or 'quarks' with qualities of 'upness', 'downness', 'charm', 'nakedness', 'beauty' and so on, usages which have nothing in common with those of ordinary language but are similar enough to suggest that something sensible is being said which simply isn't. Moreover, if this analysis is carried through consistently, it also filters-out past descriptions of phenomena such as that of 'caloric' or 'phlogiston', or elementary 'charged' particles 'frizzing' away on their own, relatively to nothing but themselves, metaphysically possessed of some special kind of 'attractiveness' or 'repulsiveness', called 'electrostatic' or some other such exotic capability. In similar fashion it rules out talk of 'photons' travelling from A to B when that motion is no more detectable than that of angels between heaven and earth. To speculate, as an amazing number of physicists do, nowadays, about the 'mass of the photon' is about as useful as speculating about the momentum or power-to-weight ratio of an angel in flight. If you accept what is plain fact, that what is called a 'photon' is the smallest amount of energy there is, then it follows that it has no energy to spare in manifesting itself anywhere, in any form, between where it is emitted and where it is absorbed, so that any question of how it 'travels' or what else it does in between A and B is simply a daft question.

Jargon-addiction, then, let's face it, is no more than a flagrant form of illiteracy. It is no more than the 'bar-bar-bar-' of a new barbarianism in which mere noise usurps the place of logical understanding. But of course, in the privacy of their own laboratories, consenting physicists may speak and do as they please. That, for many physicists, is what 'democracy' is all about. But when those beliefs and activities are sported in public – in textbooks, for instance, or on prime-time TV – that is anarchy, especially if it corrupts the young and tender-minded into thinking that this kind of jargon is, or should be, the norm. Well, alright, if there were no recourse but to talk in that mystifying way – if, for instance, there were no commonsense alternatives available – then to speak of those entities in that stylised and alien fashion would be a Hobson's choice. It would have to be allowed 'on lease', as it were, on a 'working-hypothesis' basis. However, when that lease runs out on these *ad hoc* expedients – as it should surely do as soon as some properly plugged-in commonsense alternative presents itself – the irony is that these new representations are blocked by prior presupposition in favour of the existing ones, even when those existing ones transpire, on analysis, to be

pure nonsense. It has been well-demonstrated for instance, by Bondi and others, that all the salient consequences of Einstein's notorious 'Theory of Relativity' can be deduced much more simply and efficiently from commonsense premises without any mention of the nonsensical 'speed of light *in vacuo*' and its paradoxical and brain-racking 'EPR' implications. No less well-demonstrated is that this can be done without compromising any known experimental fact or practical formula. But although these alternative explanations have now been around for nigh on half a century, they receive scarcely a mention in those halls of academic science where the stench of the sacred bull continues to be savoured as though it were a divine incense, and where no suggestion of opening a logical window or using an analytic deodorant is allowed.

What it all it comes down to, then, in the end, is simply a matter of whether one's aim in choosing to be a scientist is to become clever and famous, like Einstein, or whether, like Socrates, it is to seek good honest understanding, even at the risk of offending polite society. Socrates was a self-professed ignoramus, an intellectual bullfighter, you might say, rather than a worshipper of the academic sacred bull. His reward for expunging pure pretences at knowledge was to be given the judicial hemlock. True philosopher and father of science that he was, he would rather quaff the hemlock than spend a lifetime wading in the sacred umbala.■