

Is there any place for personal taste in science?

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Vacation post No 3. I will be out of the virtual office until Monday 31 August.

It has long been the case that physicists talk approvingly about a physical theory as being 'elegant' or even 'beautiful'. Like so much else, this seems to have become commonplace in the 1960s. More recently I have become aware of similar sentiments being expressed in mathematics. In that case one can see that some particular proof, say, might be preferred to another, purely on grounds of economy or clarity or conciseness. However, in the case of physics, one might expect that a comparison of a theory's predictions with experimental results should be the deciding factor.

There is an old adage in engineering design to the effect that 'if it looks right, then it is right'. Obviously, there are constraints on this in that your design for a motor car must look as if it is capable of being a motor car. This latter point is an instance of the precept 'form follows function' which originated in architectural design in the early part of the last century. But the adage refers to quality, and

is

supposedly a way of separating a good design from other designs that are merely adequate. So the implication is that a purely aesthetic judgement can lead to a design that satisfies various, perhaps quantitative, criteria which give a universal meaning to the term 'good design' in some particular context.

Of course the insertion of the word 'probably' into the engineering adage might lead to its justification in practice. That is, if it looks right then it 'probably' is right. So the adage could offer a guide as to whether or not one should take a particular design idea further. For this to work there must exist some consensus on what is meant by 'looks right'. And this undoubtedly changes with time. A motor car which was at the leading edge of design in the 1960s will look distinctly old-fashioned nowadays.

But there is always some unease about using a personal value judgement to determine a matter which will ultimately be settled on a quantitative basis. And there are other complications too, even when the quantitative aspect is not present, as for example in the arts. An awful warning may be found in the well known crisis in painting at the end of the nineteenth century. This was triggered by the invention of photography, which in turn led to artists becoming

experimental in order
to avoid producing paintings which were no more than (in
effect)
photographs. Such attempts were reviled and even the formation
of
schools of activity (e.g. Fauves, impressionists) did not at
first lead
to acceptance.

Unfortunately the fact that impressionist paintings are now
highly
valued appears to have led to the pendulum swinging too far in
the other
direction of uncritical acceptance. Even so, those who are
specialists
in the world of art, literature or music can argue that their
'informed' eye or ear gives their opinion a special weight.
And no
doubt that is a tempting argument in science too. Indeed, in
the case of
string theory or the idea of the multiverse, where testing
against
experiment is impossible, it is arguable that aesthetic
criteria may be
all that one has. But, if consensus develops, this can then
lead to the
creation of schools of opinion and standard models, which in
turn can have the
perverse effect of shutting down other approaches to the
problem. This
is not the case in the arts. Indeed, the non-specialist can
say 'I know
what I like', and there is an end to it. One does not have
that freedom
in science. Or at least, not if one expects to get published
in the learned
journals.

Therefore, it does seem that there are dangers from importing purely personal aesthetic considerations into science. It is interesting to note that the greatest physicist of all had some words to say on this particular subject. In the preface to his 1916 book, entitled 'Relativity', Einstein stated that he had followed the precepts of that other great theoretical physicist, Boltzmann, '... according to whom, matters of elegance ought to be left to the tailor and to the cobbler'.