



Private prescription:

A thought-provoking tonic on the lighter side

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Sing a song o' science

Hillaire Belloc (1870–1953), the author and poet, is reported to have said: 'It is the best of all trades, to make songs, and the second best to sing them' [1].

Scientists certainly do the latter and I have attended many informal singsongs at conferences where scientists have performed creditably displaying hitherto unknown talents. It is interesting to note that some scientists have even written lyrics (generally set to well-known tunes) celebrating their subject. Unfortunately examples are difficult to find in the literature. However, over the years I have managed to accumulate a small collection covering a range of subjects including physics, chemistry, histology and medicine.

Physics

One of the earliest examples of a song written by a scientist specifically about a scientific principle, I discovered while perusing a collection of comic verse [2]. It was listed as a poem written by James Clarke Maxwell (1831–1879), the eminent physicist, and was entitled 'Rigid Body Sings'. It deals with the motion of two rigid bodies in air:

Gin a body meet a body
Flyin' through the air,
Gin a body hit a body,
Will it fly? And where?
Ilka impact has its measure,

Ne're a' ane hae I,
Yet a' the lads they measure me,
Or, at least, they try.

Gin a body meet a body
Altogether free,
How they travel afterwards
We do not always see,
Ilka problem has its method
By analytics high;
For me, I ken na ane o' them,
But what the waur am I?

Fortunately, all of Maxwell's poems (he wrote over 40) have been collected in his biography [3] where the title of this poem is simply referred to as 'Rigid Body' with the word 'sings' in parentheses implying that the poem was to be sung – hence the use of dialect (for those who do not understand the dialect the words gin, ane, ilka, ken and waur mean if, one, every, know and worse, respectively). It is, in fact, a parody of that well-known poem and song 'Comin' Through the Rye' written by Robert Burns a century or so earlier to be sung to the tune 'Common' Frae The Town'.

Using song to convey ideas about complex physical concepts has been cleverly applied by George Gamov (1904–1968), the physicist, in his books featuring C.G.H. Tompkins, the mild mannered bank clerk with the short attention span and vivid imagination. In

his book *Mr Tompkins in Paperback* [4], Gamov presents three arias (including the music) to be sung by three eminent cosmologists for what is referred to as a Cosmic Opera dealing with the theories of the universe then in vogue.

'Songs can be used to convey ideas about complex concepts.'

The first aria is sung by Abbé Georges Lemaitre and deals with the big bang, the second is sung by the author himself and deals with the expanding universe and the third is sung by Fred Hoyle and deals with the steady state theory. Two stanzas from the third aria to be sung to the tune 'Rule Britannia' illustrate the approach.

The universe, by Heaven's decree,
Was never formed in time gone by,
For is, has been, shall ever be –
For so say Bondi, Gold and I,
Stay, O Cosmos, O Cosmos,
stay the same!
We the Steady State proclaim!

The aging galaxies disperse,
Burn out, and exit from the scene.
But all the while, the universe
Is, was, shall ever be, has been.
Stay, O Cosmos, O Cosmos,
stay the same!
We the Steady State proclaim!

Although whimsical, this is a scientifically accurate description of the steady state theory of the universe put forward by Fred Hoyle, Hermann Bondi and Thomas Gold. Of course this theory has not survived scrutiny and the Big Bang theory has now convincingly won the day.

Chemistry

In the 1930s, the news edition of the journal *Industrial Engineering Chemistry* published several songs dealing with chemistry and written by chemists. Two are favourites of mine. The first 'I'm going to be a chemist' is meant to be

sung to the tune 'It's a long, long way to Tipperary' and deals with the trials and tribulations of being a chemist [5]:

It's not easy to be a chemist,
It's a long way to go,
Qualitative, quantitative,
Must be accurate, you know.
Precipitation, then in filtration,
Colloids make me tear my hair –
It's a long, hard road to be a chemist,
But my heart lies there.

The second, to be sung to the tune 'I am the Very Model of a Modern Major General' from the operetta 'The Pirates of Penzance' by Gilbert and Sullivan, is aptly entitled 'The Modern Doctor Chemical' [6]:

I am the very pattern of a modern
Doctor Chemical;
I send to all the journals my remarks
and views polemical.
I've studied mathematics till I think in
terms vectorial
And scorn the plodding soul who seeks
for molecules pictorial.
And calculus is food for babes; I love
a complex var-i-able
And state a simple law in terms the
layman thinks are terr-i-able.
I can talk of relativity and space-time
for a month or more
And integrate elliptically to terms the
(n+1)th or more-
And yet my hand and mind are seized
with palsy and paralysis
When I essay that dreadful task-
a chemical analysis.

Medicine

The largest group of scientists who use song extensively to parody their peers and their subject are the medics. I reviewed one specific song dealing with pharmaceutical preparations on the US market in 1977 in a recent article [7]. Howard Bennett, in his delightful book *The Best of Medical Humour* [8], has made a collection of songs performed at concerts at his university (The George

Washington University School of Medicine and Health Sciences; <http://www.gwumc.edu>). One of my favourites is a song on diagnosis to be sung to the tune 'My Favourite Things' from the Rogers and Hammerstein musical 'The Sound Of Music'. The first two stanzas are as follows:

Crackles and rhonchi and sibilant
wheezes,
Downgoing toes in a patient, who seizes,
E. multiforme with concentric rings,
These are a few of my favourite things.

Mitral valve prolapse and EKG squiggles,
Looking for pulses in babies who wiggle,
Tapping on tendons that never
quite swing,
These are a few of my favourite things.

The song has eight stanzas in total, is technically correct and enjoyable to sing.

Histology

It should not come as a surprise that some enlightened scientists have used the medium of song to present work at conferences. The most notable example is Howard Shapiro [9], a histochemist, who in 1977 presented, or rather sang, his work to the 28th Annual Meeting of the Histochemical Society in Chicago accompanied by a guitar. The piece consists of 17 stanzas each of two rhyming couplets and is entitled 'Fluorescent dyes for differential counts by flow cytometry: does histochemistry tell us more than cell geometry?' It is a serious study with an introduction, methodology, results and discussion and even acknowledgements. Example of two stanzas taken from the introduction and the methodology sections illustrate Shapiro's style (the melody line and chord harmony are provided in the paper):

Blood cells are classified by cell
and nuclear shape and size,
And texture, and affinity for different
types of dyes,
And almost all of these parameters

can quickly be
Precisely measured by techniques of
flow cytometry.

From digitized, scanned images of
blood cells on a slide,
Key features are extracted; cells are
then identified
From distributions of a few – say four
or more – of these,
By multivariate statistical analyses.

It is unfortunate that there is no record of how this was received by the audience.

The last verse

I have chosen the examples to illustrate the diversity of the subject matter, the scientists who have written the lyrics and the structures of the songs. All are clever, humorous and parody, to varying extents, their subjects. Indeed, all are technically correct and enjoyable to sing. I welcome any further submissions from readers for my collection. Perhaps one day I will revisit this subject and review some songs relating to drug discovery!

References

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