

WHERE ARE THEY?

I began to specialise in electromagnetic theory in 1962, fifty years ago. I researched the interconnection of high speed (1ns) logic at Motorola in Phoenix. They were making the fastest logic. No lecturer or textbook writer has been addressing the subject anything like as long. Further, textbook writers are trapped in the theory appropriate for steady state, sinusoidal radio, which includes radar. The established theory takes no account of any of the insights gained from high-speed digital electronics.

In 1967 I successfully published a major 20-page article in one of the top refereed journals, since ignored. My two later, minor, papers in ProcIEEE have also been ignored. Today, none of the content of my six books on the web, including the one published by Macmillan, has gained entry into any university course or textbook in the world. This led me to jettison the results of my work, and in 1982 I asked an elementary question in classical electrodynamics, now called "The Catt Question". Although all accredited experts avoided making any comment, two such were selected by their superiors and instructed to comment. They totally contradicted each other, and during the next 30 years refused to discuss their contradiction with each other or with us.

For eight years now, a £500 prize is offered to the first student who gets his accredited expert lecturer or textbook writer to comment in writing on "The Catt Question". Recently, the flaws I have found in classical theory have multiplied, some being published in Electronics World. It has taken me incredibly long to see what in hindsight are obvious further flaws, which explains and might somewhat justify the myopia of all accredited experts. No "expert" comments on what I have found.

When, after trying for ten years, I was finally invited to lecture on "The Catt Question" to the Cambridge University Engineering Society, my talk was boycotted by the students as well as by the lecturers. Students do not tolerate doubt being cast on what they are learning.

A politician who once spoke from the same platform as Ken Livingstone told me: "It is important for a politician to not understand something which it is in his interest to not understand." I paraphrase this as "It is important for an established expert to not understand something which it is in his interest to not understand". Certainly, relevant professors protest to third parties (but not to me) that they cannot understand what I am getting at, when I think my communication is very clear, for instance in "The Catt Question".

"Crimestop means the faculty of stopping short, as though by instinct, at the threshold of any dangerous thought. It includes the power of not grasping analogies, of failing to perceive logical errors, of misunderstanding the simplest arguments if they are inimical to Ingsox, and of being bored or repelled by any train of thought which is capable of leading in a heretical direction. *Crimestop, in short, means protective stupidity.*" ~G. Orwell, 1984, pub. Chancellor, 1984 edn., p225

However, this letter points to a much more basic problem. Lecturers and textbook writers today have very little grasp of their theory, the classical theory. In particular, they do not grasp the Transverse Electromagnetic Wave, particularly the step, travelling at the speed of light guided by two conductors. This is the basic building block of 95% of all electronic equipment – the way a logic gate signals to another logic gate. For more than a decade, my website, no. 2 Google hit for TEM, has the title "The TEM Wave; a lost concept" or "Transverse Electromagnetic Wave".

In the last century, no textbook mentioned the relative phase of E and H in a TEM sine wave. The lecturer is not helped when the third hit in Wikipedia gives the wrong relative phase of E and H.

Books on electromagnetic theory "allude" to less and less of the key factors in electromagnetics, for instance even ignoring displacement current, while at the same time advancing from 200pp to

WHAT THE READERS SAY

500pp and £20 to £50.

Today's no. 1 hit for TEM, the MIT entry, ahead of my own no. 2 hit, says: "We shall be

interested primarily in the sinusoidal steady state. Between the plates, the fields are governed by differential equations having constant coefficients. We therefore assume that the field response takes the form:

$$\mathbf{H}_z = \text{Re } \mathbf{H}_z(\mathbf{y})e^{j\omega t}; \quad \mathbf{E}_x = \text{Re } \mathbf{E}_x(\mathbf{y})e^{j\omega t}."$$

End of MIT quote.

All TEM animations on the web are sinusoidal. This is what traps the lecturer or textbook writer. Knowing the Fourier series, he assumes he can ignore any waveform other than the sine wave, and so he does not think about (or grasp) the very simple voltage step, which is the basis of "The Catt Question", which he therefore cannot cope with. He sees it as an array of sine waves, and so cannot see where the electric charge comes from. Instead, he gets entangled in obscure and irrelevant mathematics, which he dumps on his awed student or textbook reader.

Today's problem is not only that accredited experts around the world do not cope with my advances, including the fatal flaws I point out, or even address them. They do not even have a proper grasp of their own classical theory, having buried it in a mass of sine waves and obscure mathematics, and having ignored the logic step, which is fundamental to today's electronics.

This is very serious, since, as Einstein asserted, electromagnetic theory is a core subject in science.

Ivor Catt

IF YOU WOULD LIKE TO COMMENT

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