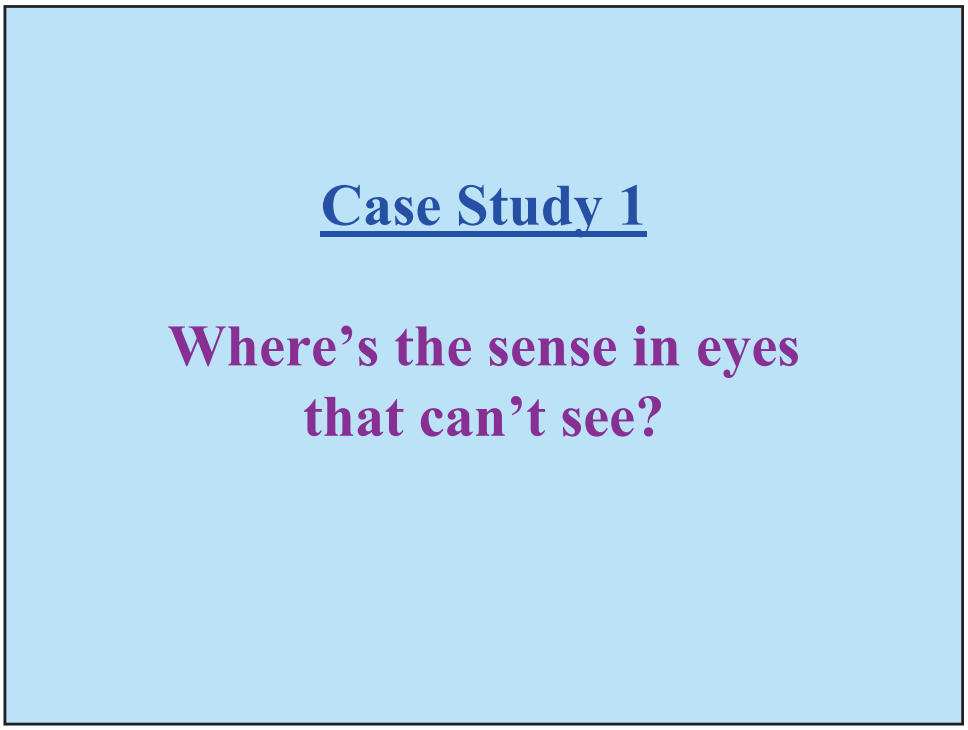
Text in **RED** - on or off slides - provides an abbreviated version of talk accompanying slides.
Some slides have been stretched to include that text, which was not on slides as presented.

In the past 20-30 years, and notably since the start of the new millenium, significant new scientific discoveries have been made which challenge the thinking behind the guidelines set for safe exposure to modulated electromagnetic radiation, as used in mobile telecommunications.

It's time to think outside the box - and to **look** outside the box.

"There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

Hamlet, in *Hamlet Act 1 Scene 5* - Shakespeare



This question is intended quite literally, and will be answered quite literally.
But first we'll take a slight detour through the world of David Bowie.

Assessment of possible health hazards is based largely on our understanding of anatomy & physiology.

The human eye contains 3 types of colour receptors - humans are TRICHROMATS.

Some fish, insects, birds, reptiles, spiders have 4 types of colour receptors - they are TETRACHROMATS.

In the 1970s film 'The Man Who Fell to Earth', David Bowie played a humanoid alien whose sight was damaged by forced irradiation, because he sensed wavelengths that we can't. That was science fiction, this is the real world. So ...

The first human tetrachromat was identified at Cambridge University in 1993.

Human tetrachromacy is now a well-established fact.

We are NOT all the same.

It would be well to bear this in mind before dismissing electrosensitive individuals as 'deluded'. We wouldn't force red-haired fair-skinned people to stand in the sun to prove their heightened sensitivity - that would quite rightly be considered barbaric. Why do we treat those with sensitivity to **other** frequencies so callously?

But we CAN all agree that we have <u>two</u> types of sensors in our eyes – cones for colour, rods for edge detection? And that sensor response depends on energy level?

Not quite.

***Science*, April 1999: "Regulation of mammalian circadian behavior by non-rod, non-cone, ocular photoreceptors."**

THIS is the "sense in eyes that can't see", as experimentally demonstrated in mice that were bred without rods or cones. We ALL have a sixth sense (and quite possibly more) - it regulates our daily rhythms and sleep patterns

Foster, R. 'Children with Leukaemia' Conference, London, September 2004. 'Novel Insights Into Photoreception, Phototransduction and Biological Rhythms – How Might This Impact on Carcinogenesis?'

Professor Foster confirmed categorically that response of these photoreceptors depends, NOT on EMF (light) energy levels, but on photon density.

SEE NEXT SLIDE FOR THE SIGNIFICANCE OF THIS OBSERVATION

Two points arise from this:

1. Those sensors have been there for millions of years – but we have known of them for less than a decade.

What else do we not know?

2. The energy of one visible-light photon corresponds to half a million Tetra/GSM photons (on average).

Tetra/GSM antenna: energy of a 40-watt light bulb.

Photon equivalent of 20,000 Kilowatts of visible light – over 1,000 World War 2 searchlights.

And this is radiation that our bodies have NOT evolved to handle effectively.

N.B. Eyes only evolved because cells responded to EM radiation.

Let's go over that again, slowly: To produce the energy equivalent to one visible-light photon takes on average 500,000 Tetra/GSM photons. So one watt of Tetra/GSM radiation carries half a million times as many photons as one watt of visible light - and similarly for 40 watts. That's 40 x 500,000 = 20,000,000 times as many photons as a watt of visible light Or the equivalent of 20 million watts-worth of photons of visible light. A World War 2 searchlight, with a beam that carried 35 miles, was 15,000 watts.

As for the evolution thing: As we approach Darwin's Bicentenary, let's remember that the process of natural selection favours those qualities already inherent in an organism that lead to 'competitive advantage'. So the development of eyes indicates that cells were already sensitive to electromagnetic radiation, and natural selection enhanced that sensitivity at frequencies that improved chances of survival - visible frequencies. Not having 'microwave eyes' doesn't show that our cells are not sensitive to microwaves, simply that such an organ wouldn't be useful.

The fact that we have EMF receptors (eyes) shows that we ARE receptive to EMFs - and there's NO reason why that initial sensitivity (before eyes) should have been just to visible light.

Case Study 2

Memory Man

This case study was originally titled:

'A Black Day for Science'

but the title was toned down so as not to be over-contentious.

Dr Jacques Benveniste: highly respected biologist, Head of Immunology & Allergy dep't at INSERM
(French National Institute for Health and Medical Research)

1988: Benveniste publishes paper in *Nature* reporting results supporting the concept of 'Water Memory' - Homeopathic dilutions of substances affecting organisms.

(Publication was conditional on replication first.)

[FIVE successful replications by other labs.]

1 week later, *Nature* sends an investigation team to Benveniste's labs: (a) a physicist, (b) a chemist and (c) a stage magician turned 'debunker'.

(a) was *Nature*'s editor, (b) was a well-known sceptic, (c) a quackbuster - no hidden agenda here, then.

Some replications were successful, some unsuccessful. Disagreement over reasons – Benveniste 'discredited'.

2001: *Inflammation Research* publishes culmination of successful replications of Benveniste's findings in blind trials involving independent labs in four countries.
See details of that multiple replication below this slide.

***The Guardian* reported: "Either Benveniste will now be brought in from the cold, or … the scientists involved in the pan-European experiment could be joining him there."**

Anyone who doesn't see this as a chilling indictment of scientific conservatism is missing a fundamental point here.

The same *Guardian* article also stated:

"The consequences for science if Benveniste and Ennis are right could be earth shattering, requiring a complete re-evaluation of how we understand the workings of chemistry, biochemistry, and pharmacology."

Bad news for the pharmaceutical industry - and, as it happens, the mobile phone industry, too.

The 4-nation multiple replication was led by a Belgian professor. Professor Madeleine Ennis, of Queen's University, Belfast, was a participant - but not the leader, as wrongly reported in various places. Samples were prepared in three different labs that took no further part in the experiment; an independent researcher who coded the solutions and collated the data also had nothing further to do with the trials. The trials were thus effectively 'double blinded'.

Three of the four labs reported significant results, the fourth was almost in the 'significant' category, giving a clear positive result overall. Professor Ennis, looking for a possible confounding factor, felt that hand-counting of samples could have possibly introduced a 'human error' factor. She repeated the process using an automatic counting protocol. She was amazed that this gave a statistically significant positive confirmation of that result.

By his death in 2004, Benveniste was still 'out in the cold'.
For committing the cardinal sin of making a discovery - verified by at least eight independent replications - that conventional science could not explain? Apparently so.

***Wikipedia* entry starts: "Water memory is a scientifically refuted speculation …". Readers should use their judgment – and study the 'discussion' page.**
'Pseudoscience' box includes a Nobel laureate whose discovery is built into life-saving equipment used in every hospital worldwide. Madeleine Innis escaped that box by (according to 'discussion') having a politically correct degree of scepticism.

Homeopathy has a history of highly successful treatment of various illnesses, c.f. conventional medicine.

In various cholera epidemics in USA & Europe (1800s)
Percentage mortality under:
(a) Conventional medicine: 40% - 50%
(b) Homeopathy: 10%
Sceptics don't dispute these figures, but explain them away by claiming that conventional doctors killed their patients by ham-fisted treatment, whereas homeopaths did nothing, good or bad. That argument isn't supported by a third mortality rate figure:
(c) No treatment: 60%

SO WHAT'S THIS GOT TO DO WITH MOBILE PHONES?

Benveniste's findings explicitly include the idea that cell receptors recognise a molecule by its *electromagnetic frequency* rather than its *shape*.
(Hence the name of his research lab: DigiBio)
The conventional view is that cell receptors recognise molecules by physical shape-matching, like fitting a key into a keyhole. Benveniste observed that this is a pretty haphazard process. How does a receptor juggle a molecule around until it fits into the shaped socket - and how long does it try, with **each** of the different molecules that are floating around it??
All molecules have characteristic frequencies; 'beat frequencies' of complex molecules are comparatively low - which could mean that extraneous signals (such as modulated EMFs) could trigger abnormal functioning of cells.
This matches experimental evidence from phone emissions.

This could have significant implications for effects of modulated electromagnetic waves on living cells.

"Physical assault at a cellular level." Dr Grahame Blackwell

Case Study 3

What do squids and enzymes have in common?

***Quantum Tunnelling*: sub-atomic particles such as electrons, acting as a probability-wave, can 'tunnel' through barriers impassable in classical physics.**

In 1973 Brian Josephson (Cambridge University) , originator of 'The Josephson Effect' [tunnelling supercurrents] shared the Nobel Prize with two US researchers who demonstrated that effect.
[Josephson was the Nobel laureate who supported Benveniste]

***SQUID*: Superconducting Quantum Interference Device**

Uses quantum tunnelling for detection of extremely low-intensity magnetic fields, e.g. in MRI scanning.

A very practical demonstration of this revolutionary quantum effect.

***Science*, April 2006: 'Atomic Description of an Enzyme Reaction Dominated by Proton Tunneling.'**

Enzymes use quantum tunnelling to transfer particles millions of times faster than their normal rate - and must have been doing so for millions of years.

Enzymes are even able to tunnel large particles such as oxygen nuclei.

Tunnelling of a large mass such as a proton is more difficult than tunnelling of a smaller mass such as an electron.
Most man-made applications of quantum tunnelling involve electrons (in electronic circuits).
An oxygen nucleus is 32,000 times the mass of an electron..

For millions of years nature has been using techniques that we are only just beginning to learn about – effects we use to detect 0.00000000000000005T fields

What else do we not know??

Case Study 4

The Crystal Connection

***Stewart Report*, Para 5.6: "… any biological effects from mobile phones are much more likely to result from electric rather than from magnetic fields."**

This is because magnetic fields are so much weaker.

[Worth remembering here, though, the size of fields we can detect with the Josephson Junction (see last case study) - and that biological enzymes know that tunnelling trick.]

Frey, *J. Appl. Physiol.*, 1962: identified microwave hearing as a sub-thermal EMF effect.

***Science*, 1967: otoliths (crystals in inner ear) of some species identified as piezoelectric.**

Put those two together and what do you get?

Could microwave hearing be a piezoelectric effect??

[i.e. electrical fields cause physical distortion of crystals.]

Official sources dismiss microwave hearing as a thermal effect – based on a mathematical simulation (Lin, 1977).

Subsequent studies have also been based on mathematical models.

Why no check on piezoelectric possibility?

***Bioelectromagnetics*, 2002: 'Calcite Microcrystals in the Pineal Gland of [every] Human Brain.'**

"Striking resemblance to otoconia of the inner ear."

In other words: "Piezoelectric effect is a real possibility."

Of all the journals, *Bioelectromagnetics* is a must-read for everyone involved in EMF health issues - notably members of official bodies such as ICNIRP, WHO, HPA-RPD.

Various studies identify sub-thermal EMFs as reducing night-time production of melatonin – consistent with sleep disorders and cancers reported around masts.

Pineal gland is a primary source of melatonin.

Next obvious step:

Check pineal gland crystals for piezoelectric response.

The authors were very aware of this:

"Studies directed toward elucidation of formation & functions, and possible non-thermal interaction with external electromagnetic fields, are currently in progress."

BUT

No funding to continue research.

Given the obvious connection between the pineal gland and clear replicated research findings (and anecdotal evidence), **how** can official bodies justify **not** supporting or undertaking further research to check this possibility???

Transfinite Mind

A 21st view of Matter, Time and Space

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A radically new approach to mobile telecommunications is needed - which in turn requires a radically new view of physics.

The Electromagnetic Description of Matter explains:

Why **the measured speed of light is invariant;**
Why **apparent mass increases with speed;**
Why **$E = mc^2$;** ***What*** **causes inertia;**
How **gravitational effects are caused by matter;**
What **causes Einsteinian curvature of spacetime;**
Why **time is an 'imaginary' dimension.**

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