

## A new quantum theory to explain homeopathy

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This Newsletter presents a new development in quantum theory which could explain many of the observed effects of homeopathic dilutions. This novel theory was first formulated in 1995<sup>1</sup> by Giuliano Preparata (1942-2000), an Italian theoretical physicist at the University of Milan. Before going into a description of this theory, let us remind ourselves of the need for such a theory in homeopathy.

### The need for a theory

Presently we have no accepted scientific theory of how homeopathic dilutions might work. Several lines of enquiry have been followed over the years with little success. One such theory hypothesises the presence of complex water structures, created and propagated through the dilution/succussion process. The problem with such a hypothesis is that our current physical theories predict such structures would not be stable for more than a few picoseconds ( $10^{-9}$  second) and hence these structures could not account for the long term effects reported for homeopathic dilutions<sup>2</sup>.

Another approach is to use a generalisation of quantum theory, the so called Weak Quantum Theory (WQT) and consider the quantum entanglement between the remedy, the patient and the practitioner<sup>3,4</sup>. However, WQT approaches make few physical predictions, which could be tested experimentally, and hence are hard to prove or disprove. This leaves us with a paucity of theories able to explain how homeopathic dilutions might work. I will now present a new theory, which is currently being investigated by physicists and has the potential to explain part, if not all, of the homeopathic dilution process.

### A new theory

This theory, as initially formulated by G. Preparata, is an extension of the conventionally accepted Quantum Electro-Dynamics (QED) originally formulated in the late 1920s by R. Feynman and others to describe how light interacts with matter. Preparata added the possibility of polarised particles interacting with external electromagnetic (EM) fields and thus opened a new sphere of possible phenomena.

The theory suggests the presence of quantum Coherence Domains (CD) in condensed matter (i.e. normal liquids and solids). In the case of water these CDs would be small volumes of water each one acting as a single 'quantum' entity rather than a collection of water molecules randomly colliding with each other.

One can think of these domains as the remnants of the quantum domains which exist in superconductors and superfluids at very low temperatures. At low temperatures the CDs occupy most of the volume of the material, thus endowing it with the 'strange' quantum properties of superfluidity/superconductivity. As the temperature rises these CDs are eroded by the surrounding normal, 'not-quantum-coherent' material, and break into smaller domains. The prediction is that at room temperatures these CDs would account for 28% of the volume of the material, the average size of a CD is estimated to be 250Å, which is the size of a typical protein<sup>5,6</sup>.

Each atom, molecule, or even complex set of molecules, has a range of associated electromagnetic frequencies characteristic of that substance. Actually this signature is so precise that it can be used to detect very small concentrations of pollutants in chemical processes<sup>7</sup>. Now, what makes these CDs potentially interesting for homeopathy is that they 'lock-in' the EM fields present at the time of their creation. In this way CDs would register the EM field characteristic of a given substance. This process could capture the signature of specific DNA fragments as in the experiments by Montagnier<sup>19</sup>, or indeed of any other substance. CDs of similar EM characteristics are also predicted to tend to clump together, thus requiring an external force to separate them out.

The serial dilution/succussion process could then be understood as distributing the CDs carrying the specific EM information around the sample (through vigorous succussions or vortexing) while eventually removing all trace of the original chemical substance (through dilutions).

It is also a well documented fact that chemical, biochemical and living systems as a whole are sensitive to EM fields<sup>8,10</sup>. The administration of properly 'informed' CDs could affect these processes in very specific ways. Thus a homeopathic remedy, carrying specific information about the EM field of the original substance, would be able to affect biochemical processes in a patient and act as a therapeutic agent.

The physical properties of these CDs would in turn explain many of the reported effects of homeopathic dilutions. In particular it would explain the anomalous light spectra (UV-Vis & Raman) of homeopathic dilutions<sup>11-13</sup>, the anomalous heat of mixing of homeopathic dilutions<sup>14</sup>, the specific thermoluminescence of homeopathic dilutions<sup>15,16</sup>, and the way in which Benveniste and co reported transmitting the effect of a chemical reagent through an EM signal<sup>17,18</sup>. It could also explain the 'cross talk' effect reported by Montagnier et al, whereby one strong sample influence the EM spectra of another sample nearby<sup>19</sup>.

The theory as presented by Preparata in 1995 is currently becoming more recognised in conventional streams of physics. The last few years have seen a number of scientific papers confirming both the theoretical validity of the theory, as well as presenting experimental evidence supporting the existence of the hypothesised CDs<sup>20-23</sup>. It is thought the presence of CDs could explain many of the unexplained properties of water and other materials<sup>20,24</sup>

This theory is still debated in the physics circle as it lays down the foundations for a new way of looking at room temperature condensed matter theory, which until relatively recently used a mostly classical description of the interaction between the atoms. Preparata's QED highlights the possibility of sizeable quantum effects in everyday materials. The links between Preparata's QED and homeopathic dilutions as briefly presented here are still tenuous; however it is currently the most promising theory out there and one to be followed closely. The HRI intends to design and carry out experiments able to test the hypotheses made by G. Preparata.

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