

GUEST EDITORIAL

A “Maddox Effect”?
A Reason to Adopt Time Series Protocols
in Tests of Homeopathic Remedies

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Homeopathy is a subject that is arousing considerable interest in the scientific world for many reasons. Not only is homeopathy a potentially a powerful and economical system of medicine, it also presents a challenge to the world of science that may be the key to the next paradigm shift. This is because it contradicts the idea that the properties of matter are purely material, reducible to material properties of its component parts. This “principle of reductionism” is held by many to be fundamental to scientific thought. There is no way reductionism can survive experiments establishing that ultradiluted homeopathic medicines in which none of the original component parts are left, work in the traditionally assumed manner, involving neither placebo nor healing resulting from the patient–practitioner relationship (PPR). The consequences of experimental proof of homeopathy will be immeasurable, reaching far beyond the fields of medicine or biology. That is why the controversy surrounding tests is so great and positive results are greeted with such skepticism.

The need, if homeopathy is to be *proven* to be effective, is that the most appropriate protocols should be designed for the experiments, as Jonas has emphasized.¹ This will be much easier when a basic theory of the whole field becomes available. The present challenge therefore is to find, and prove, a valid theory. The two go hand in hand. A theory aids experimental design; the resulting experiments may (or may not) validate and establish the theory.

Because the structure of the field violates reductionism, classically based theory can be ruled out. Reductionism was established on the basis of classical physics and chemistry, and is the basis for the current worldview of scientific materialism. Any theory must be at least a quantum theory, and not merely a quantum representation of a classical world-

view as is, for the most part, presently the case. The theory needs to be radically novel. Not even a theory based purely on electromagnetic fields will suffice.*

There have been several recent attempts at a suitably revolutionary, nonclassical quantum theory. Both Walach² and Milgrom^{3,4} have proposed complex structures for a theory involving quantum correlations now known as entanglement. This author has proposed direct models of the therapeutically active ingredient (TAI) depending on a new theory of complexity at the quantum level—“quantum complexity.”⁵ Walach⁶ and Milgrom (this issue, pp. 813–829 and 831–838, respectively) concur that, in these kinds of theories, blinding and double blinding experimental tests on a homeopathic remedy interferes with the experiment itself. They suggest that, for experimental investigations on homeopathy, double-blinded protocols will not work.

Should this really turn out to be the case, it raises serious questions: What experiments should be performed? What experimental protocols would be acceptable, in the sense of being rigorous science?

Before considering this in detail, another important aspect of Walach and Milgrom’s work should be considered. It may provide an explanation for the reversal of experimental results when the celebrated experiments of Benveniste⁷ and Ennis⁸ were reperformed with double-blinded protocols under the direction of John Maddox.⁹ The implications of the new theories are that, by making the experiments double-blinded, rather than destroying experimental support for homeopathy, Maddox unintentionally invalidated the experimental protocol.

In this case, the two data sets—those of the original experiments and those of the reperformed ones—should have shown statistically significant differences that were never

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*This means that if “memory of water” is to be explained, some unexpected aspects of quantum theory need to be involved.

tested for because each set was only tested against the null hypothesis: Homeopathy does not work. The old data should be reevaluated in this light. Any significant difference would shed entirely new light on the events described.

Had Maddox acted more dispassionately and tested this alternative, he might have been the discoverer of an important new effect: a “Maddox Effect.” Questions about a “Maddox Effect” still remain today. Does it exist? Can we really expect it? Their importance is considerable. The possibility of such an effect can guide new experiments. Finding precise answers will help distinguish among various competing quantum theories of homeopathy.

Both Walach and Milgrom have concluded that homeopathic medicines may be able to interfere with each other because of an effect either analogous to, or identical to, the “superposition of states” (or wave interference), the hallmark of quantum theory. Validating the “Maddox Effect” will prove the quantum nature of homeopathy, and, possibly, of any TAI—a second problem requiring investigation.

A remarkable feature of quantum theory is that it does not describe a “thing-in-itself” but rather its wave functions are universally agreed to refer to *knowledge* of the thing being described. This implies that information and knowledge are prior to “things” (i.e., things-in-themselves do not exist separately from information generated about them).

The implications of this fact for homeopathy should be carefully noted. If knowledge is of the essence, then by imparting “instructions” to that essence, and imbuing it with information, that “knowledge” can be altered. It is this kind of “changing of the essence” that occurs in potentization. Whatever is “potentized” by being ultradiluted is of the essence, the “spiritual essence of matter,” as Hahnemann put it.¹⁰ Thus, we arrive at an ironic identification, for the Greek letter *psi*, representing quantum wave functions, represents nothing less than the “psyche” or spirit.

Yet, if we are to represent what is being “potentized” during dilution, it cannot be the normal, Schrödinger wave function representing the probability of finding the object itself, for that dilutes to 0, as we would expect. So what can it be? It must be an associated wave function, something different from the normal one. Fortunately, quantum theory can accommodate this idea, for in quantum field theory, even quantum fields are subject to uncertainties in value, like those assailing position and momentum in ordinary quantum theory. And anything diluted to create a potentized homeopathic medicine can be represented by a quantum field.

It is the *uncertainties in the values* of quantum fields, representing diluted molecules, that are candidates for the TAIs of homeopathic remedies. Dynamically speaking, they are the same as the quantized fluctuation wave functions previously identified as candidates for the TAI⁵ in keeping with work by Weingartner¹¹ and Torres.¹²

If a normal quantum field (wave function) represents our *knowledge* of an experimental situation, the field’s quantized fluctuations represent dynamic aspects of an *uncer-*

tainty in the same knowledge—the extent to which its information content is indefinite, allowing the potential for freedom of choice. That would be indicative of an *inner intelligence* of the material concerned—something qualitatively different from, and more refined than, mere information about it.

Whether such quantum fluctuation fields obey exactly the same laws as other quantum fields is not yet clear but they would certainly enter into superposition states and create interference. The difference suggested by Walach and Milgrom is that such fields might enter into superposition states even though they originated from different sources, something ordinary quantum fields do not do. However, since they are qualitatively different, and are being considered in situations that are highly unusual, where, as states of knowledge, their history has been made untraceable, anything may be possible. We must await detailed experimental testing to see what transpires.

In light of the very real possibility of a “Maddox Effect,” a new protocol is required to evaluate the efficacy of homeopathic remedies. It should at least satisfy the following requirements:

1. There must be a way to assign a *p* value for the significance of the experiment.
2. The experiment must rule out special selection as a cause for the result.
3. The experiment must be consonant with ethics of treatment: No harm should be caused to patients nor should there be excessive delays in treatment in the name of science.

If possible, causality should be established for the effects of medication used. In other words, the protocol needs to eliminate the possibility of placebo effects, and PPR effects such as healing.

The best kind of protocol satisfying the above requirements is time series analysis, where several measurements are made before and after intervention. All the data points obtained are plotted in a graph of time against the measured variable, and differences in initial and final trends are used to identify the point of intervention *from the data*. Agreement with experimental knowledge establishes the causal nature of the intervention; reliable values of statistical significance can also be obtained. The same protocol can be repeated for all experimental subjects, so no patients go untreated. Any limitations caused by restrictions of age, social group, et cetera, caused by subject selection would apply as for all RCTs.

Time series protocols are extensively used in the social sciences. There is no reason why they should not replace RCTs as the protocol of choice for experiments on homeopathy, or any other discipline of complementary medicine (or Western biomedicine), for that matter. A time series study of veterinary homeopathy would eliminate placebo

and, if suitably designed, might also eliminate possibilities of external healing influences as well.

If such experiments yield significant results, they will not only influence medicine, but, because homeopathy negates classical, reductionist thinking, they will destroy the simplistic interpretations of scientific materialism, impacting the entire future of science.

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