APPENDIX III

A CASE FOR THE UNBELIEVABLE

"I can't believe all that!" said Alice.
"Can't you?" the Queen said in a pitying tone. "Try again: draw a long breath, and shut your eyes."
Alice laughed. "There's no use trying," she said. "One can't believe impossible things."
"I dare say you haven't had much practice," said the Queen. "When I was your age, I always did it for half an hour a day. Why, sometimes I've believed as many as six impossible things before breakfast."

from Alice in Wonderland, by Lewis Carroll

I recently had an interesting conversation with one of those dyed in the wool skeptics one finds in science departments across the country. The discussion prompted me to include this chapter with the following suggestion: If you must be a skeptic (and being one, I might add, is fine with me), do it in a Gandhian fashion. Go into every situation asking the question, "Might I be the one who is wrong?" You can still look askance at phenomenon and ideas that don't seem to make sense, but you at least won't end up falling into the trap of condemning an idea that has not-so-obvious merit simply because it does not fit into your possibly narrow view of the world.

Case in point:

--THE PROPOSITION:

1.) Water HASN'T the ability to imprint upon its molecular structure a remembrance of its contact with other materials. Specifically, if a healing material is first dissolved in water, then removed completely, the water molecules in the solution will *not* maintain a remembrance of the "energetic quality" of the previously dissolved substance. There are no mechanisms within atomic or molecular structures to allow such an imprinting.

--THE REALITY:

1.) Open to debate.

--THE PROBLEM:

On June 30, 1988, a *Los Angeles Times* newspaper headline read "French Scientist Produces *Unbelievable Solution.*"

The article began:

> Dr. Jacques Benveniste has an unbelievable problem. The French allergist has produced experimental results that other scientists find difficult, if not impossible, to believe. In essence, he has observed a biological effect produced by solutions so dilute that, theoretically, they contain nothing that could cause the effect.
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> . . . Today, the prestigious British journal NATURE has taken the unprecedented step of publishing Benveniste's results, even though the journal's editors themselves think that his conclusions "have no physical basis" and his findings are "unbelievable."

Strike you as a bit unusual? It is . . . for more reasons than meet the eye. Let's take a closer look.

The first things to know is that Dr. Benveniste is a well published, well respected member of the European medical community . . . a man once offered the position of France's Minister of Health by then President Francois Mitterand. It is probable that the only reason *Nature* did not choose to ignore him completely was due to his reputation. Similar work from a lesser individual would surely have been trashed by the magazine without a moment's thought.

A second point to consider is the fact that magazines like *Nature* don't relish the idea of being seen as a laughing stock. It is not their custom to take seemingly outrageous, unsubstantiated papers for publication. One of their greatest fears is the losing their academic status and credibility. It is not surprising, therefore, that the magazine demanded a number of stiff conditions be met before even considering publication. The most crucial of these was the requirement that the experiment be recreated by a number of independent labs around the world.

Three did so. All verified Benveniste's findings.

Still, even with the enormously rigorous scrutiny of other scientists, the editors were skeptical. Why? A bit of history will help us understand.

In the 1880's, a brilliant German doctor named Samuel Hahnemann stumbled onto a generally accepted yet singularly peculiar bit of information while translating Cullen's *Materia Medica* from English into German. In his work, Cullen maintained that "swamp fever" (malaria) was curable using cinchona bark due to the bark's *tonic effects on the stomach.* Because Hahnemann knew that similar tonics had no effect on the fever whatsoever, he thought there must be something else happening (in fact, cinchona bark relieves malaria because it contains quinine, not due to a tonic effect).

This small, seemingly inconsequential disagreement ultimately led to what was to become Hahneman's lifetime work. Piqued by the apparent disparity between Cullen's written opinion and his own observations, Hahnemann decided to use himself as a guinea pig to experiment with the cinchona bark. What he found was quite fascinating.

With the very first dose, he found himself developing all the symptoms of swamp fever, *sans* the fever itself. When he stopped taking the bark, the symptoms would leave. When he began again, they returned. He even went so far as to recruit members of his family for the experiment. In all cases, he observed the same thing. Taking small quantities of cinchona bark elicited a reaction that was characteristic of the disease the bark was purported to cure.

In his book, INTRODUCTION TO HOMEOPATHIC MEDICINE, Dr. Hamish Boyd said this about Hahneman's early discovery:

> . . . Here was a strange phenomenon: a remedy that was effective (as a cure) for the disease which, when given to a healthy person *induced* the symptoms of that disease. Could there be some natural method of cure there upon which he had stumbled? He went back to the ancient literature and found that Hippocrates and, after him, Paracelsus, mentioned that substances that produce symptoms could also cure them. (With that), Hahnemann started on his life's work . . .

Hahnemann spent the next years of his life building a Materia Medica of healthy-body symptoms produced by the ingestion of small but substantial doses of everything from benign to potentially deadly plant and mineral materials (this process is called *proving*). He found that almost all natural substances tested elicited some kind of reaction in the body, and they all proved to act therapeutically under the right conditions when given in very small microdoses.

His approach was not widely recognized until 1812. As Margery Blackie, personal physician to Queen Elizabeth of England, said in her book THE PATIENT NOT THE CURE:

> With the publication of his (first) two books, Hahnemann didn't stop his tireless search for verification or rejection of his theories. Doubtless he was having success with isolated cases, but these were not really enough to test his findings to the full...
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> The terrible winter of 1812 took its toll of Napoleon's army in Russia. The bedraggled remnants of the Grande Armee were staggering, starving, bleeding and riddled with disease while drifting across Europe on their way home. Despite their desperate condition the French fought valiantly, but lost a three-day battle at Leipzig in August, 1813. The aftermath was not only death but a fearful epidemic of typhoid. At once, Hahnemann put his hypothesis to the test. He treated 180 cases and his success bordered on the miraculous: only one patient died.

Dr. Boyd adds:

> . . . A cholera epidemic invaded Europe eighteen years later (1831), and again his hypothesis was shown to work. One of Hahnemann's pupils had only six deaths among 154 cholera patients--a little under 4%. In the same town, of the 1500 patients treated with orthodox methods, 55% died.
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> Homeopathy spread to Britain, and there was an attempt by the medical profession to have its practice forbidden by law. A cholera epidemic came to the rescue in 1854. When it was over, the results of treatment in the various hospitals were put before Parliament. Fortunately, a homeopathic patient was there and asked why those of the homeopathic hospital had not been included, and demanded that they be procured. They came accompanied by a letter from the Government Inspector. The death rate was 16.4% compared with 51.8% at other hospitals--these figures are confirmed in the British Museum's records. He (the Inspector) said that they were all true cases of cholera, and that he had seen cases recover who would have surely died in other hospitals. He ended by saying: "If it should please the Lord to visit me with cholera I would wish to fall into the hands of a homeopathic physician."

Since his time, Hahnemann's observations and theory have been put to the test over and over again. The results have been consistent. A good homeopathic doctor--one who really knows his or her stuff--can affect wonders with appropriate homeopathic treatment.[1]

Homeopathic remedies are prepared in a very special way. The process begins when the active substance (Hahnemann's cinchona bark, for instance) is pulverized and made into an alcohol tincture. This initial solution is called *the mother tincture*. Once produced, one drop of mother tincture is mixed with nine drops of pure water. The resulting solution is then succussed . . . a process whereby the mixture is violently shaken in a prescribed manner (it is interesting to note that Benveniste's "biological effect" was not evident with solutions that had been prepared as stated above, but that had not been properly succussed). The final product--the nine parts water and one part mother tincture--is called a *1x potency.*

A *2x potency* is produced by adding one drop of 1x solution to nine parts water, then successing appropriately. This means that a *2x* remedy has 99 parts water to one part mother tincture--an approximate ratio of 100:1 (note that in scientific notation, this is 10^2:1). *3x* is made from *2x* yielding a water-to-mother-tincture ratio of 1000:1 (10^3:1); *4x* is produced from *3x*, etc. *With each successive potency, the solution has one-tenth the mother tincture content of the previous potency.*

In and of itself, you wouldn't expect this to upset anyone. It is a simple procedure used to produce homeopathic remedies. But there is more. Hahnemann maintained that different potencies could have different effects on a patient. He found from observation that patients who were cured with 10x would not be affected by, say, 20x. In fact, higher potencies--remedies with *less* mother tincture in them--were found to be potentially stronger--able to deal successfully with more severe cases--than lower potencies.

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[1] I have a friend who found herself in a very awkward position a number of years ago. It seems she was asked to adopt her brother's small, two-year old child. The brother had become a drug addict, was living on the streets, had AIDS, and believed himself to be Jesus Christ. The mother was in no better shape, though she had additionally disappeared.

From the beginning, my friend had problems. The child was bright but very angry and violent--he was ultimately asked to leave nursery school because he was "torturing the other children." She knew that if she resorted to the way tens of thousands of other angry, often hyperactive children in our country are treated, the boy would be lost. So she decided to take a different course. She took him to a relatively enlightened pediatrician who prescribed a series of homeopathic remedies (the doctor could have had his license revoked by the AMA if it had been know what he was doing) to treat the problem. Three years have passed. The child is now like any other normal child. Sure, he is precocious, animated, and definitely has a twinkle in his eye, but he is *not* angry or violent any more. The homeopathic treatment changed him for the good (and no, he didn’t just naturally grow out of “a phase” . . .).

Hahnemann had the following rationale for this apparent contradiction, according to Harris Coulter, Ph.D., in his book HOMEOPATHIC SCIENCE AND MODERN MEDICINE:

> Hahnemann claimed that these high dilutions (low mother-tincture concentrations) were effective because the sick person was ultra sensitive to the action of the "similar" remedy. He wrote, as early as 1810, that "there are patients whose impressionability, compared to that of unsusceptible ones, is in the ratio of 100 to 1."

In other words, Hahnemann believed that an ill patient who was, say, 1000 times more sensitive to a remedy than the norm, required a remedy whose concentration was 1/1000 that of the mother tincture (i.e., a 3x potency).

Even though this "more is less" orientation is certainly different from our common sense perceptions about what should or should not heal a sick body, this apparent anomaly is nothing in comparison to other objections scientists currently have with the approach.

Consider the following: A remedy rated at 1000x (a potency that is available commercially) has 10^{1000} water molecules for every molecule of mother tincture. A quart of water has roughly 10^{24} molecules in it. That means that if you make up an enormous vat of 1000x solution, then removed one quart of the solution for your use, you will end up with a quart of water that will almost certainly have *no molecules of mother tincture* in it at all.

Yet if it is the correct remedy for a given patient, that solution will be curative. That was what Hahnemann believed; that is what homeopathic physicians around the world have substantiated ever since Hahnemann; that is why the United States legally recognized through the 1938 *Food, Drug, and Cosmetics Act* the equivalent legitimacy of both the United States Homeopathic Pharmacopoeia (i.e., homeopathy's Bible) and its allopathic (i.e., conventional medicine's) counterpart, United States Pharmacopoeia.

Unfortunately, legal recognition based on effectiveness is not the same as scientific recognition based on theory. Scientific theory . . . that is where the snag arises.

Scientists don't like to dwell on such things, but almost every currently accepted scientific theory has at least some aspect to it that would send any uninitiated yet self-respecting thinker right up a wall. For instance, did you know that the Big Bang theory postulates that all that now makes up our physical universe originally came from *nothing at* *all*; that light has the fantastic ability to do things that only particles can do but, under certain circumstances, can also do things that particles could *never* do; or that Einstein's Theory of Relativity maintains: a.) that space is not three but rather *four* dimensional with TIME being that fourth dimension; b.) that gravitational forces do not exist (there are gravitational-type effect, but the mechanism is believed to be related to the "curvature" of four dimensional space); c.) that time (the rate at which the moment passes) varies from place to place; and d.) that mass and energy are two different forms of a common quantity--a quantity that nobody can put his or her theoretical finger on.

There is hardly a cubby-hole in science that doesn't have some point of belief that is completely unbelievable at first glance. In short, by modern day standards for theoretical weirdness, Benveniste's findings are relatively innocuous. So why are so many scientists put off by his work? It is not as though he were some kind of crackpot. The problem is much deeper than that.

Water is a very unusual molecule. Made up of one atom of oxygen and two of hydrogen, its bonding polarizes its charge in such a way as to give it the ability to dissolve almost any known molecular substance. It has the peculiarity of being more dense in its liquid state than in its solid state (ice cubes float), and it takes a tremendous amount of energy to raise its temperature just one degree (that is why steam burns are so nasty--the energy content of water vapor is enormous).

As peculiar as water seems to be, relative to other substances, what is not currently a part of accepted scientific theory concerning its structure is the possibility that it might have the ability to absorb "energetic qualities" of other substances--healing substances for instance (cinchona bark?). If such *were* the case, homeopathy would have its scientific basis. Water used in a homeopathic preparation could, even with no physical substance present within the solution, still carry the healing property of the substance--its energetic quality--as absorbed by the water.

Whenever science collides with any experimentally observable phenomenon, science is expected to use those findings to either support already existing theory or to prompt more exploration and, if appropriate, to make changes in the current mode of thinking. In the case of homeopathy, science has done exactly the opposite. To date, science and modern medicine have ignored the apparent anomaly posed by curative homeopathic remedies by decrying their effectiveness as aberrations caused by a placebo effect. If the patient *believes* he or she will be helped by the medicine, he or she *will* be helped.

Dr. Benveniste's experimental finds have blown that bit of questionable reasoning to pieces. Using homeopathic solutions--solutions with potencies so high that there couldn't possibly be any active ingredients present in them--he has triggered "biological effects that are observable."

Science's response? "Even if the results are there, homeopathy doesn't fit into our view of the way the world works. Therefore, we do not believe the findings."

. . . and that is that.

As a follow up, an August 8, 1988 *Time* magazine article read as follows:

> THE WATER THAT LOST ITS MEMORY:
> A controversial scientific finding is debunked . . .
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> SCIENCE FRICTION, acidly quipped one Paris newspaper. Across the English Channel in London, Britain's *New Scientist* magazine howled, NATURE SENDS IN THE GHOST BUSTERS TO SOLVE RIDDLE OF THE ANTIBODIES. After months of heated controversy and speculation, the curtain fell last week, at least for now, on one of the strangest tales of scientific controversy in recent memory. The story became public . . . when the prestigious British science journal *Nature* published a report, hedged with "editorial reservation," on a phenomenon that defied the laws of physics and molecular biology: water apparently retained a "memory" of some molecules it once contained in solution. When such water was mixed with blood cells, that phantom memory seemingly caused a reaction.
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> . . . The initial findings were apparently reproduced by scientists in France, Canada, Israel, and Italy (but) . . . Last week, Nature forthrightly rejected the idea of water with a memory and relegated it to the deep freeze, along with other intriguing scientific "discoveries" that have not panned out under scrutiny.
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> Its demise was the work of a highly unusual investigative team that the magazine dispatched to Paris. Besides Maddox (the editor of *Nature),* the *Nature* group included James ("the Amazing") Randi (a magician) . . . and Walter Stewart, a free-lance fraud sleuth at the U.S. National Institutes of Health. Their report was merciless: "The hypothesis that water can be imprinted with a memory of past solutes is as unnecessary as it is fanciful." The behavior of the weird water was only a delusion, they concluded, based on flawed experimentation.

> . . . Benveniste (the scientist involved in the original experiment) compared the probe to "Salem witch hunts and McCarthy-like prosecutions." . . . (In the end, Maddox said,) "I'm sorry we didn't find something more interesting."

Some observations are in order here: To begin with, when was the last time you heard of a respected scientist having his or her experiment perused by a magician? And the conclusion this so-called review board came to? At no time did they pinpoint anything wrong with the experiment aside from concluding rather speciously that "the experiments were flawed and that no substantial effort had been made to exclude systematic error, including observer bias" (this was *Time*'s summary of Maddox's final report). Nothing was said about the bias of the investigating group. In fact, it seems that nothings was said of much substance at any point in the presentation of findings. You can bet the proverbial ranch that if Randi and company had turned up anything substantial, they would have shouted it from the rooftops. But all they could come up with was the old, weak standby--a claim that the experimental results were inadmissible due to *unspecified procedure errors*.

SO WHAT'S GOING ON HERE? Who is doing what to whom?

Tough as it may be to believe, homeopathy's legitimacy as a form of health care is not the question we are really interested in here. Neither is it important, at least at this point in time, to determine whether those skeptical investigators were being arrogant and inflexible or responsible and thoughtful in their dealings with the matter. The importance here is our observation and ultimate understanding of science's seemingly phobic concern over this obviously unorthodox medical possibility.

Science is predicated on the belief that there exists order within nature and our universe (even in chaos, it seems, order prevails--fractal theory). Billions of dollars are spent every year supporting scientific attempts to uncover, understand, and exploit that order.

Under such conditions, it should not be surprising to learn that although scientists might not always agree with one another, they generally have as a group very definite ideas about what is important and relevant within the realm of scientific research and, when all is said and done, about how the universe works. So while most scientists present a facade of unbiased, unemotional reason in dealing with their work, they actually have very deep emotional and intellectual ties to their theories. An examination of history shows time and again individuals who have made monumental breakthroughs only to be thwarted on all sides by entrenched scientific minds who simply weren't willing to look a little beyond the partial order they already perceived (or thought they perceived).[2]

Couple with this the fact that a scientist's greatest fear, aside from losing his or her funding, is being perceived as a sloppy, gullible thinker, and you have an interesting situation. A scientist can be as theoretically wild and crazy as he or she likes as long as the effort is directed "appropriately." But once curiosity strays to areas not generally accepted by mainstream thought, God help the poor soul. The individual will be taunted and scorned and generally bullyragged until he or she either comes back to the fold or drops out completely.

Homeopathy is just one of those forbidden topics, and the reason why is easy to see. It necessitates the acknowledgment that there is something profoundly unexpected happening at the atomic level . . . something that modern-day science simply has no knowledge of. In other words, homeopathy threatens the accepted order. And when experimental evidence does come to the forefront, even by reputable sources, the tendency is to either ignore it or to conclude that it must be flawed.

The bottom line: There is nothing wrong with being skeptical about things that don't seem to make sense to you. But doing so with the inviolate belief that you are absolutely right--that you couldn't possibly be the one who is wrong--is the act of a fool. We have enough of those in the world today, thank you. Please don't join their number.

On the other hand, if you run into an implacable skeptic, my suggestion is that you not waste your time on them. When I find myself in that situation, I remember the words of my favorite bumper sticker:

> Never try to teach a pig how to sing.
> It's a waste of your time,
> and it just serves to irritate the pig.

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[2] My favorite example: In his first printing of On the Origin of Species, which concerns the biological evolution of species and natural selection, Darwin's original manuscript referenced a million year old fossil he claimed to have found. He apparently removed the reference due to objections put forth by the then-president of the British Royal Society (the Royal Society was *the* scientific authority in Britain) because the president, an astronomer, believed that the sun's energy was caused by the "earlier" bombardment of comets and asteroids, which meant (due to conservation of energy) that the sun (and hence, earth) couldn't be older than 4000 years . . . clearly eliminating the possibility of a million year old fossil. Darwin *did* include the reference in his second printing.