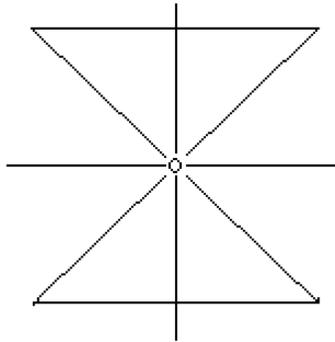


OBSERVER PHYSICS

A NEW PARADIGM



by

Douglass A. White, Ph.D.

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Dedication

In this series of essays I introduce some of the principles of a new paradigm that I call Observer Physics. This discourse represents a step toward the fulfillment of a dream that began for me many years ago in high school. At that time I read a number of books about physics and cosmology that stirred my interest in the nature of the world we live in. One book that I particularly remember was George Gamov's **One, Two, Three . . . Infinity**. Another source of inspiration for me was the magazine, **Scientific American**.

I felt the excitement and adventure of the scientific exploration of how our world works and how it has evolved. At the time I did not trust my abilities to move forward more strongly in that field of study. Nevertheless, the curiosity and interest kindled then has continued throughout my life.

In college, graduate school, and university teaching I went on to pursue other less "technical" fields such as literature and linguistics. But I kept an eye on the progress of physics while at the same time I found myself drawn ineluctably toward the quest for a science of consciousness. It turned out that this quest was actually a foundation from which I could later return to examine the progress of physics in a new light.

In my search for an experiential understanding of the structure and function of consciousness, I encountered a number of remarkable Masters of our Age. Three of these Masters contributed greatly to my appreciation of consciousness and its role as the basis for any scientific exploration.

I take responsibility for all the material in this book, especially for any errors that may have crept in. At the same time I hold deep gratitude toward these men for the contributions they have made to my understanding and to the world through their explorations, teachings, and steady devotion to the creation of a better world. I have drawn on many of their ideas, and have tried to give them credit wherever I have so done.

My first introduction to meditation and the ancient sciences of China was from Chan Master Huai-Jin Nan. For me the time I spent with him was the first real opening of awareness. Although his approach was not "scientific" in the modern sense of the word, it awakened in me the profoundly experiential nature of awareness.

Then I met Maharishi Mahesh Yogi, the exponent of the Transcendental Meditation technique. Over a number of years I dove deeply into his techniques on the experiential level, studying and applying his Science of Creative Intelligence course. His meditation technique gave me direct experience of a systematic approach to the exploration of consciousness. Maharishi had studied physics and attracted many brilliant physicists to spend time with him. He often discussed the relationship between theories of physics and the phenomenon of consciousness. He also took the trouble to record many of these discussions. Through my activities in the TM community I had the opportunity to hear many talks on contemporary physics by lucid speakers such as Dr. Lawrence Domash, and Dr. John Hagelin. I also soaked up whatever knowledge I could from distinguished guests such as Eugene Wigner, Buckminster Fuller, Brian Josephson, and many others.

Through these exposures I developed a general understanding of special relativity, quantum mechanics, coherent systems, and the attempts to build a Unified Field Theory.

I began to develop a vision of a rigorous science of consciousness with a fully developed mathematical description that integrated the direct experience of awareness fully into modern physics. Of course, I also felt strongly that such a field could make major contributions to society and the quality of living.

The third Master that inspired me in this direction was Harry Palmer. In his quiet, understated manner, he introduced what to my current knowledge is the clearest and most complete description of the principles of awareness and the tools to operate with it. He calls his contribution **The Avatar Materials**.

Of course none of these essays would have been possible without the amazing work of the great physicists and mathematicians who over the centuries have explored the laws of the universe and uncovered so many beautiful and practical ways of describing and appreciating our world.

Rather than try to list them here, I think it is better to get a feel from the discussions in the book and from the bibliography notes. Although I may not mention all of them by name, you will get a pretty good idea of the giants as you read through the essays, and you can enjoy more of their ideas and discoveries by exploring the suggested readings.

The material that follows is a work in progress. It may require considerable revisions, and I hope it will stimulate discussions and research that result in many new findings and contributions. Initially I am providing this material in electronic format, because I suspect that it will evolve quickly through a number of editions into a more finished shape.

If you as a reader see errors to be corrected, have material to add, or any other helpful suggestions, please let me know by email. Corrections will be made as soon as possible and updates will be forthcoming with credits to those who contributed any new material. Anyone who purchases the electronic version will be eligible for free electronic updates and a special deep discount rate for any printed edition that appears. Observer Physics is an ambitious team project that can benefit the field of physics and the welfare of mankind. Master Nan envisioned the Unification of Eastern and Western Culture, Maharishi heralded the Dawn of the Age of Enlightenment, and Harry Palmer is catalyzing the creation of an Enlightened Planetary Civilization. Many creative scientists and visionaries around the world are discovering how our reality works and empowering us to shape it into the world that we prefer.

See you there.

Douglass A. White
Yung-ho, Taiwan

Preface to the 2014 Edition

During the early 1980s I and a group of friends cooperated for several years in a microcomputer research and development project. One of the members of our team had training as a quantum physicist, and in our free moments I occasionally discussed with him issues of common interest in that field. Some years after we ended the project my colleague was living in Japan and I was living in Taiwan. We resumed our discussions by email, and I began to put down my personal thoughts on modern physics in emails to him, while also collecting notes and materials in folders on my computer. At the same time I became increasingly concerned about the way physics was being taught and presented in the media and in academic circles.

Several things bothered me. Many topics taught as physics and cosmology no longer made any sense. Moreover, “murder by mathematics” seemed to be happening to physics as a discipline. Mathematical descriptions of physical science have become increasingly complex, diverse, and abstract. It seems like physics is becoming less and less about simple models that a student can visualize. Experiments are becoming extremely sophisticated, involving huge projects with teams of scientists and massive budgets.

I am not against complex mathematics or sophisticated experiments. However, I believe it is important to be able to teach students by direct experience the foundational principles with simple experiments and simple mathematics. Once these principles are clearly understood, then it is fine to carry on the complicated experiments and calculations.

Increasingly I feel that physics is either deliberately or by virtue of blind side bias putting attention only on a small component of reality. For example, in a worst case analysis I see Newton’s classical physics as a political hoax to justify the imperial subjugation of humanity and the looting of the planet. In a best case scenario I see that Newton was indoctrinating people into the lowest level of consciousness from which to view the world. He teaches that “We all obey force,” while ignoring the higher realms of consciousness. The irony is that the principles Newton elucidated are verifiably true, but only in the very restricted domain to which he speaks. Yet they came to be accepted as global statements of how the world is, and only gradually has awareness of a broader viewpoint revealed the limitations of these truths.

In the discussions of force these days physicists now tell us that there are four fundamental forces – electro-magnetic, weak, strong, and gravity. The “weak” force is said to be primarily a force of decay, but, as electro-weak unification theories suggest, is probably no more than an electromagnetic trend of unbalanced systems toward equilibrium. Einstein in his relativity theory treats gravity as nothing more than the geometry of space-time in the presence of mass, and therefore hardly qualified to be a force, but he does not explain what mass is. What’s more, he says gravity is equivalent to inertial acceleration, a phenomenon commonly referred to by scientists as a fictional force. If the force related to the acceleration of a rotating space station is fictional, then not only is gravity fictional, but the mechanical forces described by Newton are also fictional!

Then we have during the past few decades a movement claiming that strong forces are hiding invisibly in the atomic nucleus to counteract the mutual repelling of proton charges. In “explanatory” diagrams scientists draw these assumed forces with curlicue lines that resemble coiled springs. Yet we do not see little springs recoiling out of nuclear reactors, or super colliders when atoms are split apart. What we detect are merely electromagnetic radiations and jets of various subatomic particles. “Conversion” of mass to energy is apparently a release of locally stored electromagnetic energy as photons of various frequencies.

We now have a cosmology in which most of the universe consists of completely unknown dark matter and dark energy – perhaps confirming that the more we know, the more we know we don’t know. Another task in observer physics is to explore whether simple explanations for these huge anomalies may lie in overlooked areas of more conventional physics, especially in areas where the role of the observer has been ignored.

In the observer physics essays I tackle these issues in the hopes that we can frame some reasonable theories and simple mathematics that embrace these issues with some clarity. Chief among the insights of these essays is the principle that **we experience what we believe**. This encourages honesty and serves as a caveat that so long as experience deviates from beliefs there is something more to learn about ourselves and our world.

Another core principle is what I call **the universal law of enlightenment: all beliefs and experiences are forms of light, because light is objectified awareness and awareness is subjectified light**. The generalized form of light is the electromagnetic interaction. The interaction always occurs between two specialized forms of light in the form of electrically charged particles (or points of view) and is a bidirectional process. **Enlightenment is the realization of conscious existence in which the self-imposed limitation that distinguishes light from awareness dissolves**.

A third core principle is that of **definition**. **In physics there are no infinities in the mathematical sense; there are only undefined states**. We create things by defining them into existence, and we “de-create” things by erasing their limiting definitions from within our consciousness. An undefined condition is a potential that is real but without content. A defined condition is an actual state of being in which limitations have been imposed by consciousness. Nothing is ever created or destroyed. Conscious awareness generates experiences through acts of defining, re-defining, and un-defining realities.

Physics has a vast range. At one extreme we find only undefined awareness in which there is no physics -- only eternal uninvolved observer awareness watching the play and display of light. The undefined observer defines the light, and the light then defines the observer. At the other extreme we find the physics of Newton’s laws in which only the mechanical effects of force are real. In between we find the observer involved with the shaping of experience through various modes of conscious management such as intuition (subtle perception beyond habitual boundaries), imagination (transcending or redesigning boundaries), quantum creativity (deliberate collapsing of wave functions in various ways),

thinking (playing with probabilities and group theory), memory (storage of system data), reactions (mechanical obeying of force), and conscious or unconscious inertial habits.

Although I do not explore all these various aspects in depth, I trust that each essay provides some new ideas, approaches, and points of view that will give impetus to further research. I offer many exercises and experiments to facilitate the reader's exploring.

Quite a lot has happened since I first typed up the first observer physics essays in 2002, posted them in 2003, and then updated them in 2005. In the meantime I wrote a number of other books and articles, some on topics related to physics and some on other topics. My attention for over ten years went strongly in the direction of ancient Egypt. That resulted in a study of the ancient Egyptian language and translation of a series of the most important texts on the core insights of that civilization along with detailed commentaries on those profound works. (See the dpedtech.com website store menu.)

In the meantime, after 2005 I retired the original observer physics essays from the website pending an opportunity to update them into a more readable format and to add new materials that I had accumulated. Finally after 2010 I found myself back in the U.S. and living once again near one of my technology team members from the 1980s who was now, like me, semi-retired. In the past we used to meet once every week or so for far ranging conversations about trends and possibilities in technology and even did a few experiments. We began to pick up the thread of those old conversations as he assembled his newly relocated machine shop and laboratory. This inspired me to go back to the old essays and update them with a clearer format plus more graphics and illustrations. I added a lot of citations to material in **Wikipedia** encouraging readers to tap into that wonderful resource and find more details on the current thinking on the topics I discuss.

The Internet and the vast array of publications available today are amazing sources of information. I hope readers who find errors in my ideas or calculations will let me know. Also I am happy to reference new information, so send me your comments and I will consider including them in updates to the essays, new essays, or a comment column. I do not have time to monitor an open blog and I find it counterproductive to wade through open discussions that meander about, so that will not happen, but I am happy to read and respond to your comments and post those that are on topic and insightful. Many thanks in advance.

A final note: watch for updates that I will post as time permits. One of the beauties of electronic publishing on the Internet is that new updates and editions can be released instantly worldwide. Each essay has the title code "OP" for Observer Physics followed by the essay number (this dedication and preface material being "00".) Then comes the date of release: 140922 (yyymmdd). For example, OP_00_140922. So, if you are interested, please note from time to time the version dates listed in the download menu to see if there is a more recent version that will include corrections and other improvements.

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Fairfield, Iowa

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Suggested Reading

- Appended to the text is an annotated list of introductory physics texts, works on mathematical subjects and math for physicists, specialized works in physics, works popularizing modern science for general readers, and works related to the development of a science of consciousness

Observer Physics

by
Douglass A. White, Ph. D.

Chapter 0. Introduction: Big Brother is . . . You!

"It depends on how you look at it."
(The motto of Observer Physics)

Welcome to Observer Physics, a new scientific paradigm!

Buckminster Fuller in "The Wellspring of Reality", his introductory essay to **Synergetics**, xxvi, has given one of the simplest and clearest definitions of science I have seen.

"Science is the attempt to set in order the facts of experience."

A **paradigm** is a widely accepted body of scientific knowledge that serves as a model for interpreting and exploring experience. The **American Heritage Dictionary** defines a paradigm as a "conceptual framework that permits the explanation and investigation of phenomena or the objects of study in a field of inquiry."

Observer Physics is a new paradigm. It is not yet widely accepted, but it will be because it provides powerful models of the world that build on current theories in ways that solve major problems of physics and will lead to many new advances in research and application.

We often take "science" to include the notion that scientifically organized knowledge is gained through the use of "the scientific method." Scientific knowledge consists of information and ideas organized into an orderly and concise format known as a hypothesis, theory, or model. A scientific model is a description of experience that is formulated as precisely and systematically as possible. Then the model is tested with experiments. Based on the results of the experiments, the hypothesis stands as demonstrated by experience, is modified to better fit the experimental results, or is discarded as failing as a model of experience and possibly replaced by a new model.

Many scientists believe that the test of a good scientific theory is not only whether it describes experience accurately, but also whether it is able to make verifiable predictions that unfold new experiences. We will examine this belief and what it implies in the course of exploring the role of the observer in science.

People commonly refer to science as "objective". If the word "objective" means that science involves descriptions of objects of knowledge, then it is a correct appellation. If it means that science is a "detached observation" of experience with no subjective involvement, then it is a mistaken understanding of science. Science is a passionately

subjective pursuit. Nobody gets deeply involved in science unless they find it fascinating and rewarding in some way. Science can not be separated from the scientist who frames the hypothesis or model. Any model of the world represents an arbitrary viewpoint that is not necessarily more valid than some other model. It may seem fascinating. It may stand as the paradigm of the age. But it is still just the arbitrary viewpoint of a single individual or group of individuals.

The power of science comes not from the “validation” of a model through experiments or the “usefulness” of the applications derived from it, or even from the successful predictions that it makes. These are excuses to justify gathering evidence to prove that someone's pet hypothesis is true. In Observer Physics we will propose that it is the passionate dedication of a scientist and his followers to his models, experiments, and applications that empowers science. This passion for exploring and for pushing forward pet theories also makes scientists a cranky lot to deal with.

Science depends completely on the observer, the knower of knowledge. Without him there is no science. The “detachment” of the observer only means that he is willing and able to let go of a viewpoint and perhaps take up a different model or viewpoint. By definition it is not possible to pursue science (the art of orderly knowing of things) without involvement with the objects of knowledge.

On the other hand, it IS possible to be completely detached as an observer. By definition a completely detached observer can not hold a particular viewpoint. Rather than call such a detached condition subjective or objective, we might say it is “undefined”. From an undefined viewpoint there are no theories or models. There is only simple observation, pure experience without any judgments, theories, or models. But there could be an indefinite number of different viewpoints, and those viewpoints can be interpreted and developed into theories and models, -- or just experienced.

Exercise: Do Exercise #18, "Viewpoints", in the **ReSurfacing**® workbook.*

As an undefined viewpoint the observer may just exist as the observation. Subject, object, and process of experience are not distinguished.

Exercise: Do Exercise # 19, "This and That", in the **ReSurfacing** workbook. Then spend some time doing Exercise # 13, "Restoring Attention".

Educator Harry Palmer** believes that belief itself (the scientist's “theory”) precedes and underlies experience. Palmer sums up his theory of how the world works in a single paradoxical sentence:

“You experience what you believe, unless you believe you won't, in which case you don't, which means you did.” (**ReSurfacing**, p. 104).

We can call this **Palmer's Fundamental Theorem of Observer Physics**.

According to Palmer's paradigm, science becomes the process of discovering “transparent beliefs,” hidden assumptions that cause our experiences (experiments) to vary from what we believe they ought to be (theory). These hidden assumptions are so obvious that they escape our attention, but are part of our reality, and constitute the way things are for us. For our model to be successful, we must include them deliberately. So we find them and adjust our model of the world to include these various uncovered transparent beliefs into our total belief system until our beliefs (theory) and experiences (experimental results) are perfectly aligned. That is the end of pure science and the beginning of “engineering”.

Exercise: Find a partner to coach you through Exercise # 23, "Transparent Beliefs", in the **ReSurfacing** workbook. Or you can do it solo if you like.

We can define engineering as the use of technology to create the life that we prefer.

Palmer suggests that once we are able to align theory and experiment by discovering hidden assumptions, we can not only deliberately create practical applications that align with our established theories, but we can also go a step further and deliberately create new theories that modify or replace old theories. The challenge to a new paradigm is that a new theory unaligned with old theories creates turbulence and disharmony. If we wish to shift the paradigm, then we must tolerate the turbulence and persist in the new paradigm until it is established. Also, ALL hidden assumptions must be uncovered and handled until the new system of beliefs is fully self-consistent. This includes gaining a clear definition of the domain in which the new theory is valid.

For example, if the old paradigm is that released objects fall to the ground, and we wish to establish a new paradigm that released objects stay where they are, then we must define clearly the domain in which objects are to be released. An object released from an airplane or from the roof of a building or from the hand of a standing person falls to the ground. But an object released while resting on a table (usually) stays put, and an object released in orbit or in free outer space stays "put" as long as no inertial momentum is imparted to it. If we want to stand on the ground, release an object from our hand held aloft, and have it float in place, then we may have a number of interesting hidden assumptions to handle.

Physics is the science dedicated to a description of how the physical world works. It is sometimes divided into statics (description of equilibrium systems and conservation principles -- e.g., objects that float in place) and mechanics (the description of dynamic, moving systems -- e.g., objects that fall to the ground.) Classical physics defined by Newton and his contemporaries sought to describe a physical world independent of an observer. However, the emergence of modern physics characterized by relativity theory and quantum mechanics has found it necessary to include the understanding that any formulation of the "physical laws of nature" must take into account the involvement of an observer.

However, this recognition of the observer's role in modern physics remains somewhat of a grudging acknowledgment. The observer is not accorded full recognition as a main

character, or indeed, as the prime mover, of any system under observation. The current paradigm usually considers the observer a necessary nuisance or someone in a white smock quietly watching things happen in an experiment. It is "unfortunate" that his presence tends to disturb the system that is being observed. This is a complication.

The purpose of this book on Observer Physics is to explore the principles of our jointly shared physical world from the paradigm that **the observer determines not only what he sees, but also everything else that is going on.**

This paradigm has been creeping up on physics for a long time, but because the physicists fancy that they are "objective scientists", they resist acknowledging that science is really just an excuse for doing what you feel like doing and promoting the ideas that you happen to like. Physicists also suffer from a contradiction of the ego. They want to explain how everything works, but they do not want to take responsibility for it all. They aspire to and often achieve the ego of a know-it-all, but try to maintain a facade of humility and smallness. Perhaps these large and small scientific personae can coexist.

Quantum physics has presented the scientists with yet another odd paradox. They are trying to observe phenomena objectively, but they find that whenever they look at something, just the act of directing attention at it fundamentally disturbs and modifies the system they want to observe. This is gradually bringing a few physicists to recognize what people who study consciousness (and a lot of commonsense people too) have noted for a long time -- that attention is not only a nontrivial aspect of any physical system, it is indispensable to it. In sleep consciousness attention is unfocused, so you do not see much of anything and consequently don't remember much either. But I know that I experience going to sleep and waking up in the morning and going through the day with various levels of alertness. Awareness and consciousness are realities for me. How about you? Perhaps any theory of physics that aims at describing the way the whole world works must include a theory of consciousness or it has left out a major portion of "reality".

Maharishi Mahesh Yogi, the well-known proponent of the Transcendental Meditation (TM) program, and an avid student of physics, pointed out numerous times that the perceiver (observer) is central to any perception of any object of perception. As the TM technique easily demonstrates, you can have the observer alone without an object of observation, but it is hard to demonstrate perception and objects of perception without a perceiver/observer. This suggests that the observer is central to any phenomenal system. Anyone can experience this principle firsthand for himself. He doesn't even need a method like TM. But, without a method to manage perception, a person generally shifts into thinking thoughts instead of direct perception as soon as he removes the objects of perception from sight -- for example, by closing the eyes. Nevertheless, when you close your eyes, you may imagine many things, but you (usually) do not SEE any "physical" objects other than the insides of your eyelids and some afterimages. Try it. If you do see other physical objects, then maybe we need to broaden the definition of physical objects.

The people who insist the world's show goes on while they are not paying attention are asserting a fiercely held belief with no evidence to prove it. The assertion of continuity of objects in the absence of attention is an assertion without convincing evidence. The reappearance of objects when attention is restored to focus is also not guaranteed. A large portion of the population is wandering around living in their imaginations and memories of how they think the world used to be or ought to be instead of seeing what's really there. Theoretical science is also mostly a head trip -- especially in these days when extremely abstract mathematical systems seem to have outstripped visual modeling.

Experiment: To understand more clearly how attention works, simply look at the palm of your hand. What do you see? Probably you see a lot of wrinkles and lines and some pink skin. Now shift your attention slightly so that you are focusing on an object right next to your hand. You can still see your palm, but your attention is focused on a pen or a cup. What happens? Do you notice that the details of the wrinkles on your palm are now fuzzy? You see the palm, but the details are lost. Instead, you see the pen or cup clearly. Now put your hand behind your back. You know it is back there, but you can not see any of it, much less any details.

This little experiment tells us how attention works. Whatever you put attention on becomes sharp and clear in great detail. Conversely, if you can not see the details of something clearly, that means your attention is not fully directed on it. Your focus is somewhere else. If you can not see something at all, then your attention is pointed in the wrong direction for seeing that particular object. It's that simple, and it does not matter what the object of attention is. The principle is completely general. Play around with it for a while. What if everything exists in every possible configuration and whether you see it or not or how you see it depends on where and how well your attention is focused?

Palmer suggests (**ReSurfacing**, Exercise #2) that by practicing the deliberate direction of attention onto objects and the deliberate noticing of details, we can strengthen the will, the director of attention. Any confusion or lack of understanding disappears and is replaced by perfect clarity when attention is deliberately placed directly on an unclear object or situation. A sideways glance, hunch, or borrowed belief doesn't count. Direct attention is required. Put the attention there without thinking about other stuff.

In **ReSurfacing**, Exercise #3, Palmer suggests a way to develop powers of concentration through gentle disciplining of attention. Once proficiency is gained in exercise #2, go on to exercise #3. You will be surprised at the results if you practice these two simple exercises regularly for a while.

Exercise: Spend some time practicing exercises #2 and #3 in the **ReSurfacing** workbook.

Observer Physics presents a new paradigm that explains in a logical fashion the apparent continuity of objects and experience that most people claim makes up their world. Things can persist, but not the way most people believe they do. Playing with computers probably gives you a better understanding of how it all really works. At the core the world is very simple. The apparent complexity is due to a multiplicity of automated

processes that are essentially simple. As Palmer has discovered, something persists only because it is resisted. (**ReSurfacing**, p.50) A fundamental principle of Observer Physics is that the physical world (and anything else that seems to hang around) persists only because observers **resist** fully experiencing it. So much for problems and any fixed view of the physical world. On the other hand, anything that one can not see or tangibly experience is unavailable due to resistance toward letting go of other preferred objects of attention -- a situation that causes the persistence of those objects as blocks to the supposedly desired alternative experience.

Therefore in this book I have decided to take a look at classical, relativistic, and quantum physics from the viewpoint that the observer is the center of the system.

In ancient times the paradigm for the universe was the Ptolemaic earth-centered model. This paradigm later shifted to the Copernican sun-centered model, and now we are ready to move on to an observer-centered model. Each model has its viewpoint and its value to an observer under certain conditions. In Observer Physics the World is centered in the Sun-like Self. Of course this brings up the interesting question of what is a Self? People can pretty much agree on what the Earth and the Sun are, but there is no real consensus on what a Self is.

At this point a self-referral problem, Russell's logical monkey wrench, rears its unshaven head to wreck the system. It may be that the self defines the self. In that case there is not much science to be done unless we can all agree on a criterion (or perhaps several criteria) for defining a self, or perhaps a hierarchy of selves. (Maybe science is a SOCIAL function.) Palmer believes (**ReSurfacing**, p. 39) that **"A self is an idea that awareness is availing itself of for the purpose of experiencing certain other ideas."**

In any case, there is some interesting physics to do here with a focus on the observer. Much of this physics is verifiable by simple experiments anyone can do, although some of it requires more sophisticated technology, and some of it predicts some interesting phenomena which may be verified in the future and that may have applications of "practical" interest to people.

Along the way we will uncover a set of remarkable principles. One of them is that the predictive aspect of science (the thing often touted as the most unique and valuable feature that makes science "scientific") is meaningless baloney, because anything is possible, and you can produce evidence of anything if you are creative enough and persistent enough. After all, if you can't find the evidence "out there" (wherever "outside" is) you can create the evidence yourself. It then becomes just a political problem and/or a marketing problem. (Some call it an ethical problem, depending on their point of view.) Isn't that what any entrepreneur worth his salt would do?

As you can see, there is a design feature demanded by any "true" natural science that is much more important than any predictive feature. That feature is honesty. The so-called "predictive" feature should really be known as "generalizing power". This is really something akin to the resolution of your printer. Whatever its resolution, your printer's

output has lots of jaggies. The same is true of generalizations. The level of resolution of generalization (i.e. "prediction") may seem important to some people, but it is secondary and refers to a vague and broad range of possibilities. It is a way of begging for acceptance. "See? I said if you do this, that would happen, and it did. And here's some evidence. So now you should believe me." Science without honesty is like your everyday politics and marketing. Anything for a buck. Honesty is precise and does not have a "range". We can link a tight operational definition of "truth" with "honesty" in a way that makes science solid: An assertion (belief) is true if it corresponds to experience.

Therefore I think that development of generalization power is one fruitful direction that science can take. Specialization is another direction. Science can go in any direction we please so long as it fulfills the basic definition of a science -- to set in order the facts of experience. Of course, we have to agree that this is what science is about. This suggests adding one additional feature to our definition.

* Science is an attempt to set in order the **shared** facts of experience.

Someone can always carry on an autobiographical monologue with himself. But I do not think we would accept that as science. Thus science is a social activity, a sharing and comparing of experiences in such a way that anyone, if he prefers, can understand and/or experience these experiences that scientists describe. If this makes science sound like a recipe for compiling instruction booklets or tourist guidebooks, then that may not be so far off base. Scientists are busy compiling tomorrow's edition of the **Hitchhiker's Guide to the Universe**.

My goal in this discourse is that each principle will have at least a minimal mathematical description and provide simple models to assist visualization, experiments, and explorations that the reader can perform for himself if interested. Mostly I belong to the generalist school of science. But I greatly appreciate the value of the specialist's contribution. These two seemingly disparate approaches work together in interesting ways. The same is true of studying the Mind Space (e.g., consciousness) and the World Space (e.g., physics). These two approaches also come together in interesting ways.

I encourage physicists to move toward a science of physics that includes a scientific description of consciousness and carries forward to the next level the ideas explored by Fred Wolf and the physics popularizers, Maharishi's **Science of Creative Intelligence**, and other recent attempts at developing a science of consciousness. Harry Palmer's **Avatar Materials** are among the best I have seen from the standpoint of studying consciousness in a reasonable and really unbiased way, but Palmer is not a physicist. (He's an educator with interests in literature, psychology, and engineering.) Of course I am not a physicist either. I'm definitely an amateur, but lots of amateurs have made contributions to science over the years.

Most of the spiritual people who take a crack at the theories of natural science cripple themselves with "woo-woo-ness" (unsystematic and unsubstantiated wild claims) and earn scorn from physicists. The physicists, on the other hand, usually try to be

sophisticated and rigorously impenetrable to prove how smart and unapproachable they are. The popularizers usually write as if the public can't count beyond three. Perhaps that's why the early great science popularizer, George Gamow, called his classic book **1, 2, 3, Infinity!** I want to find a middle ground that is a little more technical than Wolf's excellent work, **Starwave**, and really moves toward integrating what we know about consciousness with what we know about physics (and math.)

There will be material in the book exploring the foundations of math, because mathematics is the great tool of physics, and it forms the bridge between the mind of the conscious observer and the phenomena that she is modeling. Ultimately, however, what we end up exploring are the core beliefs about the nature of existence that are shared by humans and other denizens of our multi-verse.

To summarize, this book is dedicated to a single proposition, a previously hidden or somewhat obscured assumption of science:

The observer is central to any model of the physical world.

Observer Physics holds that the observer must be included overtly in any description of a physical system.

Another way of stating this proposition is to say that no description of the world is valid without a clear and honest statement of the observer's arbitrarily chosen viewpoint or reference frame -- that is, his belief system, including all hidden assumptions or transparent beliefs. Another way of stating it is Palmer's Fundamental Theorem of Observer Physics.

From the fundamental proposition of Observer Physics it follows that ANY reference frame that any observer can define is equally valid and can be mapped to any other reference frame. The choice of frame is entirely dictated by the personal fancy of the observer.

The observer and his chosen reference frame (or belief system) critically determine the types of experience or observations that are obtained with regard to the objects in the system. This is a fundamental discovery of quantum physics. Therefore the observer's viewpoint and his reference frame must be defined clearly in any scientific description of the physical world and included in any mathematical calculations.

This set of essays is intended for people who have some knowledge of physics and mathematics. It is not intended to be a textbook that systematically introduces the subject of physics. That already is done well in many texts. The purpose of this book is to explore several topics in the discipline of modern physics from the viewpoint of Observer Physics so that the reader may grasp some of the insights that this new paradigm may provide. This can serve as a jumping-off point for many areas of research and experiment that may carry the observer paradigm far beyond the scope of this book.

Generally a year of college physics will be more than adequate as preparation for reading this book. Some grounding in algebra, geometry, trigonometry, and a little calculus is helpful. But an attentive reader should be able to follow the arguments without such a background. I have purposely kept the mathematics as simple as possible. If you are more interested in the physical theories than the mathematical ideas, you may want to skip over the first few chapters quickly. But the ideas and techniques discussed there do play a role in the physical theories that unfold in later chapters. Chapter 1 is especially foundational.

This book is really a set of essays or notes. Sometimes I may seem to repeat myself, but the ideas bear repetition, especially as they unfold more and more layers of insight.

Be forewarned that the material follows a nonstandard approach. Also, the notation is sometimes unconventional. Please bear with that. I have tried to be consistent throughout with my notation, but have not always succeeded.

I have deliberately not gone too far into psychology, because the approaches I have seen there often tend to be biased and insensitive to the holistic consideration of consciousness and its relationship to the physical world. Psychology is more concerned with adjustment of peoples' mental attitudes for locally perceived values of social well being. (I apologize if that does not fit your notion of psychology.) As we shall see when we consider the typology of belief systems in Chapter Two, this ranks psychology as mainly a type two belief system – at least in my opinion. This book is more concerned with type three and type four belief systems. Type two systems are important and have their role, but are secondary to the subject of Observer Physics.

Because mathematics is a basic tool in the description of physical systems, we will begin our study of Observer Physics with a consideration of why mathematics is a powerful tool in the pursuit of physics and then consider some of the problems and limitations faced by scientists who attempt to model physical systems with mathematical

Douglass A. White, Ph.D.
Chung-ho, Taiwan, 2001.
Yung-ho, Taiwan, 2002

* I strongly recommend that you acquire a copy of Harry Palmer's little workbook, **ReSurfacing**. Throughout my discussion of Observer Physics I occasionally will suggest exercises that you can do at home to get some experiential feel for the concepts under discussion and how they may relate to your personal life and to the field of physics. Some of these will be drawn from Palmer's workbook **ReSurfacing** can be ordered online direct from the publisher, Star's Edge International, at the web site AvatarEPC.com. While you are at it, I suggest you do a free download (or order a printed copy) of another little book by Palmer, **Living Deliberately**[®]. Most of the **ReSurfacing** exercises I mention are also included in the seven **Avatar Mini-Courses**, all of which are available as free down-loads from www.avatarepc.com. Appended

below is an index mapping the **ReSurfacing** exercises to the same or similar ones in the **Avatar Mini-Courses**.

** Harry Palmer has developed a course that he calls **Avatar**. The course not only includes a simple procedure for uncovering transparent beliefs, but also a "creation" procedure for establishing beliefs as realities and a method for erasing the influence of unwanted prior beliefs on experience. The Avatar transparent belief exercise (# 23 in the workbook) can be used to find hidden assumptions, and the Avatar creation procedure (**Avatar® Materials**, Section II) can be used to establish ANY theory with experimental verification. Removal of unwanted beliefs and experiences is covered in Section III. These materials are quite a challenge for the scientific establishment to accept. Physicists tend to assume that there is a certain "right" theory to how things work, if we could only find it. Palmer asserts that physicists only need to explore thoroughly one paradigm to find all the questions and all the answers: "You experience what you believe, unless you believe you won't, in which case you don't, which means you did." (**ReSurfacing**, p. 104.) Observer Physics is an exercise in playing with Palmer's advice.

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For more information about the **Avatar Materials** visit the website: AvatarEPC.com or contact my email address above. For more information about Maharishi's TM program visit the Transcendental Meditation web site: www.tm.org. Other interesting methods of meditation, awareness enhancement, and personal development can be found introduced through various media and at my website, www.dpedtech.com.

Or contact me at my email address: dawglass@gmail.com.

The Exercise Workbooks

In the essays I refer readers to exercises and other material some of which is available in a little workbook by Harry Palmer entitled **ReSurfacing** (abbreviated sometimes as **RS**). The same or similar exercises are also available in **Seven Pillars of Enlightenment: The Avatar Mini-Courses**. You may obtain the **ReSurfacing** workbook for \$15 plus postage from Star's Edge International, 237 N. Westmonte Dr., Altamonte Springs, FL 32714; phone: 407-788-3090; e-mail: avatar@avatarhq.com. The organization has a website at www.avatarepc.com. Alternatively you can download the **Avatar Mini-Courses** at no charge from that website. In case you decide to use the Mini-Course downloads, below is a key that correlates the **ReSurfacing** Exercises that I refer to in the **Observer Physics** essays with the corresponding ones in the **Mini-Courses**. Most of the exercises overlap (are identical or very similar), but each book has a few extras that the other lacks. I highly recommend both sets of exercises. I think **ReSurfacing** exercises #18 (Viewpoints) and #22 (Belief and Indoctrination) are the only two that I mention in the essays that are not included in the **Mini-Course** materials. The **Mini-Courses** have

lots of interesting diagrams and charts for those who are more visually oriented as well as more textual discussion. Enjoy them.

Key to the Exercises
ReSurfacing (RS) and the Avatar Mini-Courses (MC)

RS01. Personality Profile
MC7.04 Discovering a Life Purpose Vector

RS02. Awakening the Will
MC3.01 Awakening the Will

RS03. Disciplining Attention
MC3.02 Disciplining the Will

RS04 Acting as Aware Will
MC3.03 Taking Control,
MC3.04 Conquering Worry
MC3.05 Willful Control

RS05. The Will Rules All
MC1.03 Two-Way Street

RS06. Controlling Attention
MC1.01 Marshalling Your Attention Troops
MC1.05 Controlling and Deciding

RS07. The Behavior of Attention
MC1.02, 1.04 Baby Eyes

MC7.01 Sticky Attention

RS08. Exhaustion of Attention

RS09. Attention and Practice

RS10. Emotion and Importance
MC7.03 Prioritize by Importance

RS11. Minding the Edges
MC4.02 Minding the Edges

RS12. Releasing Fixed Attention
MC1.07 Getting the Message; 5.03

RS13. Restoring Attention

MC4.01 Counting Forms

RS14. Caring For the Animal

RS15. Walk For Atonement
MC6.02 Walk For Atonement

RS16. Self-Deception Signals
MC6.01 Self-Deception Signals

RS17. Compassion Exercise
MC4.06; 5.04, 6.03 Compassion

RS18. Viewpoints

RS19. This and That
MC4.05 This and That

RS20. Conviction
MC2.02 Do You Know or Do You Only Believe

RS21. Operating Beliefs
MC2.01 Your Belief Inventory

RS22. Belief and Indoctrination

RS23. Transparent Beliefs
MC2.03 Transparent Beliefs

RS24. Exploring Definition
MC4.03 Exploring Definition

RS25. Motivation

RS26. Expansion Exercise
MC4.07 Expansion Exercise

RS27. Goal Setting
MC5.05, 7.05 Finding an RFY Goal

RS28. Life Alignment Program
MC7.06 Life Alignment Program

RS29. Create Your Own Epitaph
MC7.04 Discovering a Life Purpose Vector

RS30. Debrief

MC*.** (At end of each Mini-Course Checklist).

MC4.04 Thoughtstorm Exercise

MC6.00 The Enlightened Justice Procedure

Titles of The Avatar Mini-Courses “Seven Pillars of Enlightenment”

Pillar 1. Awareness: Basic Attention Management

Pillar 2. Insight: Belief Management

Pillar 3. Determination: Basic Will

Pillar 4. Perspective: Creating Definition

Pillar 5. Compassion: The Forgiveness Option

Pillar 6. Integrity: Personal Integrity

Pillar 7. Alignment: Basic Life Alignment

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