Observer Physics

by

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

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 a detached 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".

Educational psychologist, 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, 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 one prefers.

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 acknowledgement. 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 pushing 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, has 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 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.

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 doesn' t count. We mean full frontal disclosure. 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 really works. At the core it' s all very simple. The apparent complexity of the world 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.

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, that old Whitehead monkey wrench of logic, rears its unshaven head. 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 can 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 toted as the most unique and valuable feature that makes science science) 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 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 definition of "truth" with "honesty" in a way that makes science solid.

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 for himself. 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 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 and the World Space. 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 he is not a physicist. (He' s an educational psychologist and engineer.) 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" and earn scorn from physicists. The physicists, on the other hand, usually try to be sophisticated and impenetrable to prove how smart and unapproachable they are. The popularists usually write as if the public can' t count beyond three. Perhaps that' s why the first great popularist, 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 math is the great tool of physics, and it forms the bridge between the mind of the conscious observer and the phenomena that s/he 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 make 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. 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 discussions 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 physics 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 somewhat unconventional. I have taken the Greek out of the notation and replaced certain other math symbols with standard typing symbols. Please bear with that. A little practice will make it familiar. It simplifies typing and allows material to be written up as simple text files. I have tried to be consistent throughout with my notation.

As source materials for the systematic study of consciousness I have chosen two main programs. One is the **Transcendental Meditation** technique with its intellectual framework, the **Science of Creative Intelligence,** as developed by Maharishi Mahesh Yogi. I selected that body of materials because of personal familiarity and because Maharishi has a special interest in physics and he has often spoken of his principles of creative intelligence in terms of physics and encouraged scientific study of them. My second resource is the **Avatar Materials** developed by Harry Palmer. I chose these materials also because of personal familiarity and because Palmer has a strong background in both educational psychology as well as engineering. His methodology is simple, straightforward, and effective. It is also among the best-organized material I have seen. Certainly there are other programs that have contributions to offer, and these can be brought in as the field develops.

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. 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. This book is more concerned with type three and 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.

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* I strongly recommend that you acquire a copy of Harry Palmer' s little workbook, **ReSurfacing**. Throughout my discussion of Observer Physics I will suggest exercises from that workbook 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. **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 hardcopy) of Palmer' s other little book **Living Deliberately**.

** Harry Palmer has developed a course that he calls **Avatar**. This course not only includes a simple procedure for uncovering transparent beliefs, but also a "creation" procedure for establishing beliefs as realities. 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. This is quite a challenge for the scientific establishment to accept. They 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.

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.

Or contact my email address: deltapt @ ms19.hinet.net, or dpedtech @ dpedtech.com..