

Introduction

In the movie Star Wars, Luke Skywalker's adventure begins when a beam of light shoots out of the robot Artoo Detoo and projects a miniature three-dimensional image of Princess Leia. Luke watches spellbound as the ghostly sculpture of light begs for someone named Obi-wan Kenobi to come to her assistance. The image is a hologram, a three-dimensional picture made with the aid of a laser, and the technological magic required to make such images is remarkable. But what is even more astounding is that some scientists are beginning to believe the universe itself is a kind of giant hologram, a splendidly detailed illusion no more or less real than the image of Princess Leia that starts Luke on his quest.

Put another way, there is evidence to suggest that our world and everything in it--from snowflakes to maple trees to falling stars and spinning electrons--are also only ghostly images, projections from a level of reality so beyond our own it is literally beyond both space and time.

The main architects of this astonishing idea are two of the world's most eminent thinkers: University of London physicist David Bohm, a protege of Einstein's and one of the world's most respected quantum physicists; and Karl Pribram, a neurophysiologist at Stanford University and author of the classic neuropsychological textbook *Languages of the Brain*. Intriguingly, Bohm and Pribram arrived at their conclusions independently and while working from two very different directions. Bohm became convinced of the universe's holographic nature only after years of dissatisfaction with standard theories' inability to explain all of the phenomena encountered in quantum physics. Pribram became convinced because of the failure of standard theories of the brain to explain various neurophysiological puzzles.

However, after arriving at their views, Bohm and Pribram quickly realized the holographic model explained a number of other mysteries as well, including the apparent inability of any theory, no matter how comprehensive, ever to account for all the phenomena encountered in nature; the ability of individuals with hearing in only one ear to determine the direction from which a sound originates; and our ability to recognize the face of someone we have not seen for many years even if that person has changed considerably in the interim.

But the most staggering thing about the holographic model was that it suddenly made sense of a wide range of phenomena so elusive they generally have been categorized outside the province of scientific understanding. These include telepathy, precognition, mystical feelings of oneness with the universe, and even psychokinesis, or the ability of the mind to move physical objects without anyone touching them.

Indeed, it quickly became apparent to the ever growing number of scientists who came to embrace the holographic model that it helped explain virtually all paranormal and mystical experiences, and in the last half-dozen years or so it has continued to galvanize researchers and shed light on an increasing number of previously inexplicable phenomena. For example:

- In 1980 University of Connecticut psychologist Dr. Kenneth Ring proposed that near-death experiences could be explained by the holographic model. Ring, who is president of the International Association for Near-Death Studies, believes such experiences, as well as death itself, are really nothing more than the shifting of a person's consciousness from one level of the hologram of reality to another.
- In 1985 Dr. Stanislav Grof, chief of psychiatric research at the Maryland Psychiatric Research Center and an assistant professor of psychiatry at the Johns Hopkins University School of Medicine, published a book in which he concluded that existing neurophysiological models of the brain are inadequate and only a holographic model can explain such things as archetypal experiences, encounters with the collective unconscious, and other unusual phenomena experienced during altered states of consciousness.
- At the 1987 annual meeting of the Association for the Study of Dreams held in Washington, D.C., physicist Fred Alan Wolf delivered a talk in which he asserted that the holographic model explains lucid dreams (unusually vivid dreams in which the dreamer realizes he or she is awake). Wolf believes such dreams are actually visits to parallel

realities, and the holographic model will ultimately allow us to develop a "physics of consciousness" which will enable us to begin to explore more fully these other-dimensional levels of existence.

- In his 1987 book entitled *Synchronicity: The Bridge Between Matter and Mind*, Dr. F. David Peat, a physicist at Queen's University in Canada, asserted that synchronicities (coincidences that are so unusual and so psychologically meaningful they don't seem to be the result of chance alone) can be explained by the holographic model. Peat believes such coincidences are actually "flaws in the fabric of reality." They reveal that our thought processes are much more intimately connected to the physical world than has been hitherto suspected.

These are only a few of the thought-provoking ideas that will be explored in this book. Many of these ideas are extremely controversial. Indeed, the holographic model itself is highly controversial and is by no means accepted by a majority of scientists. Nonetheless, and as we shall see, many important and impressive thinkers do support it and believe it may be the most accurate picture of reality we have to date.

The holographic model has also received some dramatic experimental support. In the field of neurophysiology numerous studies have corroborated Pribram's various predictions about the holographic nature of memory and perception. Similarly, in 1982 a landmark experiment performed by a research team led by physicist Alain Aspect at the Institute of Theoretical and Applied Optics, in Paris, demonstrated that the web of subatomic particles that compose our physical universe "the very fabric of reality itself--possesses what appears to be an undeniable "holographic" property. These findings will also be discussed in the book.

In addition to the experimental evidence, several other things add weight to the holographic hypothesis. Perhaps the most important considerations are the character and achievements of the two men who originated the idea. Early in their careers, and before the holographic model was even a glimmer in their thoughts, each amassed accomplishments that would inspire most researchers to spend the rest of their academic lives resting on their laurels. In the 1940s Pribram did pioneering work on the limbic system, a region of the brain involved in emotions and behavior. Bohm's work in plasma physics in the 1950s is also considered landmark.

But even more significantly, each has distinguished himself in an other way. It is a way even the most accomplished men and women can seldom call their own, for it is measured not by mere intelligence or even talent. It is measured by courage, the tremendous resolve it takes to stand up for one's convictions even in the face of overwhelming opposition. While he was a graduate student, Bohm did doctoral work with Robert Oppenheimer. Later, in 1951, when Oppenheimer came under the perilous scrutiny of Senator Joseph McCarthy's Committee on Un-American Activities, Bohm was called to testify against him and refused. As a result he lost his job at Princeton and never again taught in the United States, moving first to Brazil and then to London.

Early in his career Pribram faced a similar test of mettle. In 1935 a Portuguese neurologist named Egas Moniz devised what he believed was the perfect treatment for mental illness. He discovered that by boring into an individual's skull with a surgical pick and severing the prefrontal cortex from the rest of the brain he could make the most troublesome patients docile. He called the procedure a prefrontal lobotomy, and by the 1940s it had become such a popular medical technique that Moniz was awarded the Nobel Prize. In the 1950s the procedure's popularity continued and it became a tool, like the McCarthy hearings, to stamp out cultural undesirables. So accepted was its use for this purpose that the surgeon Walter Freeman, the most outspoken advocate for the procedure in the United States, wrote unashamedly that lobotomies "made good American citizens" out of society's misfits, "schizophrenics, homosexuals, and radicals."

During this time Pribram came on the medical scene. However, unlike many of his peers, Pribram felt it was wrong to tamper so recklessly with the brain of another. So deep were his convictions that while working as a young neurosurgeon in Jacksonville, Florida, he opposed the accepted medical wisdom of the day and refused to allow any lobotomies to be performed in the ward he was overseeing. Later at Yale he maintained his controversial stance, and his then radical views very nearly lost him his job.

Bohm and Pribram's commitment to stand up for what they believe in, regardless of the consequences, is also evident in the holographic model. As we shall see, placing their not inconsiderable reputations behind such a controversial idea is not the easiest path either could have taken. Both their courage and the vision they have demonstrated in the past again add weight to the holographic idea.

One final piece of evidence in favor of the holographic model is the paranormal itself. This is no small point, for in the last several decades a remarkable body of evidence has accrued suggesting that our current understanding of reality, the solid and comforting sticks-and-stones picture of the world we all learned about in high-school science class, is wrong. Because these findings cannot be explained by any of our standard scientific models, science has in the main ignored them. However, the volume of evidence has reached the point where this is no longer a tenable situation.

To give just one example, in 1987, physicist Robert G. Jahn and clinical psychologist Brenda J. Dunne, both at Princeton University, announced that after a decade of rigorous experimentation by their Princeton Engineering Anomalies Research Laboratory, they had accumulated unequivocal evidence that the mind can psychically interact with physical reality. More specifically, Jahn and Dunne found that through mental concentration alone, human beings are able to affect the way certain kinds of machines operate. This is an astounding finding and one that cannot be accounted for in terms of our standard picture of reality.

It can be explained by the holographic view, however. Conversely, because paranormal events cannot be accounted for by our current scientific understandings, they cry out for a new way of looking at the universe, a new scientific paradigm. In addition to showing how the holographic model can account for the paranormal, the book will also examine how mounting evidence in favor of the paranormal in turn actually seems to necessitate the existence of such a model.

The fact that the paranormal cannot be explained by our current scientific worldview is only one of the reasons it remains so controversial. Another is that psychic functioning is often very difficult to pin down in the lab, and this has caused many scientists to conclude it therefore does not exist. This apparent elusiveness will also be discussed in the book.

An even more important reason is that contrary to what many of us have come to believe, science is not prejudice-free. I first learned this a number of years ago when I asked a well-known physicist what he thought about a particular parapsychological experiment. The physicist (who had a reputation for being skeptical of the paranormal) looked at me and with great authority said the results revealed "no evidence of any psychic functioning whatsoever." I had not yet seen the results, but because I respected the physicist's intelligence and reputation, I accepted his judgment without question. Later when I examined the results for myself, I was stunned to discover the experiment had produced very striking evidence of psychic ability. I realized then that even well-known scientists can possess biases and blind spots.

Unfortunately this is a situation that occurs often in the investigation of the paranormal. In a recent article in *American Psychologist*, Yale psychologist Irvin L. Child examined how a well-known series of ESP dream experiments conducted at the Maimonides Medical Center in Brooklyn, New York, had been treated by the scientific establishment. Despite the dramatic evidence supportive of ESP uncovered by the experimenters, Child found their work had been almost completely ignored by the scientific community. Even more distressing, in the handful of scientific publications that had bothered to comment on the experiments, he found the research had been so "severely distorted" its importance was completely obscured.'

How is this possible? One reason is science is not always as objective as we would like to believe. We view scientists with a bit of awe, and when they tell us something we are convinced it must be true. We forget they are only human and subject to the same religious, philosophical, and cultural prejudices as the rest of us. This is unfortunate, for as this book will show, there is a great deal of evidence that the universe encompasses considerably more than our current worldview allows.

But why is science so resistant to the paranormal in particular? This is a more difficult question. In commenting on the resistance he experienced to his own unorthodox views on health, Yale surgeon Dr. Bernie S. Siegel, author of the best-selling book "Love, Medicine, and Miracles", asserts that it is because people are addicted to their beliefs. Siegel says this is why when you try to change someone's belief they act like an addict.

There seems to be a good deal of truth to Siegel's observation, which perhaps is why so many of civilization's greatest insights and advances have at first been greeted with such passionate denial. We are addicted to our beliefs and we do act like addicts when someone tries to wrest from us the powerful opium of our dogmas. And since Western science has

devoted several centuries to not believing in the paranormal, it is not going to surrender its addiction lightly.

I am lucky. I have always known there was more to the world than is generally accepted. I grew up in a psychic family, and from an early age I experienced firsthand many of the phenomena that will be talked about in this book. Occasionally, and when it is relevant to the topic being discussed, I will relate a few of my own experiences. Although they can only be viewed as anecdotal evidence, for me they have provided the most compelling proof of all that we live in a universe we are only just beginning to fathom, and I include them because of the insight they offer.

Lastly, because the holographic concept is still very much an idea in the making and is a mosaic of many different points of view and pieces of evidence, some have argued that it should not be called a model or theory until these disparate points of view are integrated into a more unified whole. As a result, some researchers refer to the ideas as the holographic paradigm. Others prefer holographic analogy, holographic metaphor, and so on. In this book and for the sake of diversity I have employed all of these expressions, including holographic model and holographic theory, but do not mean to imply that the holographic idea has achieved the status of a model or theory in the strictest sense of these terms.

In this same vein it is important to note that although Bohm and Pribram are the originators of the holographic idea, they do not embrace all of the views and conclusions put forward in this book. Rather, this is a book that looks not only at Bohm and Pribram's theories, but at the ideas and conclusions of numerous researchers who have been influenced by the holographic model and who have interpreted it in their own sometimes controversial ways.

Throughout this book I also discuss various ideas from quantum physics, the branch of physics that studies subatomic particles (electrons, protons, and so on). Because I have written on this subject before, I am aware that some people are intimidated by the term quantum physics and are afraid they will not be able to understand its concepts. My experience has taught me that even those who do not know any mathematics are able to understand the kinds of ideas from physics that are touched upon in this book. You do not even need a background in science. All you need is an open mind if you happen to glance at a page and see a scientific term you do not know. I have kept such terms down to a minimum, and on those occasions when it was necessary to use one, I always explain it before continuing on with the text.

So don't be afraid. Once you have overcome your "fear of the water," I think you'll find swimming among quantum physics' strange and fascinating ideas much easier than you thought. I think you'll also find that pondering a few of these ideas might even change the way you look at the world. In fact, it is my hope that the ideas contained in the following chapters will change the way you look at the world. It is with this humble desire that I offer this book.