

In science, the acceptance of new ideas follows a predictable, four-stage sequence. In Stage 1, skeptics confidently proclaim that the idea is impossible because it violates the Laws of Science. This stage can last from years to centuries, depending on how much the idea challenges conventional wisdom. In Stage 2, skeptics reluctantly concede that the idea is possible, but it is not very interesting and the claimed effects are extremely weak. Stage 3 begins when the mainstream realizes that the idea is not only important, but its effects are much stronger and more pervasive than previously imagined. Stage 4 is achieved when the same critics who used to disavow any interest in the idea begin to proclaim that they thought of it first. Eventually, no one remembers that the idea was once considered a dangerous heresy. *The psyche's attachment to the brain, i.e., its space-time limitation, is no longer as self-evident and incontrovertible as we have hitherto been led to believe.... It is not only permissible to doubt the absolute validity of space-time perception; it is, in view of the available facts, even imperative to do so. – Carl Jung, Psychology and the Occult*

The idea discussed in this book is in the midst of the most important and the most difficult of the four transitions – from Stage 1 into Stage 2. While the idea itself is ancient, it has taken more than a century to conclusively demonstrate it in accordance with rigorous, scientific standards. This demonstration has accelerated Stage 2 acceptance, and Stage 3 can already be glimpsed on the horizon.

The idea

The idea is that those compelling, perplexing and sometimes profound human experiences known as "psychic phenomena" are real. This will come as no surprise to most of the world's population, because the majority already believes in psychic phenomena. But over the past few years, something new has propelled us beyond old debates over personal beliefs. The reality of psychic phenomena is now no longer based solely upon faith, or wishful thinking, or absorbing anecdotes. It is not even based upon the results of a few scientific experiments. Instead, we know that these phenomena exist because of new ways of evaluating massive amounts of scientific evidence collected over a century by scores of researchers.

Psychic, or "psi" phenomena fall into two general categories. The first is perception of objects or events beyond the range of the ordinary senses. The second is mentally causing action at a distance. In both categories, it seems that intention, the mind's will, can do things that – according to prevailing scientific theories – it isn't supposed to be able to do. We wish to know what is happening to loved ones, and somehow, sometimes, that information is available even over large distances. We wish to speed the recovery of a loved one's illness, and somehow they get better quicker, even at a distance. Mind willing, many interesting things appear to be possible.

Understanding such experiences requires an expanded view of human consciousness. Is the mind merely a mechanistic, information-processing bundle of neurons? Is it a "computer made of meat" as some cognitive scientists and neuroscientists believe? Or is it something more? The

evidence suggests that while many aspects of mental functioning are undoubtedly related to brain structure and electrochemical activity, there is also something else happening, something very interesting.

This is for real?

When discussing the reality of psi phenomena, especially from the scientific perspective, one question always hovers in the background: You mean this is for real? In the midst of all the nonsense and excessive silliness proclaimed in the name of psychic phenomena, the misinformed use of the term parapsychology by self-proclaimed "paranormal investigators," the perennial laughing stock of magicians and conjurers ... this is for real?

The short answer is, Yes.

A more elaborate answer is, psi has been shown to exist in thousands of experiments. There are disagreements over to how to interpret the evidence, but the fact is that virtually all scientists who have studied the evidence, including the hard-nosed skeptics, now agree that there is something interesting going on that merits serious scientific attention. Later we'll discuss the reasons why very few scientists and science journalists are aware of this dramatic shift in informed opinion.

Shifting opinions

The most important indication of a shift from Stage 1 to Stage 2 can be seen in the gradually changing attitudes of prominent skeptics. In a 1995 book saturated with piercing skepticism, the late Carl Sagan of Cornell University maintained his life-long mission of educating the public about science, in this case by debunking popular hysteria over alien abductions, channelers, faith-healers, the "face" on Mars, and practically everything else found in the New Age section of most bookstores. Then, in one paragraph amongst 450 pages, we find an astonishing admission:

At the time of writing there are three claims in the ESP field which, in my opinion, deserve serious study: (1) that by thought alone humans can (barely) affect random number generators in computers; (2) that people under mild sensory deprivation can receive thoughts or images "projected" at them; and (3) that young children sometimes report the details of a previous life, which upon checking turn out to be accurate and which they could not have known about in any other way than reincarnation.

Other signs of shifting opinions are cropping up with increasing frequency in the scientific literature. Starting in the 1980s, well-known scientific journals like *Foundations of Physics*, *American Psychologist*, and *Statistical Science* published articles favorably reviewing the scientific evidence for psychic phenomena. The *Proceedings of the IEEE*, the flagship journal of the Institute for Electronic and Electrical Engineers, has published major debates on psi research. Invited articles have appeared in the prestigious journal, *Brain and Behavioral Sciences*. A favorable article on telepathy research appeared in 1994 in *Psychological Bulletin*, one of the top-ranked journals in academic psychology. And an article presenting a theoretical model for precognition appeared in 1994 in *Physical Review*, a prominent physics journal.

In the 1990s alone, seminars on psi research were part of the regular programs at the annual conferences of the American Association for the Advancement of Science, the American Psychological Association, and the American Statistical Association. Invited lectures on the status of psi research were presented for diplomats at the United Nations, for academics at Harvard University, and for scientists at Bell Laboratories.

NEW (not in the book): The first US patent for a psi effect was granted to Princeton University researchers on November 3, 1998. Patent "US 5830064" is entitled: Apparatus and method for distinguishing events which collectively exceed chance expectations and thereby controlling an output. This patent specifically covers distant mental control of electronic random number generator outputs.

The Pentagon has not overlooked these activities.

From 1981 to 1995, five different US government-sponsored scientific review committees were given the task of reviewing the evidence for psi effects. The reviews were prompted by concerns that if psi was genuine, it might be important for national security reasons. We would have to assume that foreign governments would exploit psi if they could.

Reports were prepared by the Congressional Research Service, the Army Research Institute, the National Research Council, the Office of Technology Assessment, and the American Institutes for Research (the latter commissioned by the Central Intelligence Agency). While disagreeing over fine points of interpretation, all five of the reviews concluded that the experimental evidence for certain forms of psychic phenomena merited serious scientific study.

For example, in 1981, the Congressional Research Service concluded that "Recent experiments in remote viewing and other studies in parapsychology suggest that there exists an "interconnectiveness" of the human mind with other minds and with matter. This interconnectiveness would appear to be functional in nature and amplified by intent and emotion." The report concluded with suggestions of possible applications for health care, investigative work, and "the ability of the human mind to obtain information as an important factor in successful decision making by executives."

In 1985, a report prepared for the Army Research Institute concluded that "The bottom line is that the data reviewed in [this] report constitute genuine scientific anomalies for which no one has an adequate explanation or set of explanations.... If they are what they appear to be, their theoretical (and, eventually, their practical) implications are enormous."

In 1987, the National Research Council reviewed parapsychology (the scientific discipline that studies of psi) at the request of the US Army. The committee recommended that the Army monitor parapsychological research being conducted in the former Soviet Union and in the United States, they recommended that the Army consider funding specific experiments, and most significantly, they admitted that they could not propose plausible alternatives to the "psi hypothesis" for some classes of psi experiments. Dr. Ray Hyman, a psychology professor at the University of Oregon and long-term skeptic of psi phenomena, was chairman of the National Research Council's review committee on parapsychology. He stated in a 1988 interview with

the Chronicle of Higher Education, that "Parapsychologists should be rejoicing. This was the first government committee that said their work should be taken seriously."

In early 1989, the Office of Technology Assessment issued a report of a workshop on the status of parapsychology. The end of the report stated that "It is clear that parapsychology continues to face strong resistance from the scientific establishment. The question is – how can the field improve its chances of obtaining a fair hearing across a broader spectrum of the scientific community, so that emotionality does not impede objective assessment of the experimental results? Whether the final result of such an assessment is positive, negative, or something in between, the field appears to merit such consideration."

In 1995, the American Institutes for Research reviewed formerly classified government-sponsored psi research for the CIA at the request of the U. S. Congress. Statistician Jessica Utts of the University of California, Davis, one of the two principal reviewers, concluded that "The statistical results of the studies examined are far beyond what is expected by chance. Arguments that these results could be due to methodological flaws in the experiments are soundly refuted. Effects of similar magnitude to those found in government-sponsored research ... have been replicated at a number of laboratories across the world. Such consistency cannot be readily explained by claims of flaws or fraud.... It is recommended that future experiments focus on understanding how this phenomenon works, and on how to make it as useful as possible. There is little benefit to continuing experiments designed to offer proof....."

Surprisingly, the other principal reviewer, skeptic Ray Hyman, agreed: "The statistical departures from chance appear to be too large and consistent to attribute to statistical flukes of any sort.... I tend to agree with Professor Utts that real effects are occurring in these experiments. Something other than chance departures from the null hypothesis has occurred in these experiments."

These opinions are even being reflected in the staid realm of college textbooks. One of the most popular books in the history of college publishing is Introduction to Psychology by Richard L. Atkinson and three co-authors. A portion of the preface in the 1990 edition of this textbook reads: "Readers should take note of a new section in Chapter 6 entitled 'Psi Phenomena.' We have discussed parapsychology in previous editions but have been very critical of the research and skeptical of the claims made in the field. And although we still have strong reservations about most of the research in parapsychology, we find the recent work on telepathy worthy of careful consideration."

The popular "serious" media haven't overlooked this opinion shift. The May, 1993, issue of New Scientist, a popular British science magazine, carried a five-page cover story on telepathy research. It opened with the line, "Psychic research has long been written off as the stuff of cranks and frauds. But there's now one telepathy experiment that leaves even the sceptics scratching their heads." And in the last few years, Newsweek, the New York Times Magazine, Psychology Today, ABC TV's Nightline, national news programs, and television and print media around the world have begun to moderate previously held Stage 1 opinions. They're now beginning to publish and broadcast Stage 2-type stories taking scientific psi research seriously.

If all this is true, then a thousand other questions immediately bubble up. Why hasn't everyone heard about this on the nightly news? Why is this topic so controversial? Who has psi? How does it work? What are its implications and applications? These are all good questions, and this book will attempt to answer them through four general themes: Motivation, Evidence, Understanding and Implications.

Theme 1: Motivation

Why should anyone take psychic phenomena seriously? The answer rests on the strength of the scientific evidence, which stands on its own merits. But to fully appreciate why the scientific case is so persuasive, and why has there been any scientific controversy at all, we have to take a bit of a circuitous route.

That route will first consider the language used to discuss psi to show how many confusions over this topic are due to misunderstood and misapplied words (Chapter 2). This is followed by examples of common human experiences that provide hints about the existence and nature of psi phenomena (Chapter 3). We will then consider the topic of replication, where we will learn what counts as valid scientific evidence (Chapter 4). And we'll end with meta-analysis, where we will see how replication is measured and why it is so important (Chapter 5).

In sum, the motivations underlying this scientific exploration can be found in mythology, folk tales, religious doctrines, and innumerable personal anecdotes. While sufficient to catch everyone's attention, stories and personal experiences do not provide the hard, trustworthy evidence that causes scientists to confidently accept that a claimed effect is what it appears to be. Stories, after all, invariably reflect subjective beliefs and faith, which may or may not be true.

Beginning in the 1880s and accumulating ever since, a new form of scientifically valid evidence appeared – empirical data produced in controlled, experimental studies. While not as exciting as folklore and anecdotes, from the scientific perspective these data were more meaningful because they were produced according to well-accepted scientific procedures. Scores of scientists from around the world had quietly contributed these studies.

Today, with more than a hundred years of research on this topic, an immense amount of scientific evidence has been accumulated. Contrary to the assertions of some skeptics, the question is not whether there is any scientific evidence, but "What does a proper evaluation of the evidence reveal," and "Has positive evidence been independently replicated?"

As we'll see, the question of replicability – can independent, competent investigators obtain approximately the same results in repeated experiments – is fundamental to making the scientific case for psi.

Theme 2: Evidence

Theme 2 discusses the main categories of psi experiments and the evidence that the effects seen in these experiments are genuinely replicable. The evidence is based on analysis of over a thousand experiments investigating various forms of telepathy, clairvoyance, precognition, psychic healing, and psychokinesis (presented in Chapters 6 through 10). The evidence for these basic phenomena is so well-established that most psi researchers today no longer

conduct "proof-oriented" experiments. Instead, they focus largely on "process-oriented" questions like, What influences psi performance, and How does it work?

Also presented are experiments exploring how psi interacts with more mundane aspects of human experience like unusual physical effects associated with the "mass mind" of groups of people (Chapter 11), psi effects in casino gambling and lottery games (Chapter 12), and applications of psi (Chapter 13).

Theme 3: Understanding

The wealth of scientific evidence discussed in Theme 2 will show that some psi phenomena exist, and that they are probably expressed in more ways than anyone had previously thought. The vast majority of the information used to make this case has been publicly available for years. One might expect then that the growing scientific evidence for genuine psi would have raised great curiosity. Funding would flow, and researchers around the world would be attempting to replicate these effects. After all, the implications of genuine psi are profoundly important for both theoretical and practical reasons. But this has not yet been the case. Few scientists are aware that any scientifically valid case can be made for psi, and fewer still realize that the cumulative evidence is highly persuasive.

In Theme 3 we consider why this is so. One reason is that the information discussed here has been suppressed and ridiculed by a relatively small group of highly skeptical philosophers and scientists (Chapter 14). Are the skeptics right, and all of the scientists reporting successful psi experiments over the past century simply delusional or incompetent? Or there is another explanation for the skepticism?

We will see that because scientists are also human, the process of evaluating scientific claims is not as pristinely rational or logical as the general public believes (Chapter 15). The tendency to adopt a fixed set of beliefs and defend them to the death is incompatible with science, which is essentially a loose confederation of evolving theories in many domains. Unfortunately, this tendency has driven some scientists to continue to defending outmoded, inaccurate world-views. The tendency is also seen in the behavior of belligerent skeptics who loudly proclaim that widespread belief in psi is due to a decline in the public's critical thinking ability. One hopes that such skeptics would occasionally apply a little skepticism to their own positions, but history amply demonstrates that science progresses mainly by funerals, not by reason and logic alone.

Understanding why the public has generally accepted the existence of psi and why science has generally rejected it requires an examination of the origins of science (Chapter 16). In exploring this clash of beliefs, we will discover that the scientific controversy has had very little to do with the evidence itself, and very much to do with the psychology, sociology and history of science.

Discussions about underlying assumptions in science rarely surface in skeptical debates over psi, because this topic involves deeply held, often unexamined beliefs about the nature of the world. It is much easier to imagine a potential flaw in one experiment, and use that flaw to cast doubt on an entire class of experiments, than it is to consider the overall results of a thousand similar studies. A related issue is how science deals with anomalies, those extraordinary "damn

facts" that challenge mainstream theories. Along with an understanding of the nature and value of anomalies, and how scientists react to them, we will explore the role that prejudice, in the literal sense of "pre-judging," has played in controlling what is presumed to be scientifically valid. Other issues, like how scientific disciplines rarely talk to each other, and the historical abyss between science and religion, make it abundantly clear that if psychic experiences were any other form of curious natural phenomena, they would have been adopted long ago by the scientific mainstream on the basis of the evidence alone.

Beyond the themes of motivation, evidence, and understanding, resides the question, So what? Why should anyone care if psi is real or not?

Theme 4: Implications

The eventual scientific acceptance of psychic phenomena is inevitable. The origins of acceptance are already brewing through the persuasive weight of the laboratory evidence. There are converging theoretical developments from many disciplines offering glimpses at ways of understanding how psi works (Chapter 17). There are explorations of psi effects by major industrial labs, evaluation of claims of psychic healing by the Office of Alternative Medicine of the National Institutes of Health, and articles about psi research appearing in the "serious" media.

As acceptance grows, the implications of psi will become more apparent. But we already know that these phenomena present profound challenges to many aspects of science, philosophy and religion (Chapter 18). These challenges will nudge scientists to reconsider basic assumptions about space, time, mind, and matter. Philosophers will rekindle the perennial debates over the role of consciousness in the physical world. Theologians will reconsider the concept of divine intervention, as some phenomena previously considered to be miracles will probably become subject to scientific understanding.

These reconsiderations are long overdue. An exclusive focus on what might be called "the outer world" has led to a grievous split between the private world of human experience and the public world as described by science. In particular, science has provided little understanding of profoundly important human concepts like hope and meaning. The split between the objective and the subjective has in the past been dismissed as a non-problem, or as a problem belonging to religion and not to science.

But this split has also led to major technological blunders, and a rising popular antagonism toward science. This is a pity, because scientific methods are exceptionally powerful tools for overcoming personal biases and building workable models of the "truth." There is every reason to expect that the same methods that gave us a better understanding of galaxies and genes will also shed light on experiences described by mystics throughout history.

Now let's explore a little more closely what we're talking about. What is psi?