



Return now



Purchase at
Better World Books

Borrow ends at 4:04 PM



School of Theology at Claremont



1001 1425432

The Psychology of the PSYCHIC

A penetrating scientific
analysis of claims of
psychic abilities...

David Marks and
Richard Kammann
Foreword by Martin Gardner



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



CONTENTS

Foreword	Martin Gardner	1
Preface		4
Chapter	1. The Growing World of the Occult	7
	2. Remote Viewing (DM)	12
	3. The Targ-Puthoff Effect Explained (DM)	26
	4. Kreskin's Riddle	42
	5. Solving Kreskin's Riddle	57
	6. Uri Geller: Super Psychic of the Seventies	73
	7. The Geller Effect Observed	87
	8. Geller Exposed	103
	9. Geller Performs at the Stanford Research Institute	119
	10. "Gelleritis": A Case Study in Pathological Science	140
	11. The Roots of Coincidence (RK)	155
	12. Self-Perpetuating Beliefs (RK)	174
	13. The Art of Doubt	200
Appendix I		216
Appendix II		223
References		227



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

11

THE ROOTS OF COINCIDENCE

One thing, however, remains to be explained—the Geller effect. By this I mean the ability of one able though perhaps not outstanding magician (though only his peers can judge that) to make such an extraordinary impact on the world, and to convince thousands of otherwise level-headed people that he is genuine, or at any rate, worthy of serious consideration.

Arthur C. Clarke


The short answer to Arthur Clarke's question is that Geller succeeded because the public wanted him to. As we have seen (chapter 1), most people are believers, and Geller (or Kreskin or remote viewing) is only "proof" they are right.

The real puzzle is why so many people believe in supernatural effects for which there is so little evidence. Is this our answer to the hard seats and dull arithmetic of schooldays past? No area of science could survive such a long history of high hopes and poor results, so many false alarms, so many hoaxes, and so little visible progress (Hansel, 1966). We have examined the three most spectacular psychic claims of the 1970s, only to find three more duds. While most scientific fields change so fast that only experts can hope to cope, psychism has a Brigadoon indifference to time while it awaits its first reliable result.

It would be foolish to deny the *possibility* of ESP, or for that matter, the fountain of youth. We must acknowledge that most wonders of modern science were once crazy conjectures: atoms, meteorites, germs, artificial



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM 

156 *The Roots of Coincidence*

fertilizers, genes, antibiotics, and all the rest. Who among us wants to be the historic fools of our era, like those who doubted the round earth of Columbus, the centrality of Copernicus' sun, Fuller's steam engine, or NASA's moon landing?

On the other hand, our history books forget to mention all the false theories that have been believed, sometimes by quite large followings, a deficiency that has been much corrected by Martin Gardner's skeptical classic, *Fads and Fallacies in the Name of Science* (Dover, 1957). Contrary to the where-there's-smoke theory, the number of people believing an idea is not much evidence for its truth value.

Just for the sake of argument, let us imagine that *there really is no such thing as ESP*. In that case, how could we explain the widespread conviction that there *is*? This turns our attention from psychics to the psychology of psychic belief.


One likely explanation is motivational. We seem to have a profound yearning for a magic formula that will free us from our ponderous and fragile human bodies, from realities that will not obey our wishes, from loneliness or unhappiness, and from death itself. This idea is especially compatible with the broader occult spectrum including astrology (which relieves us from responsibility for our actions and moods), spiritualism, reincarnation, and faith healing. In this sense, the occult serves as a sort of underground religion. It is less clear, however, what wish is fulfilled by ESP or UFOs, which seem rather to be superstitious conjectures of modern thought. We think the motivational hypothesis deserves much more study, but at the moment it is only an enticing speculation.

We move onto firmer ground with the cognitive hypothesis that psychic belief follows from natural fallacies of human thought. Our starting point is the common experience of stumbling onto a mysterious event that defies explanation and seems supernatural. These are the stories that people say "could not be a mere coincidence." But what is a coincidence, and what are the roots of coincidence?

The Case of the Drowning Daughter

We begin with a true story that happened to one of the authors (RK).

I usually forget my dreams, but seven years ago I had a

Return now Purchase at
Better World BooksBorrow ends at 4:04 PM *The Roots of Coincidence* 157

particularly vivid and disturbing nightmare that turned out to be prophetic. In this dream, I kept running into the bathroom where my seven-year-old daughter was playing in the bathtub. The water level was not very high, but as dreams go, she had somehow shrunk to doll-size and was constantly slipping under the water, so I had to keep sitting her back up to keep her from drowning. I mentioned this bad dream to my wife the next day.

After I had forgotten the dream, we were invited to a garden party at the home of friends who had a swimming pool. The party took place about two weeks later. After most of us had taken a dip in the pool, the adults gathered on the lawn for party talk and drinks. Suddenly out of the corner of my eye I saw my daughter thrashing under water in the deep end of the pool—she did not know how to swim. I broke through the crowd, jumped in beside her, and heaved her up into the arms of a friend at the poolside. After a few gasps and splutters, she got her breath back and was perfectly okay. She had been bobbing up and down alone in the shallow end of the pool and had drifted well beyond the ramp into the deep end.

After I was calm again I remembered the dream of saving her in the bathtub. Coincidence seemed impossible. Why should I, who rarely remembers dreams, who never had a dream like that one, and who rarely went swimming with my daughter, find myself dreaming about her nearly drowning just two weeks before she nearly did? The idea of the pool party could not have caused the dream, because I remembered that the invitation came after it. The idea that the dream caused the pool incident seems absurd—if anything the dream should have made me more careful to prevent any accident. Nor could my memory of the dream have been revised to fit the facts, since I had already told it to my wife. After much discussion, I could only guess that it was precognition, but whatever it was, I never forgot it.

In such stories as this, it is common to say that there was a “striking coincidence,” and to turn around and deny that it was a “mere coincidence.” This semantic paradox results from different meanings of “coincidence,” so we must take a small detour through a definition of our terms.

The dream is event A. The pool incident is event B. They are connected



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

158 *The Roots of Coincidence*

by *similarity* (a drowning daughter in a rectangular tub of water being saved by her father). Thus, events A and B form a *match*.

While life is full of matches, as when the front door key fits the front door lock, this type of match has a distinct quality of *oddity*, because we cannot explain it by any common knowledge. An oddity captures our attention and causes us to search further for an explanation. The more striking the oddity, the longer we think about it and remember it.

Because a psychic anecdote first requires a match, and, second, an oddity between the match and our beliefs, we call these stories *oddmatches*. This is equivalent to the common expression, an “unexplained coincidence.” However, we are not just being difficult to insist that *oddmatch* is a better name. You might think of your favorite psychic story to see if it fits our definition of an oddmatch.

All explanations of an event in terms of normal or nonpsychic processes are examples of what we call *N Theory*. All explanations based on psychic or paranormal ideas belong to *P Theory*. But the two types or theories are not equal. If we can explain an event in terms of N Theory, then we do not involve P Theory. An event cannot be “paranormal” unless we can first show that it is not “normal.” As a person’s knowledge of N Theory expands, the number of oddities decreases and the less often P Theory is needed.

The reason N Theory always dominates P Theory is that N Theory can predict events (i.e., can name the conditions that favor their occurrence), whereas P Theory predicts nothing until after it happens.

Parapsychology is a class of P Theory that studies oddmatches involving thoughts. In *telepathy*, there is an unexplained match between one person’s thought A and another person’s thought B. In *clairvoyance*, the oddmatch occurs between thought A and object B, as when we can state which card is now on top of a well-shuffled deck. In *psychokinesis*, A is a thought or wish that some object would change (event B)—we might wish that the car engine would fix itself, and it does. Finally, in *precognition*, thought A predicts some future event B, as when a fortune teller says you will meet the love of your life in the next six months, and you do. It is actually difficult to classify many oddmatches. Suppose you imagine that you are about to get a long distance telephone call from your mother, and you do. Is this telepathy from her mind to yours, or clairvoyance that she is dialing, or precognition of the phone call?

One final point. The way we explain an event, whether by N Theory or by P Theory, influences which details are remembered and which are forgotten.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

The Roots of Coincidence 159**Four Meanings of Coincidence**

We have taken the trouble to define oddmatches, P Theory, and N Theory, so that we can make sense of *coincidence*, which has four different meanings.

1. *Coincidence as a Match.* Coincidence as the coinciding of similar events is a trivial definition because it covers all matches. Thus, a box of chocolates would be a bundle of coincidences.

2. *Coincidence as an Uncaused Match.* It has been traditional to define a coincidence as the coming together of two (similar or related) events without any apparent cause. This definition is not really complete, because we don't know the cause of a lot of matches. Just because two ships pass each other on the seas, or two friends meet in a store, we do not experience a sense of oddity.

Our knowledge of causes is actually very limited. Why do objects fall to the ground? Because of gravity. What causes gravity? (??) As the parent of a three-year-old child can tell you, we find the limits of our causal understanding very quickly by asking "why" after each explanation.

Furthermore, science has had to go beyond the idea of chains of causes. These have been replaced by other ideas, of which probability and statistics are the most important here. This brings us to the "chance coincidence."

3. *Coincidence as a Probability Match.* When a person is dealt four aces in a poker hand, we have a very striking match, but it is not a scientific oddity because we say it occurred by chance or the laws of probability. But if it happened five times in a row, we would suspect that something else was going on.

Probability can never predict that a particular event will occur at a given moment, such as which cards will appear in the next poker hand, but it predicts how often events will occur, under certain conditions. For example, if you roll a pair of dice 360 times, then you would expect the sums of the dice to come up this often:

sum of two dicenumber of times

2

10

3

20

4


30

5

40



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM 160 *The Roots of Coincidence*sum of two dicenumber of times

6	50
7	60
8	50
9	40
10	30
11	20
12	10

Statistical rules tell us we will usually not get exactly these sums, but they will be reasonably close. The more times we roll the dice, the better the results will agree with the theory.

It is puzzling, of course, how probability rules cannot predict any particular event, and yet can predict the frequency of events. But as long as events fit the expected pattern, we say the particular event is normal within chance. Thus, the “mere coincidence” is a case of N Theory.

A very common use of statistics in research is this. We propose that a certain condition exists (such as, these are fair dice) and work out the expected distribution. If the results differ too much, then we conclude the hypothesis was wrong (the dice are loaded).

4. *Coincidence as an Oddmatch.* We finally get to the “striking coincidence,” which is taken as evidence of a psychic or paranormal happening. Recall that an oddmatch has no explanation, not by cause, not by probability, not by any form of N Theory. Therefore, it supports P Theory.

The failure to distinguish among these meanings of coincidence can lead to tremendous confusion as, for example, in the writings of Arthur Koestler, which we take up shortly. What we mean by the roots of coincidence is the explanation of the oddmatch.

In psychic thinking, anecdotes like the dream of the drowning daughter are significant because they baffle N Theory and open the way for P Theory. But this is an illusion. There are biases in human perception and reasoning that hide the role of probability from our view. What seems like an oddmatch must often be a probability match, and our challenge to psychic theory is the challenge of chance.

The Challenge of Chance

We shall use probability theory to explain the results of a major ESP experiment and then a group of personal anecdotes, both of which are given in *The Challenge of Chance* by Alister Hardy, Robert Harvie, and Arthur Koestler (Hutchinson, 1973). Their title has a very different meaning from ours.

Alister Hardy is an eminent British marine biologist who founded the Religious Experiences Research Unit in Oxford, England. As a young man he had experienced a striking oddmatch that convinced him that telepathy was real. He was also President of the British Society for Psychical Research from 1965 to 1969, and it was during this period that he organized one of the most comprehensive ESP tests on record, an experiment ingeniously designed to snare mental telepathy for once and for all.

In this study, members of the Society for Psychical Research and interested friends were recruited for an experiment in which 120-or-so of them would concentrate in unison on a single target picture while another 20 of them in the same room tried to receive the group message. The receivers were seated in screened cubicles in the center of the lecture hall in Westminster, London, while the senders sat on both sides and in front of the cubicles so they could see the target picture. After each one-minute trial, the receivers came out to look at the target. After ten trials, the 20 receivers traded places with 20 (of the 120) senders, so everybody got a turn as receiver. The experiment took seven Monday evenings to complete.

Hardy enlisted the help of Robert Harvie, a graduate psychology student at the time, for the statistical analysis of the results. Their own judging revealed 35 cases of a match between the response and the target; all of these matches are published in the book for public inspection, and most of them seem very good. But looking at these best cases is somewhat beside the point. *They represent only 1.7 percent of the 2112 responses judged.* That Hardy and Harvie did not point this out is not vital, but is our first sign of the human bias to concentrate on successes and ignore failures. This is the very basis of the psychic illusion.

It was not, however, the 35 target matches that interested the researchers, but the unexpected finding of 260 matches occurring *between receivers*. None of these cross-talk matches had anything to do with the target, but, for some reason, the 1-power thought of another receiver came

through more often than the 120-power thought of the senders.

Or so it seems. But to show that cross-talking is stronger than target matching, we should not compare 260 to 35. Rather, we must show that the cross-talks had a greater success rate, and this means we must know how often they failed, as well as how often they succeeded. We have gone back through the Hardy experiment, and found that there were 18,952 cross-talk failures. The success rate is the number of successes out of all possible cases (successes and failures), and *this turns out to be 1.4 percent, which is actually lower than the rate of target matches (1.7 percent)*.

The failure of Hardy and Harvie to calculate this reflects again the human bias to look carefully at the successes (they published all 260 cross-talk matches) and to throw the failures into an uncounted scrap heap.

As it turned out, however, Harvie conducted the necessary test for the number of matches that would be expected by chance, using the method of the delayed control group on Hardy's data. He first moved every response from its correct trial to some other trial, on a random basis. Second, he required that no two drawings from the same real trial could get shifted to the same false trial.

The results of this massive shuffle were startling. They now discovered 34 new target matches on false trials, compared with 35 on real trials, and 217 new cross-talk matches compared with 260 original ones.

Naturally, these results were frustrating to the psychic researchers. While the difference between 260 and 217 cross-talk matches was probably not significant, it was at least in the right direction, so they left that result alone. However, 34 accidental target matches was much too close to 35, so they ran some more tests. This is the classic psychic "fishing fallacy," which is searching through the data to find a publishable result, without considering that the more times you analyze the data, the more chances you have of finding a "result" that is merely an unusually large but random fluctuation in the numbers. Some social scientists do it too.

First, they looked for so-called *precognitive* target matches, that is, a match between any drawing on one trial and the target of the *next trial*. That only produced 16 cases, so they tried out precognitive matches going back two trials, and then three, four, and five trials, but the number of precognitions in each test varied randomly around an average of 13, or only 0.6 percent. As they stated, they would also have tested for postcognitive matches (getting the target from a *preceding trial* by ESP), but they had allowed the subjects to see the target after each trial, so this test would have been meaningless.

Return now Purchase at
Better World Books

Borrow ends at 4:04 PM

*The Roots of Coincidence* 163

So the next thing to do was to repeat Harvie's control test with a new shuffling of the data, but they still got 30 control matches, compared with the original 35 target matches. So, they shuffled the data three more times, which finally produced the result they were looking for—they got only 16, 16, and 22 control matches. So they could now *average* the number of matches on different control runs, giving an average of 24, and that, of course, is "only about two-thirds" as large as 35.

Throughout this entire experiment, it never occurred to the two researchers that there could be anything wrong with the procedure of letting themselves be the judges of the matches. It is a well-established psychological fact that our intuitive standards of judgment change to fit our hopes and our expectations. But we are asked to believe that Hardy and Harvie were not influenced by their knowledge that every match found in these later control runs was a blow against ESP.

To summarize, Hardy and Harvie did not do any follow-up tests on the cross-talk matches, but, counting the precognitions, they ran nine more tests on the target matches—using themselves as the judges—until they got a result that allowed them to conclude, "Perhaps just a small fraction was really due to telepathy?"

But if we stick to the first run of control tests, as we should, it is clear that Hardy and Harvie produced a definitive demonstration of non-ESP. The result is all the more impressive by the fact that the usual psychic rationalizations do not apply. One can hardly say that the researcher was too skeptical, or did not use a good selection of psychic subjects, or that the signal was too weak (with 120 senders), or that the receivers' sensitivity was blunted by boredom, since they had only ten trials and were allowed to see the target (got feedback) immediately after each trial.

But pseudoscience theories are outstanding in their ability to disregard negative findings. In this instance, Hardy and Harvie suspected that something mysterious was producing all those *control* matches (ignoring the simple explanation that they occurred by chance), whereupon Harvie ran some checks on random number tables and found that they were *not quite* random after all. As we are not concerned here with the possible defects of random number tables, we move on to Koestler's anecdotes.

Koestler's Fallacy

Arthur Koestler has long been interested in ESP and other scientific



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



164 *The Roots of Coincidence*

mysteries and has authored several books on the theme that modern science is mechanistic, strait-jacketed, narrow-minded, and is on the brink of a paranormal revolution, or should be.

Koestler is such a fascinating writer that it is hard to tell the difference between his scientific essays and his novels. Unfortunately, his critique of scientific logic stumbles on his failure to understand it. Instead, he uses the same literary formula that generates pseudoscience bestsellers: first, choose an exciting hypothesis and then assemble all facts or quotes that agree with it, and ignore any that don't.

For example, in *The Roots of Coincidence* (Hutchinson, 1972; Pan Books, 1974), he takes us through an uncritical acceptance of ESP experiments, some paradoxes of modern physics, the paranormal speculations of a lot of scientists, but most especially of physicist Wolfgang Pauli, biologist Paul Kammerer, and psychoanalyst Carl Jung, through his own concept of "holons," and, finally, the lurking suspicion that Darwin's theory of evolution must be wrong. The conclusion is that there are more things under the stars than are dreamt in our philosophies, a platitude with which we can readily agree.

This intellectual casserole is seasoned with a sprinkling of personal anecdotes of the oddmatch variety. The first two come from Kammerer's personal logbook.


While seated in the doctor's waiting room, Kammerer's wife comes across the name of a painter named Schwalbach in a magazine, whereupon the receptionist appears and asks if a patient named Frau Schwalbach is present, as she is wanted on the telephone.

Again, Kammerer's wife reads the name, Mrs. Rohan, in a magazine, later that day she sees a man who looks like her friend, Prince Rohan, and that evening, Prince Rohan himself actually drops in for a visit. In the same day the name of the village Weissenbach on Lake Attersee also occurs twice. As Koestler then says, "Most of [Kammerer's] other examples are even more trivial."

Two more of Koestler's favorite examples come from Carl Jung, the pro-mystic psychoanalyst. While talking with Freud about ESP, Jung felt a red-hot sensation in his stomach, and there was abruptly a loud report from Freud's bookcase. Jung predicted it would happen again, and immediately it did. Apparently Freud was unimpressed, and it appears that neither of them bothered to see if any books had fallen over or if a mouse was encountering some mousetraps. Regrettably, we do not have Freud's account of the incident.



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM *The Roots of Coincidence* 165

On another day, one of Jung's patients was recounting a dream involving a golden scarab (a black dung beetle that was a religious symbol in ancient Egypt), and a few moments later, Jung discovered a scarab beetle trying to get into his window.

When Koestler picks up the challenge of saving the Hardy-Harvie results from psychic oblivion, he now has a much wider field of anecdotes from his fan mail and from Hardy's files in the Religious Experiences Research Unit. Over forty of these personal oddmatches are recounted in detail.

But all this requires that oddmatches cannot be explained by chance, which is to say they could not arise from time to time in the normal progression of natural events.

If we think about the movement of the moon around the earth, and of the earth around the sun, it seems very unlikely that the three balls will ever be found lying in a straight line. Indeed it *is* unlikely, because it happens so rarely, but it is also perfectly predictable that it will happen—which produces an eclipse of the sun or the moon.

By "*Koestler's fallacy*" we mean the mistaken assumption that oddmatches cannot arise by chance. It is a simple deduction from probability theory that an event that is very improbable in a *short run* of observations becomes, nevertheless, highly probable somewhere in a *long run* of observations. For example, if we flipped five coins at once, the probability of getting five heads is $1/32$ or about .03. But if we repeated the flipping of five coins ten times, the probability of getting five heads *somewhere* in the ten tests is about .27. If we ran 100 tests, the probability of five heads rises to .96, which is highly probable indeed. But if we stopped anywhere in these 100 tests and asked, what is the probability of getting five heads on the very next trial, we are back to the starting probability of .03 because we have switched from a long run question to a short run question.

This example also shows the basic error made by Hardy and Harvie in conducting ten different searches for ESP in their data. It is standard practice to reason as follows. If I assume that only chance is operating here, I can calculate how likely I am to get a difference between the experimental and the control group results of any particular size. (If the difference is small, the probability of it occurring is large, but if the difference is large, the probability is small.) So I shall say that if any large difference occurs that has a chance probability of .05 or less, then I can reasonably conclude that it is most likely not chance but is a real ESP effect. But this reasoning is



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

166 *The Roots of Coincidence*

correct only for the first test. The probability that the researcher will get a difference *that large* somewhere in ten different tests is actually .40. It is incorrect to interpret the results of a long run as if they came from a short run.

The principle of the long run is easy to understand in simple coin/dice/card situations where all the choices are well defined, but it is less visible in the chaotic world of human experiences. Something is happening all the time to every living person, but we do not see these events as a long run because so many *different kinds* of things are happening. Thus, when we come across an oddmatch, we suffer from a *short run illusion*, because there is nothing before or after that looks at all related. We can now show how this comes about.

Let us do a simple mental experiment on Koestler's 40-or-so anecdotes. Assume that at the end of an ordinary day, a person can recall 100 distinct events if prompted by questions. Since an oddmatch requires, first of all, a match between an event A and an event B, we need to know the total different number of PAIRS of events available from the 100 single events. The first event can be paired with each of 99 others. The second event can be paired with each of 98 others (because it has already been paired with the first event). Proceeding in this way we see that the total pairs is given by: $99+98+97+96+\dots+3+2+1$. The total is 4950 pairs of events for a single person in a single day.

We have already noted that oddmatches will be remembered for years to come (witness the dream of the drowning daughter), so we may estimate that a person can remember all the important oddmatches over the past 10 years (about 3650 days). Let us assume further that Koestler has access to 1000 people through his personal life, his books, his fan mail, and Hardy's files. We are now ready to multiply: $4950 \times 3650 \times 1000$, giving us 18,067,500,000 pairs. That Koestler should find 40 (or even 400) amusing oddmatches out of 18 billion pairs of events is not sufficient cause for a paranormal revolution.

It may be argued that 100 simple events a day is too many, but is it? Most people do things like read newspapers, magazines, and books, receive letters, answer the telephone, talk to family, friends, and work associates, listen to the radio, watch TV, and travel around town for work, leisure, and shopping, and thus receive countless thousands of bits of information of which 100 might well be memorable at the end of the day. By memorable, we mean that if event B occurs that is surprisingly like event A, then A will be recalled too. Furthermore, oddmatches are not always confined to a



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

The Roots of Coincidence 167

single day (e.g., the dream of the drowning daughter). But even if we allowed only 10 events a day, and only 5 years, and only 100 people, we still get a long run of over 8 million pairs of events to give rise to Koestler's 40 interesting stories.

Of course, these nonevents seem irrelevant because, for example, there were not thousands of patients talking to Jung about scarab beetles, nor did Jung notice thousands of such beetles over the years. Perhaps only one patient mentioned a golden scarab, and perhaps Jung had only seen ten in his whole life.

But one oddmatch is just as good as another. It doesn't matter whether the match is between beetles, claps in bookshelves, names in a magazine, or dreams about daughters—they are equally good as psychic mysteries. We call this the *principle of equivalent oddmatches*. It is not the probability of a *particular* oddmatch that matters, but the probability of *any* oddmatch. Statistician-magician Persi Diaconis (1978) has called this the problem of "multiple end points," which frequently crops up in psychic research.

Clusters and Gremlins

The perceptual basis of Koestler's fallacy is this. It is easy to see something happen, but it is hard to see something NOT happen. We notice that two events are a *pair* if they are alike, but not if they are different. This bias has several applications.

Koestler is much intrigued by Kammerer's "law of series" that says, essentially, that things come in clusters or runs, or as we all know, it never rains but it pours.

A doctor or dentist gets a run of the same rare problem after he has not seen it for months. A typewriter repairman notices that he gets a run of the same brand of typewriter, or else a run on the same defect across different brands. Nurses notice that a full moon produces a surge of births in the maternity ward. We call this the *clustering illusion*.

Why does the phone always ring when I'm in the bathtub? Why does the vacuum cleaner (oven, refrigerator, blender) always break down just before a dinner party? Why does it always rain on my vacation? Why do I get a flat tire on the very day I left my jack at home? We call this the *gremlin illusion*.

There is a special case of the clustering illusion, which is the *new word*


[Return now](#)

[Purchase at
Better World Books](#)
[Borrow ends at 4:04 PM](#)


168 *The Roots of Coincidence*

effect. One day you learn a new word, and to your surprise, it crops up a few days later, and then again a few days after that. But maybe it was cropping up just as often *before* you learned it as it does afterwards.

To illustrate, one of the authors (RK) moved from America to New Zealand, and after he was there about six months, he learned the new word *ta*, which is the New Zealand equivalent of “thanks.” From that day on he ran into *ta* practically every day, but during the first six months he had not “heard” it once. We notice things that have meaning, and not the ones that do not.

Birthdays and Committees

No matter how good human intuition may be for some purposes, it can be disastrous in estimating combinations of events and, hence, certain kinds of probabilities.

How many people do you need to have together in one room before you have a fifty-fifty chance of finding two people born on the same day of the year (ignoring the year)? Surprisingly, the answer is only twenty-two people.

Koestler says this birthdays problem is a silly puzzle that has nothing to do with his judgment of probabilities. Let us try a much more basic estimation problem.

You are a member of a secret club of ten people who want to organize some big happenings. You are going to need a lot of committees, and each person will have to be on several committees, but you don't want any two committees to have exactly the same people. That is, comparing any two committees, there must be at least one person on the first committee who is not on the second.

For certain jobs, you need teams of only two people. How many different teams of two can you make out of ten people?

For other jobs you want committees of three people. How many different committees of three people can you make out of the ten?

How many different committees of four people? Five people? Six people? Seven people? Eight people?

Psychologists Amos Tversky and Daniel Kahneman gave this problem to college students, and it is interesting to compare their average guesses with the correct answers:



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

The Roots of Coincidence 169

<u>Committee Size</u>	<u>Correct Number</u>	<u>Average Number Guessed</u>
2	45	70
3	120	50
4	210	40
5	252	26
6	210	26
7	120	29
8	45	20

(Tversky and Kahneman, 1973.)

We usually underestimate the possible number of combinations rather badly. The only exception is for pairs, and even that overestimation may only apply when the starting number is small, such as ten in this case.

Tversky and Kahneman suggest that we base our guesses on how easily we can think up the first few examples. It is easy to visualize a lot of different pairs in a set of ten people, but difficult to imagine different committees of eight. Only when we stop and think—for each unique committee of eight there is a unique pair left off the committee—do we begin to see why pairs and eights must both have the same total number (forty-five). But the students guessed that there are seventy pairs and only twenty octuples.

The lesson is clear enough. Before we say that an event could not happen by chance, we should try to work out the number of chances it had—on paper. Our impressions are not good enough.

The First Root of Coincidence

We can summarize as follows. The first root of coincidence



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



170 *The Roots of Coincidence*

(oddmatches) is simple probability.

Koestler's fallacy refers to our general inability to see that unusual events are probable in the long run. We call it "Koestler's fallacy" because Arthur Koestler is the author who best illustrates it and has tried to make it into a scientific revolution. Of course, the fallacy is not unique to Koestler but is widespread in the population, because there are several biases in human perception and judgment that contribute to this fallacy.

First, we notice and remember matches, especially oddmatches, whenever they occur. Second, we do *not* notice nonmatches. Third, our failure to notice nonevents creates the *short-run illusion* that makes the oddmatch seem improbable. Fourth, we are poor at estimating combinations of events. Fifth, we overlook the *principle of equivalent oddmatches*, that one coincidence is as good as another as far as psychic theory is concerned.

Our human ability to see positive cases and inability to see negative ones tends to put us all in the position of the fool who believed that everybody spoke the same language he did, because he had never met anybody who didn't. Nor is it so surprising that many people believe that islands float on water, rather than recognizing that they are the upper tips of submerged mountains or land masses.

For the same reason, it is *ingenuous* (although very human) to believe that the plants and animals we see are the only ones that have ever been, whereas it is *ingenious* to visualize the vastly greater number of vanished species that were the stepping stones to the current living assortment. It is no wonder that evolutionary theory was a late development in human thought, that Darwin's theory was later still, and that many people still reject the whole idea out of hand.

The Second Root of Coincidence

Up to this point, we have simply assumed that every event is independent of every other event, just as we might imagine rolling two dice in separate shakers and counting up how often we get a matched pair. But life is not a random collection of unrelated events, but a highly organized process.

Usually we can see clearly what leads to what, but there are exceptional cases where invisible chains of cause and effect bias the probabilities, so that matches are made more probable than simple chance would predict.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



The Roots of Coincidence 171

The second root of coincidence is the *unseen cause*. With Koestler's pardon, we shall illustrate these with anecdotes and practical cases.

A simple example of the unseen cause, especially in scientific research, is an *equipment malfunction*. For example, in *Learning How to Use Extrasensory Perception* (1976), parapsychologist Charles Tart, a good friend of Targ and Puthoff, reported a successful ESP experiment in which his subjects scored above chance in guessing which of ten digits (from 0 to 9) was being displayed on special apparatus in another room. But later, three of Tart's colleagues at the University of California at Davis discovered that the machine, which was supposed to choose the digits purely randomly, was badly biased because it tended to avoid using the same digit twice in a row from one trial to the next. It just so happens that people have exactly the same bias. Since the ESP subject was always given feedback (was told the correct target digit) after his guess on each trial, his natural tendency to choose a *different* digit for the next trial agreed perfectly with the bias in the random number generator. When Tart repeated these experiments with proper controls, the ESP result disappeared but his original incorrect finding will be quoted for years to come.

Deliberate *deception* is another unseen cause, as Kreskin and Uri Geller have amply demonstrated. The stories of the pool hustler who misses his shots until the stakes are high enough, or the poker shark who uses marked cards are legendary. Even in the cultured atmosphere of international tournament bridge, a few teams have recently resorted to hand and posture signals to convey their hands to their partners.

We should as well beware of whimsical *pranks*. After Geller made his big splash in England, there was a boom of psychic spoon-bending children. During a radio show on Uri Geller in New Zealand, a child psychic was rushed into the studio for our attention with a huge bent fork (scratched by plier marks). It is difficult to estimate how many poltergeists might turn out to be ten year olds living three or four doors down the block.

Not long after we had completed our Geller studies, a local professor of chemistry called us for our opinion about an old friend of his who had recently been discovered to be a psychic spoon-bender. The man was then holding a job of high responsibility and seemed sane in every respect, but one evening he turned ashen white while several spoons melted in his hand in front of his wife and a visitor. Our advice to the professor was to interview the man for more details, whereupon the budding psychic sheepishly admitted that his face had only gone pale from the amazing



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

172 *The Roots of Coincidence*

discovery that he could so easily fool his wife and friend with pre-bent spoons.

One of the greatest psychokinetic events of all time took place at a suburban party in 1959 on a hilltop looking out over Cincinnati, Ohio. A crowd gathered on the veranda as one Max Brill waved his finger about in slow circles, then suddenly stabbed his finger at the sky, producing an instant distant clap of thunder. Not once, not twice, but again and again. Some observers were awed, some scoffed, and some remained silent, but there was no denying that Brill was poking distant booms out of the sky.

Max Brill's view of the situation was entirely different. He had spied a fireworks display going on in the baseball park down in the valley and used the flashes of light to cue his arm thrusts. At that distance, the lag between sound and light was enough for Brill to jab a fraction before the sound arrived.


One of the authors was in Ann Arbor, Michigan, in the early 1960s when the newspapers reported a rash of UFO sightings. The next day he learned that an enterprising team of students were trying to figure out how to attach candles or flashlights to light a cluster of helium balloons they planned to release that night.

Even more subtle as an unseen cause is the *self-fulfilling prophecy*, which occurs when a person has a belief or makes a statement about the future and then acts unconsciously to make it come true. For example, consider a man who believes that people in general are selfish and incompetent; he then approaches a workmate, a sales clerk, or a waitress with his demanding and distrusting attitude. Naturally this breeds resentment, which escalates into open hostility, and then the grouch goes home more convinced than ever that people are rotten.

The self-fulfilling prophecy can be far more powerful than this. In a voodoo or black magic culture in which a sinner "knows" he cannot escape the edict of magical revenge, grown men have been reported to collapse in fear and die within a few days.

Most self-fulfilling prophecies are less dramatic, but let us consider. Arthur Koestler writes a book on the mysteries of strange coincidences, and, sure enough, his fan mail includes a rash of new cases. If you happen to be a person lacking in oddmatches you are somewhat less likely to read Koestler, and you are certainly less likely to write him a letter telling him that you have nothing to report.

One unseen cause we cannot fully explain is the *population stereotype* that we encountered in Kreskin's circle-triangle and number-37 tricks. To

Return now Purchase at
Better World BooksBorrow ends at 4:04 PM *The Roots of Coincidence* 173

be fair, Uri Geller uses it too. On one radio talkback show, Geller announced he had made a drawing, whereupon one of us bet it was a sailboat against the other who bet it was a flower. It was a flower. Then we really had a laugh when Geller next said he was thinking of two geometric shapes that (lo and behold) turned out to be a “circle and a pyramid.”

Simple curiosity goaded us to do a further experiment on population stereotypes, which we pitted against an ESP effect, but population stereotypes won hands down. The details of this experiment are given in Appendix I.

Our analysis of *unseen causes* has covered several types: equipment malfunction, deliberate deception, whimsical pranks, self-fulfilling prophecies, and population stereotypes. To this ragbag of illusions we must add one or two more that have no simple labels.

It is commonly said that ESP is more likely to occur between two partners in love than two acquaintances, and this is attributed to their psychic rapport. Alternatively, it might be attributed to:

- a. having more experiences in common;
- b. being more familiar with each other's habits of thought;
- c. thinking about each other more often;
- d. all of the above.


Similarly, the prophetic dream about the drowning daughter becomes a little less mysterious when we fill in some missing details. The father had been late in learning how to swim in his own childhood and had resolved that his daughter should learn as early as possible. But over the preceding summer, he had not made time for it and felt concerned to do so as the new summer came in. His daughter was now seven years old. The problem was thus half-consciously on his mind, and it is often the case that unresolved worries express themselves most clearly in a dream. Furthermore, it is not certain, after all, that the party invitation had not at least been mentioned shortly before the dream occurred, in which case the thought of his daughter at the swimming pool would have intensified his guilty feelings.

While this does not explain the incident at the pool, it does suggest that the dream was part of a recurring thought pattern that anticipated certain risks coming up that summer. That the father was the first person to see the daughter in trouble, although many adults were closer to the pool, suggests that the worrying was not without its uses.

But what details are perceived and remembered depend importantly on how the oddmatch is interpreted at the time. To a surprising extent, you see what you believe. We take up this theme in the next chapter.



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM 

APPENDIX II

RULES FOR RATIONALS

Having confronted so many varieties of rationalization we wondered, almost whimsically, if we could construct a set of rules for rationals. While very few people can be scientists, and very few really want to be, anybody can be rational if he wants to.

The art of doubt can be fun, like having the only pin at a balloon party. But it is important to make a distinction between confronting an idea and confronting a person. It is one thing to show that an idea is wrong and quite another to show that a person is wrong. The object is never to win, only to learn. When you win, you lose.


For some unknown reason a lot of people have got it into their heads that they have to "be right" in order to be lovable, respectable, and happy. And yet who is more lovable and worthy of our respect than the person who says, "Say, you're absolutely right. Fancy that, all my life I have believed just the opposite, and I was completely wrong." This is a person with real self-confidence, with humility, with flexibility. For him it is more important to learn the truth of things than to appear to be right.

For a rational person, no idea is sacrosanct or above challenge, including his own ideas. For him, "being right" is a posturing game, and a serious source of human frustration and confusion. The rational person finds it equally amusing to discover that his opinions and views are right or wrong.

When two rational people sit down to talk, they have a wonderful



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM 224 *Appendix II*

freedom to play with ideas. One can offer a proposition, while the other can be the devil's advocate who tries to destroy it. In the middle, they can switch roles. Or they can jointly brainstorm an idea to see how far they can push it.


When a rational person meets a rationalizing person, he finds discussion to be a waste of time, because it is not a learning opportunity, except to learn how this person carries out his rationalizations. Having no interest in "being right" or in causing useless upset and distress, the rational person drops the discussion.

1. *If-what-then-what.* Many beliefs are stated in such vague terms that even the author doesn't know what they mean. They are judged on their esthetic merits, like a painting. To bring a belief down to earth you can ask what it predicts, what it means in terms of if-what-then-what. For example, a person offers the opinion that we have hardly begun to grasp the possibilities of cosmic consciousness. You ask what he means, and get another string of words you don't understand. So then you might say, if I have cosmic consciousness, how will my life be different?

2. *Disprovability.* This is another way of stating rule 1. Instead of repeating if-what-then-what, you may need to shift gears and ask, what piece of evidence would make your theory incorrect? For example, the believer says, lots of people have mental telepathy. You can startle his logic by asking, what kind of evidence would make him change his mind. Since he has only thought in terms of positive cases, this will add a new dimension to the discussion.

3. *The Burden of Proof.* The burden of proof is on the believer. A person asks, why are you so skeptical about UFOs. It is easy to fall into the trap of trying to give reasons why UFOs are improbable. The best answer is, why do you *believe* in UFOs?

4. *Alternative Thinking.* When evidence is presented, you may ask (or just wonder) if there is any explanation that could produce the same results. For example, the advocate says, modern medicine has increased our life expectancy from thirty-five years to seventy years. You could ask if anything else could have done it, even if you don't have a hypothesis, like diet, sanitation, housing, immunity, etc. *Alternative thinking is your most creative tool.*

Return now Purchase at
Better World BooksBorrow ends at 4:04 PM *Appendix II 225*

5. *Missing Negative Cases.* This rule has three applications.

a. *Probability Matches.* We demonstrated in chapter 11 that one needs to count all possible events including negative cases to see how often a result might occur by chance in the long run.

b. Sometimes negative cases are ruled out by an escape clause. For example, the reason that UFOs are never photographed clearly is that they always run away from cameras. People may see them clearly, but bring out a camera and away they go. This is like the “negative vibes” clause in ESP theory.

c. Sometimes the negative cases have been literally eliminated. An educator reports a survey showing that senior students all love high school, overlooking the fact that all the drop-outs were not interviewed. The story is told of a British officer who proposed to add armor plates to certain sections of Royal Air Force planes during World War II. He presented a diagram showing the regions with a high density of gunnery scars after combat missions. But Winston Churchill said maybe he should put the armor everywhere else because he had only studied the planes which came back.

6. *Personal Observation.* What a person has observed in his personal or clinical experience is no evidence for his belief. Unless he has at least kept a written tally of positive and negative cases, you can reasonably assume he is giving his subjective validations.

7. *Testimonials.* The worst kind of evidence for a belief about human nature comes from people’s experience of themselves. We recently met a man who claimed that the key to giving up smoking was simple will power, which he had demonstrated himself. As the story went on, it turned out that he had developed a chronic chest complaint that got worse, and his doctor told him that if he didn’t quit smoking he would soon die. Above all, remember the Forer effect—fortune tellers (even in plain clothes or white coats) always seem to be right.

8. *Sources.* It is always helpful to find out where a person got his ideas. This may turn out to be a completely frivolous source like a newspaper or a TV program. If the source sounds more credible than that, you may decide it’s worth looking up. But you can always apply the short-cut rule—if the believer can’t make a plausible case himself, forget his sources.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

226 *Appendix II*

9. *Emotional Commitment.* If the person advocating an idea is committed to it emotionally, if he cannot consider being wrong in a matter-of-fact style, then you are wasting your time for two reasons. First, your questions are threatening his personal beliefs for no good purpose (unless he is doing public harm). Second, you can reasonably assume that his theory is false. Of course, this is not inevitably so. But it is unlikely that an emotionally committed person has weighed his evidence pro and con. He is advocating a belief that feels good to him.

10. *The Ad Hominem Technique.* This Latin phrase means "to the man." It has many variations. First, a believer may hold certain authorities to be infallible, and quote their opinions as evidence. Second, he may try to place contrary believers into a category of bad people and thus reject their arguments out of hand. Third, he may turn against you, accusing you of bad motives or stupidity. All of these arguments are fallacious, and it is not only important to recognize them, but also not to use them. The object is to learn, not to win.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



REFERENCES

- Bainbridge, W.S. Biorhythms: evaluating a pseudoscience. *The Skeptical Inquirer*, 2 (1978), pp. 40-55.
- Bakwin, H. Pseudodoxia pediatrica. *New England Journal of Medicine*, 232 (1945), 691-697.
- Barber, T.X. *Pitfalls in Human Research: Ten Pivotal Points*. New York: Pergamon, 1976.
- Bateson, G. *Steps to an Ecology of Mind*. Frogmore, St. Albans, England: Paladin, 1973.
- Bronowski, J. *The Ascent of Man*. London: British Broadcasting Corporation, 1973.
- Campbell, A. Subjective measures of well-being. *American Psychologist*, 1976, 117-124.
- Chapman, L.J. and Chapman, J.P. Genesis of popular but erroneous psychodiagnostic observations. *Journal of Abnormal Psychology*, 72 (1967), 193-204.
- Cochrane, A.L. World health problems. *Canadian Journal of Public Health*, 66 (1975), 281-287.
- Delaney, J.G. and Woodyard, H.D. Effects of reading an astrological description on responding to a personality inventory. *Psychological Reports*, 37 (1974), 1214.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

228 *References*

- de Mille, R. *Castaneda's Journey: The Power and the Allegory*. Santa Barbara, California: Capra, 1976.
- DeMuth, P. Wobbly biorhythms. *Human Behavior*, April 1979, pp. 53-55.
- Diaconis, P. Statistical problems in ESP research. *Science*, 201 (1978), 131-136.
- Dooling, J.D. and Lachman, R. Effects of comprehension on retention of prose. *Journal of Experimental Psychology*, 88 (1971), 216-222.
- Dyer, W.W. *Your Erroneous Zones*. London: Sphere Books, 1977.
- Ehrlich, P.R., Ehrlich, A.H., and Holdren, J.P. *Ecoscience: Population, Resources, Environment*. San Francisco: W.H. Freeman, 1977.
- Einhorn, H.J. and Hogarth, R.M. Confidence in judgment: persistence of the illusion of validity. *Psychological Review*, 85 (1978), 395-416.
- Eisenberg, L. The social imperatives of medical research. *Science*, 198 (1977), 1105-1110.
- Evans, C., Parapsychology—what the questionnaire revealed. *New Scientist*, 25 January 1973.
- Fischhoff, B. Hindsight foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology, Human Perception and Performance*, 1 (1975), 288-199.
- Fischhoff, B., Slovic, P., and Lichtenstein, S. Knowing with uncertainty: the appropriateness of extreme confidence. *Journal of Experimental Psychology, Human Perception and Performance*, 3 (1977), 552-564.
- Forer, B.R. The fallacy of personal validation: a classroom demonstration of gullibility. *Journal of Abnormal and Social Psychology*, 44 (1949), 118-123.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



References 229

Fuller, U. *Confessions of a Psychic*. Box 433, Teaneck, New Jersey 07666: Karl Fulves, 1975.

———. *Further Confessions of a Psychic*. Box 433, Teaneck, New Jersey 07666: Karl Fulves, 1979.

Gallup, G.H. *The Gallup Poll: Public Opinion 1972-1975*. Vol. 1. Wilmington, Delaware: Scholarly Resources, 1978.

Gardner, M. *Fads and Fallacies in the Name of Science*. New York: Dover, 1957.

Garwood, Superstition and half-belief. *New Society*, 31 January 1963.

Gathey, C.N. *They Saw Tomorrow: Seers and Sorcerers from Delphi till Today*. London: Harrap, 1977.

Hastorf, A. and Cantril, H. They saw a game: a case study. *Journal of Abnormal and Social Psychology*, 49 (1954), 129-134.

Hammond, K.R. Human judgment and social policy. *Program of Research in Human Judgment and Social Interaction, Report 170*. Boulder: Institute of Behavioral Sciences, University of Colorado, 1974.

Hanlon, J. Uri Geller and science. *New Scientist*, 64 (1974), 170-185.

Hansel, C. E. M. *ESP: A Scientific Evaluation*. New York: Charles Scribner's Sons, 1966.

Hardy, A., Harvie, R., and Koestler, A. *The Challenge of Chance*. London: Hutchinson, 1973.

Illich, I. *Limits to Medicine*. London: Marion Boyars, 1976.

———. *Tools for Conviviality*. New York: Fontana, 1973.

Jahoda, Gustav. *The Psychology of Superstition*. Gretna, La.: Pelican, 1970.

Return now Purchase at
Better World Books


Borrow ends at 4:04 PM

230 *References*

- Kammann, R. *Sourcebook for Affectometer I*. Dunedin, N.Z.: Why Not? Foundation (P.O. Box 8010), 1979.
- Klass, P.J. N-rays and UFOs: are they related? *The Zetetic* (since renamed *The Skeptical Inquirer*), 2 (1977), 57-61.
- Koestler, A. *The Roots of Coincidence*, London: Hutchinson, 1972; London: Pan, 1974.
- Kreskin. *The Amazing World of Kreskin*. New York: Random House, 1973.
- Kusche, L. *The Bermuda Triangle Mystery—Solved*. New York: Harper and Row, 1975.
- Laing, R.D. *The Politics of Experience*. New York: Ballantine, 1967.
- Leland L.S., Jr., Patterson, J.R., and Clark, J.R. "Incidence of (Self-report) Supernatural Powers among University of Otago Undergraduates." Paper presented at the New Zealand Psychological Society, August 1974. Professor John Clark, who initiated this work, is now at Highlands University, New Mexico.
- Lichter, S. and Kammann, R. A demonstration course for improving happiness and psychological health. Unpublished manuscript, Department of Psychology, University of Otago, Dunedin, New Zealand.
- Miller, G.T. *Living in the Environment: Concepts, Problems and Alternatives*. Belmont, California: Wadsworth, 1975.
- Mitchell, Edgar D. and White, J., eds. *Psychic Exploration: A Challenge for Science*. New York: Putnam's Sons, 1974.
- Oskamp, S. Overconfidence in case-study judgments. *Journal of Consulting Psychology*, 29 (1965), 261-265.
- Pfungst, O. *Clever Hans (the Horse of Mr. von Osten)*. Holt, 1911; New York: Holt, Rinehart, and Winston, 1965.



Return now

Purchase at
Better World BooksBorrow ends at 4:04 PM 

References 231

- Puthoff, H. and Targ, R. The record: eight days with Uri Geller. In *The Geller Papers*, edited by Charles Panati, Boston: Houghton Mifflin, 1976.
- Randi, J. *The Magic of Uri Geller*. New York: Ballantine Books, 1975.
- Rhine, J.B. Security versus deception in parapsychology. *Journal of Parapsychology*, 38 (1974), 99-121 (a).
- . A new case of experimenter unreliability. *Journal of Parapsychology*, 38 (1974), 215-255 (b).
- Rosenhan, D.L. On being sane in insane places. *Science*, 179 (1974), 250-258.
- Schumacher, E.F. *Small is Beautiful: A Study of Economics As If People Mattered*. London: Spaere Books, 1974.
- Snyder, C.R., Shenkel, R.J., and Lowery, C.R. Acceptance of personality interpretations: the "Barnum effect" and beyond. *Journal of Consulting and Clinical Psychology*, 45 (1977), 104-114.
- Story, R.D. *The Space-Gods Revealed*. New York: Harper and Row, 1976.
- Sulzberger, P., Marks, D.F., & Hodgson, I. *The Isis Smoking Cessation Program*. Dunedin, New Zealand: Isis Research Centre, 1979.
- Szasz, T.S. *The Myth of Mental Illness: Foundations of a Theory of Personal Conduct*. New York: Harper and Row, 1961.
- Targ, R. and Puthoff, H. Information transfer under conditions of sensory shielding. *Nature*, 251 (1974), 602-607.
- . *Mind-Reach*. New York: Delacorte, 1977.



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM

232 *References*

- Tart, C. *Learning to Use Extrasensory Perception*. Chicago: University of Chicago Press, 1976.
- Temerlin, M.K. and Trousdale, W.W. The social psychology of clinical diagnosis. *Psychotherapy: Theory, Research and Practice*, 6 (1969), 24-29.
- Torrey, E.F. *The Death of Psychiatry*. New York: Penguin, 1975.
- Tversky, A. and Kahneman, D. Availability: a heuristic for judging frequency and probability. *Cognitive Psychology*, 5 (1973), 207-232.
- – –. Judgment under uncertainty: heuristics and biases. *Science*, 185 (1974), 1124-1131.
- Ulrich, R.E., Stachnik, T.J., and Stainton, N.R. Student acceptance of generalized personality interpretations. *Psychological Reports*, 13 (1973), 831-834.
- von Däniken, E. *Chariots of the Gods?* London: Corgi, 1971.
- Wason, P.C. On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology*, 12-(1960), 129-140.
- Wilhelm, J.L. *The Search for Superman*. New York: Pocket Books, 1976.


THEOLOGY LIBRARY
CLAREMONT, CALIF



Return now



Purchase at
Better World Books

Borrow ends at 4:04 PM 

BF
1042
M33
1980

**THEOLOGY LIBRARY
SCHOOL OF THEOLOGY
AT CLAREMONT
CLAREMONT, CA
91711**

DEMCO
4/99



Return now

Purchase at
Better World Books

Borrow ends at 4:04 PM



“For every person who reads this valuable book there are hundreds of naive souls who would prefer to have their spine tingled by a sensational but worthless potboiler by some hack journalist of the paranormal. You who now read these sentences thoughtfully join a small but wiser minority.”

—Martin Gardner

Written by two psychologists, this book is a thorough refutation of the claims of “serious” researchers such as Targ and Puthoff, and the conjuring methods of modern “mentalists” such as The Amazing Kreskin. Marks and Kammann have conducted their research at a time when there is a growing acceptance of pseudoscience and the occult. With regard to ESP, the authors uncovered a long trail of deception, conjuring tricks, and scientific bungling. In spite of the public mania for all things occult, they found no new evidence for ESP.

Included in this fascinating book is a discussion of why so many people today are prone to believe in the reality of psi phenomena. A final chapter on “The Art of Doubt” explores the positive role of skepticism in the progress of genuine science.

David Marks is senior lecturer in the department of psychology at the University of Otago in New Zealand and a scientific consultant for the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP).

The late Richard Kammann was associate professor of psychology at the University of Otago and a CSICOP fellow.

Cover design: Kevin Miller

Prometheus Books

59 John Glenn Drive
Amherst, New York 14228-2197
www.prometheusbooks.com

