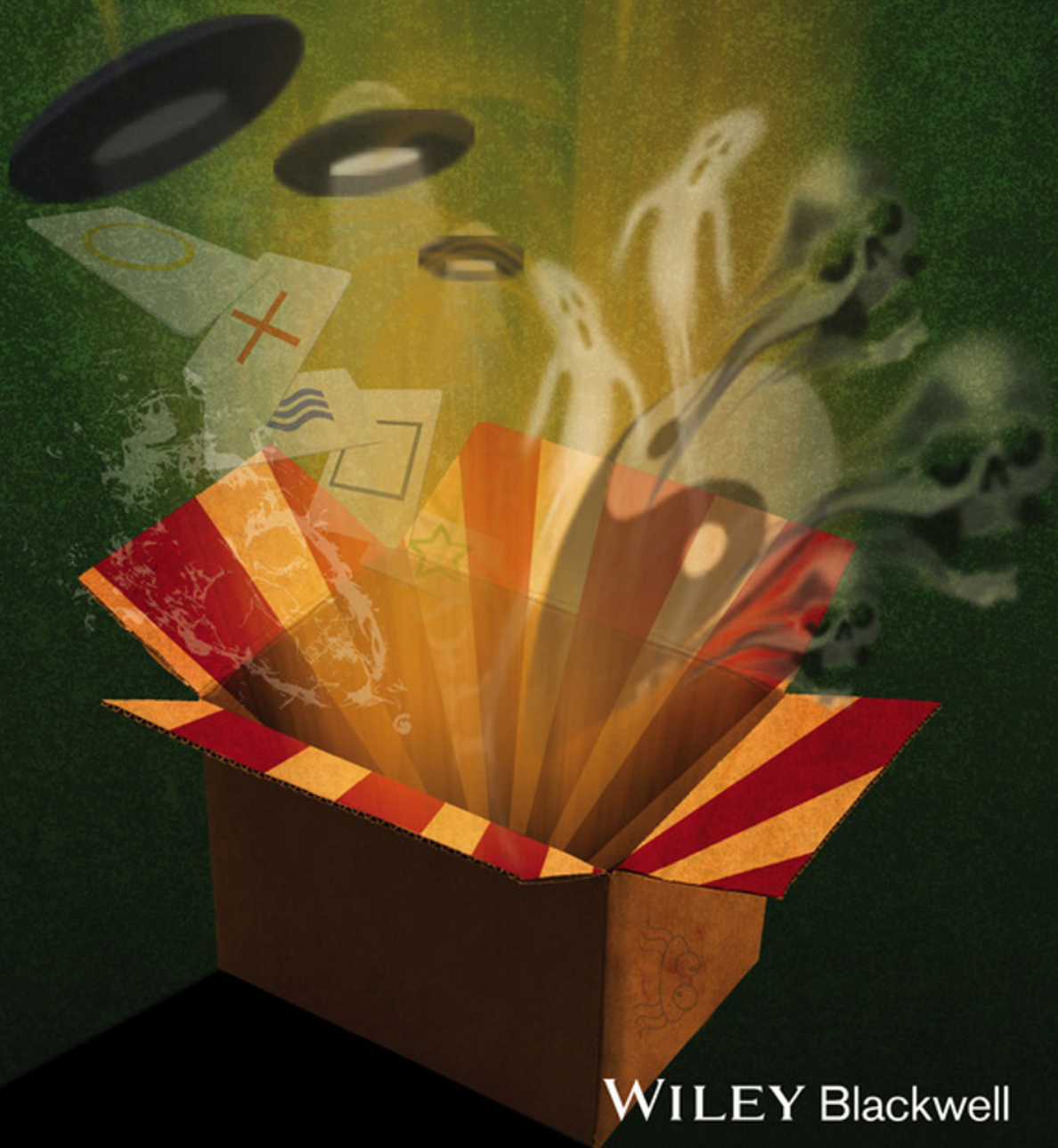


JONATHAN C. SMITH

# CRITICAL THINKING

PSEUDOSCIENCE AND THE PARANORMAL

SECOND EDITION



WILEY Blackwell



## **Critical Thinking**



# **Critical Thinking**

Pseudoscience and the Paranormal

Second Edition

*Jonathan C. Smith*

*Roosevelt University, USA*

**WILEY** Blackwell

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## Part I

### Introduction



## 1

## Critical Thinking: Your Survival Kit

### OUTLINE

- 1) Critical Thinking Defined: *Critical thinking is the process of (1) evaluating a claim about objective reality and identifying support, and (2) considering alternative hypotheses.*
  - a) Stating a Claim, Identifying Types of Support
    - i) Appropriate sources
    - ii) Logic and clear language
    - iii) Science
  - b) Alternative Hypotheses: Going Beyond Immediate Personal Experience and Intuition
    - i) Oddities in nature and the world of statistics
    - ii) Perceptual error or trickery
    - iii) Memory error
    - iv) Placebo effect
    - v) Sensory phenomena, hallucinations, and psychiatric conditions
- 2) Bats, Balls, and Mind-Reading: Intuitive vs. Reflective Cognitive Thinking Styles
- 3) The Time and Place for Critical Thinking
- 4) Finding a Safe Practice Arena
- 5) The Four Challenges of the Open-Minded Critical Thinker
  - a) Have the Courage to Pause and Reflect
  - b) Question Fearlessly and Honestly
  - c) Recognize that There May Be More to the World than Meets the Eye
  - d) Admit You Might Be Totally Mistaken

Life can be a Pandora's box of problems and mysteries. This includes all things great and small. Everyday challenges like starting college, dating, and finding work. Threats to society, like war, poverty, disease, and environmental disaster. Yes, even frantic internet exposés of mind-controlling psychics, flesh-eating vampires, and invasions from other universes. In a world full of troubles, every student needs one important survival kit – a toolbox of powerful critical thinking skills.

Consider Alex, a college student who faces a rather complicated dating dilemma. The first few dates went well. What to do next? Please study this carefully:

*I think I'm ready for sex. I'm dating Jesse, who is fun to be with. But I doubt Jesse has any interest in romance. I'm not quite sure what I want.*

*I want to take Jesse to an art museum this weekend. There are two exhibits. I've seen both. Which has the more beautiful art?*



**Figure 1.1** What's in your Pandora's Box?  
Reproduced with kind permission of  
Shutterstock.

*I'm getting closer to both Jesse and Riley. I've gone out with both. It almost feels like I'm dating two people. Is that OK? Should I drop one and date the other? And what about Jamie, someone interesting I just met?*

*What does God want me to do? How can I tell the difference between God's will and my wishes?*

*Julian, my roommate wants me to take a drink he obtained from a store that specializes in alternative medicine. Citing personal experience, Julian says it works and will help me make choices more decisively. Should I try it?*

*All these questions! Last night I had a dream that I dropped out of school and took a hike on a long mountain path to clear my head. Out of nowhere, a sage on a vintage Harley rumbled to a dramatic stop in front of me. I was struck by what this person was wearing – a glowing ruby eye earring, delicate flowered silk scarf, and steel-studded leather arm band. As the dust settled, my Biker Sage whispered: "Think clearly!" blew me a kiss, and roared away. Should I take this premonition seriously?*

## Critical Thinking Defined

Fortunately, Alex is taking a course in critical thinking and hopes he can find some answers. He begins with some popular definitions. For example, his very first Google hit (out of 53,100,000 results) is a very popular definition:

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

*(Scriven & Paul, 2014)*



Such definitions are abstract and global and can be applied to a wide range of life's challenges. Think "clearly." Conceptualize "consistently." Evaluate "fairly." You could use these with just about any issue, whether it be one of romance, beauty, creativity, morality, God, science, the deeper mysteries of life, or even sex.

However, the majority of texts on critical thinking take a more focused approach. Put very simply, critical thinking boils down to two very simple questions:

*What are the facts? How do we know they're true?*

To elaborate:

*Critical thinking is the process of (1) evaluating a claim about objective reality and identifying support, and (2) considering alternative hypotheses.*

This needs a little unpacking. Let's examine each part of our definition.

### **Stating a Claim, Identifying Types of Support**

First, critical thinking involves stating and testing reality claims against three types of support:

- *Appropriate sources such as other people, groups, or institutions (Chapter 4);*
- *Correct use of the tools of logic and clear language (Chapter 5, Chapter 6); and*
- *Science (Chapter 7).*

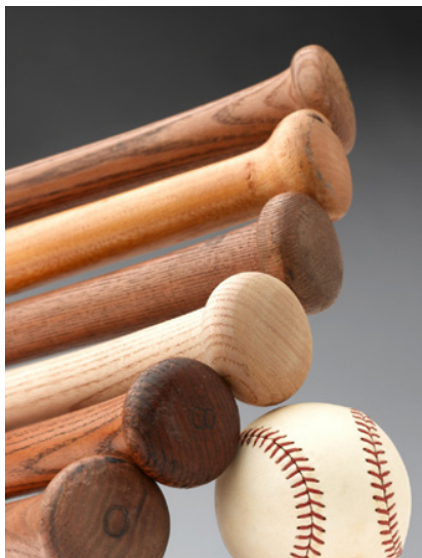
### **Alternative Hypotheses: Going Beyond Immediate Personal Experience and Intuition**

Appropriate sources, logic and clear language, and scientific observation prompt us to be open to the possibility that there may be more than meets the eye, more to reality than what is apparent. They may suggest five alternative hypotheses. A mistaken conclusion that a paranormal claim is factual may be the result of:

- *Oddities in nature and the world of statistics (Chapter 8);*
- *Perceptual error or trickery (Chapter 9);*
- *Memory error (Chapter 10);*
- *Placebo effect (Chapter 11);*
- *Sensory phenomena, hallucinations, and psychiatric conditions (Chapter 12).*

This definition provides an outline of our text.

Critical thinking is reality checking. Thinking that masquerades as critical thinking, pretends to identify support, and fails to openly question personal experience and intuition is *pseudoscientific thinking*. A different way of looking at this is to consider the objectives. Is your goal to discover the facts (critical thinking) or protect your preconceived notions (pseudoscientific thinking)? Is your goal to put aside political, social, religious, or personal objectives in pursuit of the truth (critical thinking)? Or is it to "keep controversy alive" by sowing needless doubt and confusion in order to pursue another political, social, religious, or personal agenda (Oreskes & Conway, 2010)?



**Figure 1.2** Bats and ball. Reproduced with kind permission of Gettyimages.

## Bats, Balls, and Mind-Reading: Intuitive vs. Reflective Cognitive Thinking Styles

Stepping back, our definition is based on an important idea: the critical thinker takes pause and recognizes there may be more than *immediate personal experience and intuition*. First impressions and hunches, no matter how vivid, may be misleading. One important area of cognitive research illustrates this idea. Consider these curious studies on the price of bats and balls.

An **intuitive thinking style** involves automatically going with one's first instinct. A **reflective thinking style** involves questioning such first instincts and considering other possibilities (Frederick, 2005; Stanovich & West, 1998). An intuitive thinker accepts what immediately seems to be true. A reflective thinker takes pause, questions first instincts, and considers other possibilities. As such, reflective thinking allows for counterintuitive conclusions. Importantly, a reflective thinker can suppress an intuitive and spontaneous wrong answer in pursuit of a less obvious answer that may be correct.

The Cognitive Reflection Test (CRT; Frederick, 2005) is a remarkably powerful and brief test that measures reflective and intuitive cognitive thinking styles. It consists of only three questions. Try this frequently cited example: "A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball. How much does the ball cost?"

Is your answer \$0.10? This is the intuitive answer, but it is incorrect. Reflective thinkers tend to suppress this automatic and intuitive answer because they are suspicious of the first thing that comes to mind. As a result, they are more likely to come up with the right answer, \$0.05. (Ball = \$0.05. Bat = \$1.05. Bat + Ball total cost = \$1.10. The bat costs \$1.00 more than the ball;  $1.05 - 0.05 = 1.00$ . Put differently, if the ball costs \$0.10,

and the bat costs a full \$1.00 *more* than that, then the bat *alone* would have to cost \$1.10. So the cost in total would have to be  $\$1.10 + \$0.10$  or  $\$1.20$ , not  $\$1.10$ .)

Those who think intuitively are more likely to apply an emotionally appealing and immediately tempting paranormal explanation to an apparently paranormal event. In contrast, reflective thinkers are more likely to use critical thinking and take pause and look for a more complete explanation. While exploring a supposedly haunted house at night you may see a shadowy figure in a corner. Your shivering gut tells you it is a ghost. Or you may put aside your intuition and reflect that there might be other explanations, such as drifting cobwebs, window shades blowing in the wind, or simply scurrying mice.

The effects of intuitive and reflective cognitive thinking styles have been demonstrated in research. Bouvet and Bonnefon (2014) had students participate in what was described as an experiment in “telepathic transfer of information from one person to another.” But the experiment was rigged to make it appear that extrasensory perception (ESP) was involved. Each student was paired with a “reader,” someone who could presumably read minds. A student was given a stack of ESP Zener cards, each with a different symbol (star, plus sign, circle, wavy lines, square). He or she would then view one card completely hidden from the reader. The reader would attempt to use mind-reading to identify the viewer’s card. Remarkably, the reader could do this successfully.

Actually the experiment was a trick. Unknown to the student, the reader was a plant working for the experimenter. During each session, the experimenter would secretly signal to the plant what card was being viewed.

Those who scored as intuitive (on the CRT) were more likely to say that ESP explained the odd results. This was true even if they did not particularly believe in ESP before the experiment. Reflective thinkers were more likely to explain the results as a statistical fluke. Both did find the results weird, suggesting that the reflective thinkers indeed could tell the results appeared to be paranormal.

In another experiment, Bouvet and Bonnefon gave students astrological horoscopes described as individualized personal descriptions. In fact, all were identical. Furthermore, all were actually fake horoscopes filled with meaningless generalities that could apply to nearly anyone (e.g., “You have a tendency to be critical of yourself.”). Intuitive thinkers on the CRT were more likely to accept the “horoscopes” as personally accurate.

Yes, how people think (or fail to think) about bats and balls can tell us something important about open-minded critical thinking and the paranormal.

## The Time and Place for Critical Thinking

There may be a time and place for intuitive and reflective thinking. Some situations may be so complex that reflective analysis is not practical, and an immediate intuitive action is required. Perhaps at times intuition enables us to process a large amount of information unconsciously and quickly. Intuition may be highly desirable in considering questions not particularly amenable to critical analysis, for example, questions of love, beauty, morality, and God. On the other hand, intuitive thinkers may be at greater risk

for fraudulent and deceptive manipulation, not only from unscrupulous psychics but for any type of persuasion that relies on a quick, unreflective response.

Concerning Alex's readiness for sex, one could consider claims about the objective risks of disease. However, objective reality checking may not apply to passions of the heart. Which museum has more beautiful art? A critical thinker might count the number of positive online reviews. But then beauty is in the eye of the beholder. What is the moral course of action? What is the will of God? A reality check may identify precise rules in a favored holy book or moral guide. Or one might rely on intuition or prayer. Some problems call for objective reality checking, others do not.

## Finding a Safe Practice Arena

If you want to become a master of critical thinking, you must do more than memorize a set of rules. A handy pocket list will be of little use in the battlefield of life. You need to practice. Where is the best place to practice? Where does a football player practice tackling a 250-pound receiver barreling at locomotive speed? Where does the rookie police officer practice nabbing a screaming terrorist wearing a suicide vest? Where does the surgeon practice slicing into one's chest to replace a heart valve? For future champions of critical thinking, what is the most appropriate practice arena? You want an arena that gives you a good workout, but one where there will be no bloody noses or broken bones.

One solution is to select a very limited subject area, for example repairing car mufflers, rearing children, writing college papers. Such targeted approaches work well for their restricted domains, but have limited generalizability. Skills for repairing a noisy car muffler may not always work for soothing a crying infant.

There are several arenas that work for most reality-testing skills, for example, science, politics, religion, journalism, and advertising. However, each has its drawbacks. Critical thinking applied to science can require specialized technical knowledge. Critical thinking applied to politics and religion can arouse distracting ideological passions. Journalistic critical thinking can be as dated as today's headline. Critical thinking applied to advertising can descend into the trivial.

There is one arena that has emerged as ideal, and indeed is the preferred choice for textbooks. Surprisingly, this is the world of ghosts, astrology, psychics, miracles, alien abductions, and magical cures. This is the world of the paranormal, the world of claims beyond science.

Think about it. Nearly everyone has at least one paranormal belief. And nearly everyone can identify a paranormal belief they reject as nonsense. Justifying either position requires sharp critical thinking skills. Paranormal claims have been around for millennia and permeate nearly every culture. You can find paranormal claims in science, politics, religion, journalism, and advertising – indeed just about every human endeavor. And frankly, the world of the paranormal is interesting. Applying and practicing our critical thinking skills can transform what might be a tedious exercise into something fun. And in this arena there should be few lasting bruises after our bouts of vigorous practice. In the following chapters, we will enter this arena with our saber and shield of critical thinking. In this book's final section, you can try your skills on more challenging claims. And I invite you to explore an extended sample of extraordinary claims in my companion text, *The Paranormal Sampler* (Smith, in press, createspace.com).

## The Four Challenges of the Open-Minded Critical Thinker

This book tries to make sense out of the strange and unexplained. We go beyond the ordinary, what we think is real. We will map the vast heavens of mysterious claims and explore reality-checking tools for determining which are true or false. My mission is not to convert you into a True Believer or True Skeptic. Instead, I invite you to take on the Four Challenges of the Open-Minded Critical Thinker.

**CHALLENGE 1: Have the courage to pause and reflect.**

**CHALLENGE 2: Question fearlessly and honestly.**

**CHALLENGE 3: Recognize that there may be more to the world than meets the eye, that things may be different than you wish.**

And perhaps most important:

**CHALLENGE 4: Admit you might be totally mistaken.** A true critical thinker can make this admission. In contrast, a True Believer cannot.

I invite you to apply these challenges to all life's mysteries, bright and beautiful, great and small.

## Study Questions

### 1.1 *Definitions (Define, differentiate, and provide an example for each of the following)*

- A. Critical thinking
- B. Intuitive vs. reflective cognitive thinking style
- C. Practice arena
- D. Challenges of the Open-Minded Critical Thinker

### 1.2 *Simple Thought Questions*

- A. What do you think is an area or topic that needs the application of critical thinking? Why? What are the possible consequences of uncritical thinking in this area or topic? What are some of the benefits of an intuitive thinking style?
- B. Is it possible to be a “closed-minded critical thinker”? What would it be like to engage in a discussion with such a person (perhaps about “the existence of ghosts”)?

### 1.3 *Essay Questions*

- A. Think of a question or choice in your life that cannot be satisfyingly answered through critical thinking? Why is that the case? What might be the costs of applying critical thinking? How might critical thinking help?
- B. “How people think – or fail to think – about the prices of bats and balls is reflected in their thinking, and ultimately their convictions, about the meta-physical order of the universe” (Shenhav, Rand, & Greene, 2011). Evaluate this observation using the concepts of this chapter.
- C. “Perhaps one can be a reflective thinker and accept a paranormal claim reflectively” (Tassi, 2012). What do you think?

#### 1.4 *Internet Search*

- A. Search “critical thinking” and find a definition that appears to differ from that of your text. What are the advantages and disadvantages of the term you discovered and the definition offered by your text?
- B. Search for definitions of “skepticism.” How is skepticism similar to and different from our definition of critical thinking?

#### 1.5 *Conversation with a Classmate*

Most study guides include essay questions. Essay questions can be very valuable tools for teaching how to create and present an argument in textbook English. However, in real life our critical thinking skills are challenged, not by formal essays, but by what people say, text, and write in unexpected ordinary places – on the streets, by the water cooler, in the coffee house, over breakfast, and so on. Here one does not write essays.

I believe it is important to practice applying critical thinking in situations that resemble real life. Throughout this text we will attempt this through an exercise called “Conversation with a Classmate.”



**Figure 1.3** A Klingon. Reproduced with kind permission of Fotolia.

In these exercises we begin with an email from a hypothetical classmate. He or she makes a challenging assertion. You reply with an email in which you explore and possibly question the assertion using textbook concepts. It is important that you write in the first person (*"Hi Student X. Thanks for writing. I disagree with your claim that vampires stole the cupcakes in the cafeteria, although I think I understand where you are coming from ..."*).

However, when creating this exercise I quickly discovered a problem. To make the exercise realistic, I wanted to use actual names (rather than "Student X," "A hypothetical person," or, God forbid, "John Smith.") But my editors noted that if I picked a real name I ran the risk of insulting someone who actually had that name, or perhaps some ethnic or national group. Here's my solution.

Klingons are a species of humanoid warriors in the famous science fiction series *Star Trek*. They are noted for their snarly personalities, rigid foreheads, spines, eight-chambered hearts, and multiple stomachs (all of which help them survive their frequent forceful encounters). The Klingon language is different from any human language. There is a Klingon dictionary (Okrand, 1992) and even a Klingon-English translator on the Bing search engine (which may prove useful for students exploring question 1.3C or the loving dedication on p. v). You can find a version of Shakespeare's Hamlet in the "original" Klingon (Nicholas & Strader, 2000), and translations of books of the Bible. "To be or not to be" in the original is *"taH pack taHbe."* (Note how Shakespeare was able to retain the alliteration and cadences of the original.) But we digress.

So, to avoid the possibility of insult, from this point on our examples will use Klingon rather than Human names.

Here is the complete list of students in our class of Klingons. These are actual Klingon names selected from a list of thousands available online (<http://fantasynamegenerators.com/star-trek-klingon-names.php#.VVyg4FnBzGc>):

Gest Bimrat	Klong Pansato
Pelkewi Birc	Sasso Pondlil
Burf (the dog)	Dohla Qornang
Elana Emrem	Krorf Rrirdon
Eturd Ernoch	Obom Rrononn
Baltig Ev	Undun Sustradh
Durtid Ev	Jadoz Tassi
Yahi Firshack	Groshi Tharesbh
Otam Fistram	Bolkrom Thol
Ewith Gampazh	Jang Trenzaz
Urara Grolkolt	Dreth Ukrul
Yovon Haj	Lurinn Urni
Nemulo Hev	Drorf Vompaj
Ebek Hogur	Gil Vrunjol
Torkul Kadha	Borgh Wommruck
Yoho Krarang	Odros Xatzhog
Klurf K'tudij	Ovosi Zendloth
Tuss Lactaz	Chipolt Zolt
Ubaw Likirk	Jeska Zolt-Zonjag
Vinn Mennan	Ugrox Zonjag
Busti Mochirr	

And now for our first email example, from one Chipolt Zolt.

TO: You  
SUBJECT: Religion and doubt for Klingons  
FROM: Chipolt Zolt

I think of myself as an intelligent critical thinker. For example, my culture teaches me that there are multiple gods; some have killed each other off. I believe it is honorable to question such claims, and I do so without fear. Indeed, only through such questioning does one's faith grow stronger.

Reply

TO: Chipolt Zolt  
SUBJECT: Religion and doubt for Klingons  
FROM: [Your name]

Hi Chipolt! It was good to read your thoughtful email. I always enjoy rowdy and civil discussions with my otherworldly classmates. Getting to your point: Religion is a very personal topic, and I think there are some religious ideas that aren't meant to be logically tested. I've read some of the accounts of battles of your gods, and some of them teach what it means to be courageous. But something you say confuses me. You see doubt as something very honorable. I get it. But doesn't that mean that you have to accept wherever your doubt takes you? What if in your open-minded search you conclude that Klingon gods never fought each other. But you say doubt is good because it strengthens belief. In this case doubt might lead you to change your belief. Aren't these paths contradictory?

Here's an example for you.

TO: You  
SUBJECT: I saw it with my own eyes  
FROM: Elana Emrem

Before we begin, I have to tell you about this incredible experience I had last week! My dear granny passed away last month. It was very sad. One night last week I went to her empty house to get some of my belongings. She had put them in her basement. As I walked down the stairs alone, the lights went out for about a minute. I heard a giggle that sounded like granny. She always liked to play jokes. I saw a misty figure next to her favorite chair. It looked like her, although very fuzzy. I felt a rush of cold air and the lights went on. At that instant I saw a blur moving from her chair to the window. It was her. I was terrified and walked to the chair. Sure enough, there were footprints in the dusty floor, right where I saw granny. I called for my sis, and she agreed that they were footprints. I saw granny's ghost. I know what I saw. Something was really there.

What is your civil reply?

TO: Elana  
SUBJECT: I saw it with my own eyes  
FROM: [Your name]



## 2

## The Paranormal Spectrum

*There are more things in heaven and earth, Horatio,  
than are dreamt of in your philosophy.*

Hamlet (I, v, 166–167)

*All things bright and beautiful,  
All creatures great and small,  
All things wise and wonderful,  
The Lord God made them all.*

Famous Anglican Hymn (Monk, 1875)

*'Extraordinary claims require extraordinary evidence'*

Popularized by Carl Sagan (Truzzi, 1976)

### OUTLINE

- 1) Making Sense out of Mysteries: The Paranormal Spectrum
  - a) Borderline and Gratuitous Paranormal Claims
  - b) Simple Superstitions
  - c) Paranormal Patterns
  - d) Paranormal Powers
  - e) Simple Life Energies
  - f) Intelligent Forces and Entities
  - g) Afterlife Entities
  - h) Supernatural Entities
- 2) Extraordinary, Nonparanormal Mysteries
  - a) A Theory in Search of a Fact
  - b) Observations that Are Currently Unexplained

Have you ever made a wish that came true? Perhaps you carry a rabbit's foot or read the daily horoscope. Maybe you avoid walking under ladders, stepping on sidewalk cracks, or spilling salt, comforted by the thought that you are still alive and kicking. Nearly everyone has a habit or belief that others might call a bit superstitious.

Then there are the bigger mysteries. People spend millions on energy manipulation cures, psychic readings, and faith healing. Terrorists commit history-altering acts of

suicide and murder driven by promised rewards in the afterlife. What are we to make of this world of extraordinary and strange claims? Why do they persist in the face of science? Is it possible some are true? Does it matter?

Decades ago, I started looking into things paranormal and supernatural. I was a teenager and my interests were not quite those of a scholar. My childish and magical wish was to become famous, build time machines, develop superhuman powers, or find a secret way to get good grades or hot dates. Before long I realized I had opened a treasure chest of claims, too many to fully understand. Overwhelmed, I turned to the more manageable study of psychology. But my curiosity about the mysteries of life never completely went away. In fact, it is difficult to avoid the world of the paranormal and supernatural. Like the proverbial gorilla, it sits conspicuously in the middle of the living room of life. If you ask the right questions, you will find that most of your friends and most professors, doctors, or preachers harbor at least one secret superstition.

## Making Sense out of Mysteries: The Paranormal Spectrum

What is the realm of the paranormal? This is a question of considerable interest to scholars. Clearly, mind-reading, astrology, and seeing into the future are paranormal claims. But what about acupuncture? Yoga? Space aliens? Silly mistakes of sloppy scientists? Dark energy? Typically, paranormal claims lie beyond science, that is, “normal” scientific observation and explanation. A paranormal event has not been observed, and if one were to be observed, any hypothesized scientific explanation would be inadequate.<sup>1</sup> This definition is not perfect, but it works quite well.

Consider the following:

*An invisible Flying Spaghetti Monster (FSM) creates everything, and hides all evidence of its existence.* This has never been observed (by definition, the FSM is not observable!).

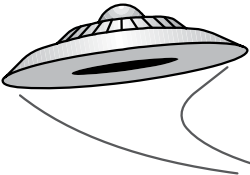


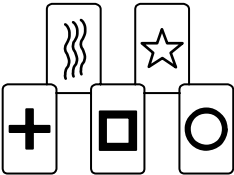
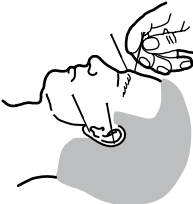
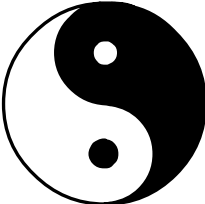

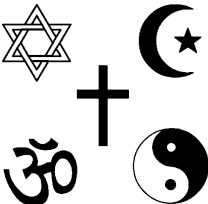
*When playing the lottery, use the year of your birth and you are more likely to win.* If this were to really work, with no tricks, it could not be explained in any way by science. The claimed event is paranormal.

*A psychic can look at you and read what you are thinking. This is true, even if you are separated by a brick wall, the psychic doesn't know you, and you deliberately think of cards randomly selected from a deck.* This claim appears to rule out natural-world explanations such as reading body language and making good guesses based on what you are wearing. So it's a genuine paranormal claim.

*A nurse at a local hospital claims she can heal through therapeutic touch and cure your backache by gently waving her palm over your spine.* Such cures could be due to many things. People get over backaches on their own. Expectation can play a large role. Once you rule out these other explanations, you may have something paranormal.

Some mysteries are bigger than others. Cherishing a magic rabbit's foot isn't as dramatic as going to war over an astrological reading. I find it useful to organize paranormal and supernatural claims into eight groups placed on a *Paranormal Spectrum*

Table 2.1 The Paranormal Spectrum.

Lower-level paranormal claims			
Borderline/gratuitous paranormal claims	Simple superstitions	Paranormal patterns	Paranormal powers
			
<ul style="list-style-type: none"><li>• Bigfoot</li><li>• Loch Ness Monster</li><li>• Flying saucers</li><li>• Acupuncture</li><li>• Tai chi</li><li>• Firewalking</li><li>• Moon madness</li><li>• Many types of yoga and meditation</li></ul>	<ul style="list-style-type: none"><li>• Magic charms</li><li>• Rabbit's feet</li><li>• Stepping on cracks</li><li>• Number "13"</li></ul>	<ul style="list-style-type: none"><li>• Palmistry</li><li>• Tarot cards</li><li>• Reading entrails</li><li>• Tea leaves</li><li>• Some astrology</li><li>• Numerology</li><li>• Bible code</li></ul>	<ul style="list-style-type: none"><li>• ESP</li><li>• Psychokinesis</li><li>• Werewolves</li><li>• Fortune-telling</li><li>• Astral projection</li><li>• Out-of-body experiences</li><li>• Dowsing</li></ul>
Higher-level paranormal claims			
Simple energies	Intelligent forces/ entities	Afterlife entities	Supernatural entities
			
<ul style="list-style-type: none"><li>• Chi</li><li>• Magnet therapy</li><li>• Homeopathy</li><li>• Early chiropractic</li><li>• Traditional tai chi</li><li>• Traditional acupuncture</li><li>• Healing touch</li></ul>	<ul style="list-style-type: none"><li>• Yin/yang</li><li>• Spirits</li><li>• Karma</li><li>• Fate</li><li>• Comic book superhumans</li><li>• Vampires</li></ul>	<ul style="list-style-type: none"><li>• Reincarnation</li><li>• Ghosts</li><li>• Communication with dead</li></ul>	<ul style="list-style-type: none"><li>• Flying saucer cults</li><li>• Faith healing</li><li>• Organized supernatural religion with complex theologies, incorporating a literal heaven, hell, devil, angels, witches, saints, virgin births, resurrections, and fantastic miracles</li></ul>

according to the degree to which they challenge what is or can be known by current science. Minor or *low-level paranormal claims* are on the left while *high-level paranormal claims* are on the right. You can see that higher-level claims are more *encompassing*, *complex*, and *organized*. More aspects of the natural world are brought into question, with greater diversity, and organized into an abstract belief system, itself divorced from the natural world. Claimed low-level processes have limited impact on our world, whereas high-level claims have greater potential impact.

It should be noted that all truly paranormal claims go beyond science. In that sense they are all equal. However, high-level paranormal claims are more elaborate than low-level claims. They more fully elucidate the implications and applications of a paranormal assumption, and posit additional parallel, perhaps equally improbable, assumptions. The belief that possessing a rabbit's foot will help you win the lottery violates what we know about matter and energy. Nothing about the chemistry and physics of a disembodied and dried piece of mammal anatomy should affect the random selection of winning lottery tickets thousands of miles away. If this could happen, then why not assume that wrinkle lines in the disembodied foot say something about your personality and future? Or that the foot possesses an energy that can cure warts? Or that the foot is indeed conscious and wants you to win the lottery and be wart-free? Or that the dead foot possesses the ghost of the recently deceased rabbit, a reincarnation of an ancient sage who is now your guardian angel and who wants you to be healthy, wart-free, and rich? All of these are equally improbable. All violate what science says we have observed or can explain. They differ primarily in their breadth, complexity, and organization.

Many paranormal claims come in several varieties each of which might be classified differently. For example, the claim that acupuncture releases brain endorphins or blocks pain gates is not paranormal. A vague claim that acupuncture opens blocked channels of unmeasurable life energy can be classified as a simple energy claim. A claim that the arrangement of stars at the time of one's birth contains information about one's personality and future is a paranormal pattern. However, it is an energy claim to state that the stars contain some mysterious force that can influence life on Earth.

### **Borderline and Gratuitous Paranormal Claims**

**Borderline paranormal claims** concern mysteries that need not violate the world of physics; nonetheless, true paranormal explanations are often entertained. For example, we have no clear evidence that flying saucers have visited Earth, but nothing in physics says that flying saucers from a different planet could not visit us. It might take a spaceship thousands of years using conventional rocket propulsion. Perhaps such a ship would be directed by robots or beings in hibernation. Or, to entertain a paranormal explanation, space aliens might slip from their home in the thirteenth dimension and instantly (and invisibly) appear on Earth. Such a paranormal explanation invokes a claimed phenomenon (travel from the thirteenth dimension) that runs counter to the physical world we know.

Closer to home, acupuncture is an ancient Chinese medical procedure that involves inserting needles in precisely defined points on the body. Acupuncture patients claim relief from a wide range of problems ranging from pain to hypertension. The traditional paranormal explanation is that acupuncture frees the flow of a mystical vital energy, chi, resulting in healing. Chi has never been detected and does not operate by the known

laws of physics. A variety of contemporary nonparanormal explanations exists, including that the slight discomfort of inserting needles distracts one from pain, triggers the release of peaceful brain endorphins, reinforces expectations of cure, and so on. Thus, acupuncture represents a borderline paranormal claim.

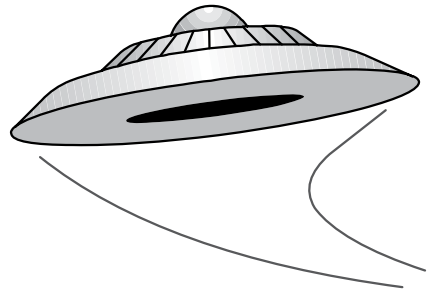
Cryptozoology is the study of “hidden animals” (“cryptids”), claimed creatures whose existence is controversial (Heuvelmans, 1962). Examples include the Loch Ness Monster, Bigfoot, and various dragons of antiquity. Strictly speaking, there is nothing paranormal about cryptids because their existence would not violate the laws of physics. However, a few psychics have made additional paranormal claims, for example, that Bigfoot and Nessie are from some other dimension and can be conjured up psychically (Bauer, 1996). In such cases one might classify cryptozoology as a borderline paranormal claim.

**Gratuitous paranormal claims** offer a nonphysical explanation when there is no mystery to be explained. Why do leaves fall from trees? Because little fairies pluck them off. Why did you fail your exam when you didn’t bother to read the textbook? Because Fate is punishing you for your irresponsibility. Why did your headache go away when you took the aspirin tablet? Because you unblocked the chi flowing to your brain. Why did your young nephew steal your cookies? The Devil made him do it. In each case there is no mystery to be explained, no need for a paranormal hypothesis.

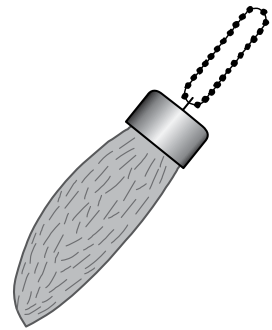
Note the difference between pure, borderline, and gratuitous paranormal claims. Pure paranormal claims imply that an extraordinary event can be explained only by going beyond current basic science. No alternative explanations are sufficient. Borderline and gratuitous paranormal claims accept that current scientific explanations may work just fine and that paranormal explanations are simply alternatives. The remaining claims we consider are purely paranormal.

### Simple Superstitions

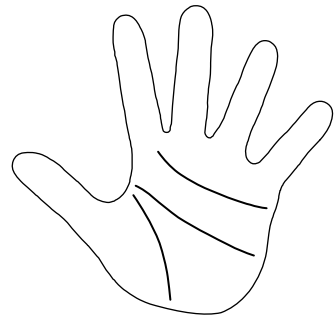
Simple superstitions refer to everyday events that seem to violate the laws of physics. Generally, they are based on four types of support: (1) *coincidence*, (2) *folklore*, (3) “*similarities*,” or (4) “*contagion*” (Frazer, 1911–1915). If you coincidentally won a card game



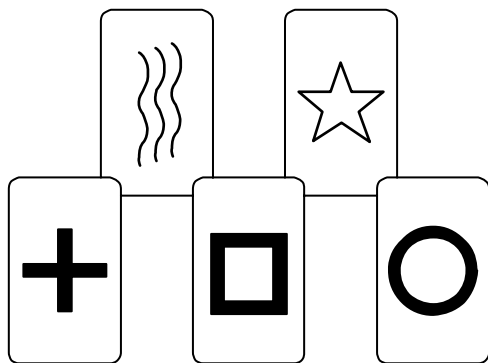
**Figure 2.1** Did flying saucers from another world, or from the future, once visit Earth? (borderline paranormal claim).



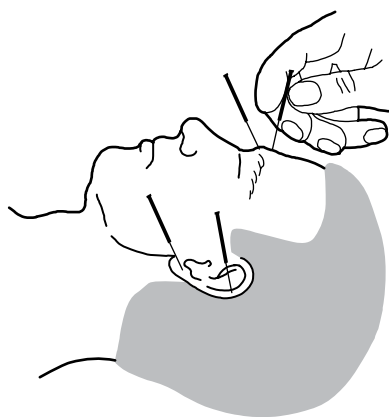
**Figure 2.2** Will possessing a rabbit's foot grant you good luck? (simple superstition).



**Figure 2.3** Do the creases in your palm reveal your personality, and future? (paranormal pattern).



**Figure 2.4** Can psychics tell which of these special Zener ESP cards you are looking at ... with their eyes closed? (paranormal power).



**Figure 2.5** Can acupuncture needle pricks release a powerful healing life energy? (simple paranormal energy).

while wearing a red shirt, you might wear this lucky shirt whenever playing cards. If your great-grandmother warned you never to peek at birthday presents, you might honor this rule because it is a bit of family folklore. Perhaps you think you are a bright and sunny person because of this similarity – you were born on a bright and sunny day. Maybe you shouldn't wear your great-grandfather's ring. After all, he wore it just before he died of a stroke and you don't want to "catch" his unfortunate, but contagious, luck. Perhaps bad luck can be like Ebola. And good luck can rub off on you. Simple superstitions are not encompassing, complex, and organized. Generally their broader implications are ignored or not elaborated. People do not devote careers to the risks of stepping on sidewalk cracks or avoiding the number "13." There are no rumors of secret Russian labs studying the feet of rabbits.

### Paranormal Patterns

Are there secret messages embedded in the creases of your palm, tarot cards, tea leaves, entrails of sacrificial lambs, I Ching symbols, special combinations of numbers, the Bible code, and heavenly constellations? A relatively simple paranormal claim asserts that certain patterns contain special information that

cannot be explained through any means consistent with contemporary physics. Palmistry claims that the wrinkles in the palm of your hand contain vast information about your history, personality, and future. There is no physical way this could be the case. Similarly, ancient tarot picture cards, particles of tea at the bottom of a tea cup, and the arrangement of intestines in a slaughtered lamb can be equally revealing. And, of course, astrology claims that the patterns of heavenly bodies present at the moment of your birth can say much about your life and future. Although such patterns may possess paranormal information, typically an individual with no paranormal ability can "read" the messages contained. Anyone with a book on palmistry can discover the secrets hidden in the wrinkles of a hand, and the message of a long "life line."

### Paranormal Powers

Paranormal powers are limited human (and possibly animal) capacities that violate physics. However, few people possess or have cultivated such powers and these gifted individuals appear to be able to use them only in highly restricted circumstances. Examples include

reading thoughts through extrasensory perception or bending spoons (or influencing the roll of a casino slot machine) through psychokinesis. People have devoted their careers to these topics. Libraries of books and articles have been written. And, of course, paranormal powers fuel a large part of the comic book universe.

### Simple Life Energies

Unlike paranormal powers, which may be limited and appear in select individuals at select times, simple life energies are enduring and more pervasive. Furthermore, they have the potential for affecting physical health and biological processes. For example, many practitioners of acupuncture believe that a mysterious paranormal energy, chi, permeates the human body and can be “unblocked” through the strategic insertion of needles. Unlike fate or karma, such forces do not guide, direct, or provide a purpose for actions. And unlike ghosts or spirits, they lack psychological characteristics such as thoughts, feelings, and intentions. However, simple life energies can be tapped and directed by individuals with paranormal powers. A skilled acupuncturist claims to use chi to heal.

### Intelligent Forces and Entities

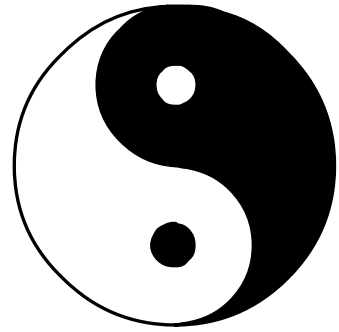
Intelligent forces are also enduring and exist beyond the natural world. However, they have a complexity not possessed by life energies – an “intelligence” of their own that does not require the assistance of someone with a paranormal power. Such forces may be impersonal sources of guidance or direction, such as fate, yin/yang, the powers of prophetic astrology, karma, or some non-physical evolutionary principle that pushes toward “goodness” or “higher consciousness.” Alternatively, intelligent forces may have psychological characteristics, such as consciousness, thoughts, feelings, and intentions, all internal complexities that enable us to call them **entities**. Examples include living objects possessed by spirits that wish us well.

### Afterlife Entities

Afterlife entities are intelligent forces with one spectacular additional characteristic – they exist in this world and the world after death. They might include reincarnated souls as well as ghosts and some spirits. The existence of such entities permits communication with the dead.

### Supernatural Entities

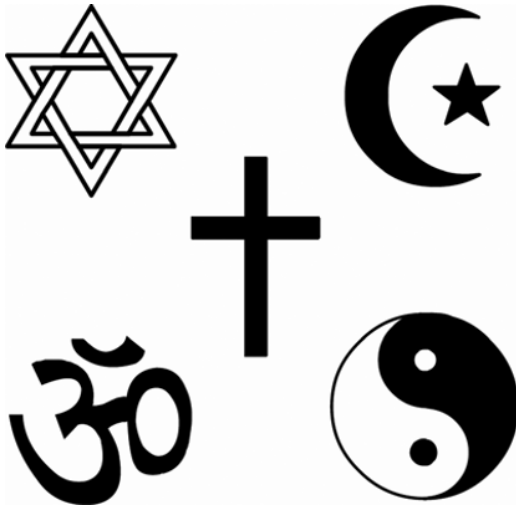
The universe of the supernatural consists of paranormal claims that are exceptionally encompassing, complex, and organized. More aspects of the natural world are brought into question, with greater diversity. Supernatural beliefs are often organized into an



**Figure 2.6** Does everything go well when “yin and yang,” two principles that permeate the universe, are in balance? (intelligent force/entity). Reproduced with kind permission of Shutterstock.



**Figure 2.7** Are ghosts the spirits of dead people that can live in this world, and the next? (afterlife entity).



**Figure 2.8** Do some world religions – like Judaism, Islam, Christianity, Hinduism, and Taoism (represented here) as well as the Bahai faith, Buddhism, Pastafarianism, Shintoism, and Sikhism (not here) – make paranormal claims? (supernatural entities).

abstract conceptual system, itself divorced from the natural world. Supernatural entities have vast potential impact on our world.

Note that some purely supernatural entities may never intrude in the observable universe. Such a being would never make itself known, and would be forever unknowable. We do not know if there is one God (as in Christianity, Judaism, or Islam) or several (Hinduism, Greek and Roman religion), if God communicates with a flock of Angels, or if God created the Universe and retreated for the rest of eternity. Indeed, we may never know the private life of the great entity in the thirteenth dimension, why we've been dumped in a cosmic lunatic asylum (Hitchens, 2009), or who set the clock-work universe into motion and stood aside. Such *purely supernatural ideas* are off limits to science, but discussed extensively in various forms of literature, including personal accounts and diaries, Holy Scriptures, theology texts, science fiction and fantasy novels, and comic books. In contrast, some supernatural ideas claim a specific and measurable impact on the observable world. These are paranormal claims and are fair game for critical inquiry.

I am often surprised how vehemently practitioners of some religions object to the claim that some of their beliefs are paranormal. Yet they are perfectly comfortable identifying paranormal beliefs in other religions. Christians may object to labeling notions of the resurrection or virgin birth as paranormal, and yet fully accept as paranormal Hindu claims of reincarnation, that Allah dictated every word of the Qur'an, or that the Book of Mormon was inscribed on golden plates unearthed by Joseph Smith.

Should we be less critical of a paranormal religious claim that “serves an important social function” and “binds a community together”? Indeed this was the very opinion voiced by a review of the first edition of this work (PsycCRITIQUES, the comprehensive and authoritative database published by the American Psychological Association; Ludden, 2010). Are some supernatural paranormal claims off limits from critical inquiry? What do you think?