

**Ask a Little—Learn a Lot**

**How Questions Change Everything**

**R. W. A. Mitchell**

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—*Learn a Lot*



HOW QUESTIONS CHANGE EVERYTHING

R. W. A. MITCHELL

iUniverse, Inc.  
Bloomington



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# INTRODUCTION

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“Learn from yesterday, live for today, hope for tomorrow.  
The important thing is not to stop questioning.”

— *Einstein*

HOW MUCH DO YOU think you can learn simply by asking questions?

The answer is this: more than you might ever imagine! That’s because questions that no one else has asked, dreamed of asking, or perhaps even dared to ask, will lead you to *discover* things. You don’t even need to dream up entirely new questions, because fresh answers to old questions have sometimes changed the world.

“I have no special talent. I am only passionately curious.”

*Albert Einstein*

Much of what you say and think should end with question marks.

Questions are incredibly powerful tools because they lead to thinking and understanding. Questions have got us to where we are and will take us to where we’re going. Most of what we take for granted in our day-to-day lives is based entirely on understanding how the world works and using it to our advantage.

“I am curious about everything, even subjects that don’t interest me.”

*Alex Trebek, Jeopardy!*

No one can really ever know where our inclination to ask questions came from, but questioning appears to be a uniquely human trait. Questions have helped us make sense of the world around us, to understand why it is the way it is, and to find an order in chaos.

We all love music, movies, and everything glamorous in popular culture. One of the goals of this book is to make ideas, thinking, and learning as glamorous as they ought to be. Albert Einstein made science and thinking cool because besides hanging out with celebrities, he became a celebrity himself, and eventually an icon of the twentieth century. Simply asking more interesting and thought-provoking questions is one of the best ways to learn more, think more, and even think more about thinking.

“Every science begins as philosophy and ends as art.”

*Will Durant*

Thinking inspires. And with a bit of imagination, it *creates*.

Some questions, especially really good ones, might take a while to answer. Many of the questions first asked by Ancient Greek scientists and philosophers took thousands of years to answer.

Asking questions is easy. Questions can help you get inside the minds of the finest thinkers and questioners of all time, from the Ancient Greeks, to Isaac Newton and Albert Einstein. In this book, you'll see how many of the best questions ever asked spurred mankind onto its greatest achievements.

I'll always remember my first physics lecture as a college freshman. The professor opened our eyes when she asked us why we thought her course was in the Department of Arts and Science, and why wasn't there a separate Science Department. It was a while back, so I'll paraphrase her answer from memory. “While physics is a science,” she said, “I want you to learn that all science is also art. The *art* lies in gaining insight into the minds of some of mankind's greatest thinkers.”

“The beautiful thing about learning is that no one can take it away from you.”

*B. B. King*

That’s what this book is about.

It’s meant to be lively, fun, and easy to read. It includes examples of some of the best questions ever asked, illustrated with examples from a wide range of topics, including everything from mathematics and science, to philosophy, game theory, gambling, lucky numbers, and even game shows.

Inside, you’ll explore questions based on the following:

- learning how to learn, just by asking questions
- the kinds of questions asked by the greatest thinkers
- paradoxes, which are rather peculiar and tricky questions
- how to surf the North Pole
- how to type like a monkey
- how to win on *Let’s Make a Deal*
- the weird science of Wile E. Coyote
- messing around in boats
- how to sell valuable baseball cards
- how to get ketchup out of the darned bottle
- the biggest number (or is it numbers?)
- supersonic dinosaurs (what?)
- why a chicken might cross the road
- dropping watermelons from very high places
- snail racing (they turn out to be relatively fast)
- unexpected results from flipping coins
- how to get lucky

We’re thinking all the time—even when we’re asleep. If you can turn just a bit more of your thinking into good questions, you will be amazed by the results.

“Who questions much,  
shall learn much, and  
retain much.”

*Francis Bacon*

You don’t need any special skills other than an open mind and a willingness to always ask. There aren’t any formulas, and there isn’t any tricky math in here, because



in the words of Stephen Hawking, “Someone once told me that each equation I included in the book would halve the sales.”

Start right now by getting into the habit of always asking questions.

Become skeptical. Question anything and everything in the world around you, and the world within you. There’s never any shortage of good questions to ask, and no shortage of bad ones either. But as a friend of mine once said, “The only stupid question is the one you don’t ask.”

So read on and ask away.

At the end of each chapter, you’ll find keywords to search in case you want to dig a little deeper. Some are factual and some are silly, because life should be fun. You can also find lots of useful YouTube videos by searching the same keywords.

#### Web Search Keywords

| *fun science* | *asking questions* | *stephen hawking* | *she blinded me with science thomas dolby* | *steven wright quotes* |

## Chapter 1

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### ASK AWAY!

“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.”

—*Einstein*

THE BEST WAY TO explore new ideas comes by simply asking questions. When you ask questions, you learn things. It naturally follows that the more questions you ask, the more you can learn. Many of your thoughts and much of what you say should end with question marks.

Question anything and everything about the world around you. When you learn to ask questions that no one else ever asked, thought of asking, or perhaps dared to ask, I guarantee you will start on a path that will lead you to amazing discoveries for yourself, and quite possibly for the rest of us too.

“Ask not what your country can do for you—ask what you can do for your country.”

*JFK*

In life, you will always be presented with ideas put to you as facts. Why believe any of it without asking and thinking? The danger of

not questioning and not thinking for oneself comes from one of the most disturbing, yet compelling, quotes from one scary man:

“What luck for rulers, that men do not think.”  
—*Hitler*

Around the beginning of the twentieth century, there were amazing changes going on in the sciences, physics in particular. Old ideas were challenged, and many of the new ones turned hundreds, and even thousands, of years of thinking on its head. You’ll read about the revolutionary ideas of modern physics in later chapters.

One important question came up in the art world in the early 1900s after the invention of the camera. Prior to photography, the *best* artists were those who could draw or paint the most lifelike representations of interesting subjects. After the camera arrived and its technology had been refined, artists and critics started to ask themselves, “What is the point of art if we can just take a picture instead?” This simple question gave rise to new meaning in the world of art and ushered in the age of modern art. Art was not just about representing images anymore. Art became about *new* ways of looking at subjects.

Photography eventually became an art form in itself. In fine art photography, images come from the creative vision of the photographers. They often make use of unique perspectives and fresh ways of capturing even the most commonplace subjects. Photographs taken by American photographer Ansel Adams, which are black-and-white images of the American West, especially in Yosemite National Park, are truly remarkable and focused on the way he perceived light.

“If at first, the idea is not absurd, then there is no hope for it.”  
*Albert Einstein*

This new way of thinking, by reexamining old ideas and questioning them, spilled over into other disciplines and spawned even more revolutions in the arts.

In classical music, most composers at the turn of the twentieth century continued on in the tradition of nineteenth-century music. As modernism grew increasingly important, composers such as Mahler, Debussy, and Stravinsky began to produce music with new forms, timbres, and orchestration. Electronic music made its debut later, when composers began to move away from the classical sounds of stringed instruments. It started with the Theremin. This odd instrument was used in the *Star Trek* theme song and continues to be featured in many other contemporary tracks.

Modern jazz would come later, based on new ways of looking at and reinterpreting traditional jazz. Miles Davis became one of the greatest questioners of the interpretation of jazz. He completely changed what the music was all about, not once, but *four* times.

“All great truths begin as blasphemies.”

*George Bernard Shaw*

Much of the rock music in the late 1960s and early 1970s, by performers such as Jimi Hendrix and Led Zeppelin, were about reinterpreting the blues.

Modern architecture completely reinterpreted classic design. Years later it gave rise to striking new structures from designers like Frank Lloyd Wright, followed by others like Frank Gehry. If you’ve never seen it, look up images of Bilbao, the Guggenheim museum in Spain. If that wasn’t a new way of looking at architecture, I don’t know what is.

In modern dance, choreographers began to move away from classical ballet to a more creative self-expression, just as happened in other arts.

Some really *big* questions had come up many years before. There were amazing discoveries in the 1800s, and many more were to follow. James Clerk Maxwell explained how electricity and magnetism work in the late 1800s. Electrical currents in wires make them act like magnets, and moving magnets inside coils of wire induces currents. His big question must have been something like, “Why do electricity and magnetism seem to be connected?” By answering it, he went on to develop the theory of electromagnetism, perhaps the greatest breakthrough of nineteenth-century science.

There were other great discoveries in the making back then. Robert Chambers, who was a journalist—and no doubt a great question asker—published *Vestiges of the Natural History of Creation*. In it, he asked where all the different species came from, and proposed that some transmutation between species must be happening. His theories were very unpopular with both the church and scientists at the time. A few years later, Charles Darwin published *On the Origin of the Species* and explained evolution. He felt that Chambers’s work prepared the public mind for Darwin’s own later theories of natural selection. Chambers asked; Darwin answered.

To learn by asking questions, you have to ask the right ones.

The first step is to understand what makes up a good question. The word *why* is one of the most important and powerful words in the English language—except for *me*. Just kidding, of course.

“I only ask good questions.”  
Judge Judy

I had the good fortune to have a high school English teacher who was brilliant, yet subtle. One of the best lessons I took away from his teaching was something he called the *Five Qs*, which are key words that trigger important questions to ask. They are the following:

- Who
- What
- Where
- When
- Why

To that he added: “and sometimes *How*.” Maybe it should have been: “and sometimes *Why*.” He was an English teacher, after all.

These simple questions are very powerful tools.

Their strength lies in focusing your thinking. Sometimes it’s a good idea just to jot them down on a blank sheet of paper when you’re thinking, learning, writing, or trying to solve a problem. You may have noticed that the Five Qs are all *open-ended* questions that lead to further consideration or discussion. This is in stark contrast to *closed-ended* questions that can be answered simply with a yes or

no. Closed-ended questions don't usually lead to any dialogue. Conversations don't start with a question like, "Do you like books?" "What kind of books do you like?" fares far better. Some even say that any question that begins with a word like *did* is a dud. Nevertheless, closed-ended questions can serve a purpose. Besides, you can always follow up a dud with a *why*.

My teacher's ideas struck me as conveying a very common-sense approach to gathering information and knowledge. While he was a gifted man and great teacher, it turns out that his method was by no means new or original. Thankfully, he jazzed it up a bit to make it fun and interesting for us. Its origins date all the way back to classical Greek philosophy, when Socrates (around 400 BC) inspired the Socratic method, which is teaching based on asking and answering questions. The idea is to generate a dialogue that stimulates thinking that guides students to answers.

"The most valuable commodity I know of is information."  
*Wall Street*

These kinds of questions form the basis of legal education and newspaper reporting. Reporters always ask these questions to get to the bottom of a story, and the answers form the basis of their articles. The next time you pick up a newspaper, see if you can spot it in practice. The same approach is also widely used in police and detective work.

If you're familiar with the game *Clue*, a popular board game that was invented in 1944, you'll recognize three Qs necessary to solve the puzzle: *who*, *where*, and *how*. The game is based on a murder mystery where someone is murdered in a mansion. There are six suspects and six potential murder weapons. The game progresses as players move from room to room trying to gather clues. In the end, when players who think they've solved the mystery ask three questions like: "Was it Miss Scarlet, in the kitchen, with a knife?"

The idea of the five (or six) Qs first gained popular attention with a poem written by Rudyard Kipling in 1902. He went on to win the Nobel Prize in Literature in 1907. Among his many other stories, he



is best known for *Jungle Book*, which was eventually adapted into a popular Disney film.

The five Ws (and one H) appear in his *Just So Stories* as follows:

I Keep six honest serving-men  
    (They taught me all I knew);  
Their names are What and Why and When  
    And How and Where and Who.  
I send them over land and sea,  
    I send them east and west;  
But after they have worked for me,  
    I give them all a rest.  
I let them rest from nine till five,  
    For I am busy then,  
As well as breakfast, lunch, and tea,  
    For they are hungry men.  
But different folk have different views;  
    I know a person small—  
She keeps ten million serving-men,  
    Who get no rest at all!  
She sends 'em abroad on her own affairs,  
    From the second she opens her eyes—  
One million Hows, two million Wheres,  
    And seven million Whys!  
    —*The Elephant's Child*

Toyota Motor Corporation has five Ws. They contributed significantly to the company's manufacturing success through a chain of continuous improvement. In this case, the Ws are all *whys*. By stringing them together in a coherent sequence, they helped lead the company to the root of problems. For example, "Why is it broken?" leads to "Why did it break in the first place?" and so on. *Why* is still viewed by Toyota as a fundamental business tool. The same approach has since been adopted by many other companies and people.

Brilliant and inspired minds have asked lots of questions over the years. Many questions first asked long ago have determined how we got to where we are today. Some date as far back as the Ancient Greeks. Nevertheless, good questions always deserve to be re-asked and re-answered, because sometimes, fresh answers to old questions can lead to great discoveries.

If you take the time to ask good questions and come up with excellent answers, you will shine.

#### Web Search Keywords

| *asking questions* | *five basic types of questions* | *asking all them questions*  
| *who's on first* | *sesame street asking questions* |



## Chapter 2

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# QUESTIONS: NOT A TRIVIAL PURSUIT

PEOPLE LOVE QUESTIONS—IT'S IN our nature. Mankind has an insatiable thirst for knowledge.

Questioning appears to be a uniquely human trait. Primates, such as gorillas and chimpanzees, have been taught to communicate using sign language or by picking out tokens that represent words. Sarah, Washoe, and Koko are among the best-known examples. They learned to answer questions such as *who*, *what*, and *where*; but they never actually *asked* any despite understanding the signs or tokens that stood for questions. This is in stark contrast to children who ask questions ceaselessly. They start asking one-word questions even at the earliest stages of speech, just by using intonation: “Out?” They’ve also been known to say: “Out! Out! Out!”

People like to be asked questions and to come up with answers. It happens all around us and leads to a sense of accomplishment in our work, at least on a good day. We even like answering questions for entertainment. Asking questions is not trivial by any means; it’s a vital part of our lives.

Questions form the basis of much of our popular culture. Observational comedy often starts with a question like: “Have you ever noticed how...?” In the pilot episode of *Seinfeld* (you can find the script on the show’s official website), I count at least one question

in sixty-six of the two hundred lines spoken by the cast. That's about 30 percent. Talk show hosts and talk radio people always ask loads of questions.

If you attune yourself to listening for questions, it's amazing how many there are swirling around all the time. Most are so mundane that we pay no attention.

- What time is it?
- What are your specials?
- What other colors does this come in?
- You want how much?!

In a way, competitive sports events answer questions. The Olympic motto is "Faster, higher, stronger." The games resolve to answer the questions "Who is the fastest ...?"

McDonalds currently serves more than sixty million customers every day, and they've made billions of dollars by asking one simple question: "Do you want fries with that?"

If McDonalds asks that of every customer, it would amount to about twenty-two billion questions a year. That's not only a lot of questions, it's a great way to sell fries. Why stop at fries? "Would you like to supersize that?" was hugely successful, and inspired the fast food documentary *Supersize Me*.

The enormously popular *Guinness World Records* (previously *The Guinness Book of World Records*) is a reference book that contains a collection of world records on just about any topic you might imagine. *Guinness World Records* is now recognized as *the* authority on verifying and keeping track of world records. The book itself is recognized as being the best-selling copyrighted book of all time, with sales exceeding one hundred million copies. It's also reputed to be one of the most frequently stolen books from US public libraries. Believe it or not, the Bible

"I went into a McDonalds yesterday and said, 'I'd like some fries.' The girl at the counter said, 'Would you like fries with that?'"

*Jay Leno*

makes that list as well. I guess the thieves should read up on “Thou shall not steal.”

As the story goes, the idea for the Guinness book came from Sir Hugh Beaver on a hunting trip in Ireland in 1951. A debate raged at dinner over whether or not the fastest game bird in Europe was the golden plover. It came up because the hunters in the party who had failed to shoot one tried using its speed as an excuse. They soon concluded that it was impossible to find the answer. It occurred to Sir Hugh that these kinds of debates were probably going on all the time, particularly in pubs in the UK. He was Managing Director of Guinness Breweries at the time, which owned thousands of pubs. After years of collecting information, the first edition was published in 1955 and quickly became a bestseller. Oddly, the answer to the question that sparked the book didn't appear on its pages until the thirty-sixth edition (1989). The fastest game bird turned out to be the red grouse, which was measured to be slightly faster than the plover.

Entire entertainment industries were inspired by the success of the Guinness book. Trivia books started to appear in the 1960s and continue to grow in popularity. I recently looked up an online bookseller and counted more than two hundred different trivia books for sale. There are also many trivia games available as computer games, on the Internet and in games like *Buzztime*, which is popular in pubs and bars across North America.

“Why is it trivia? People call it trivia because they know nothing and are embarrassed about it.”

*Robbie Coltrane*

Game shows involve answering questions or solving puzzles. They have held a place in American popular culture beginning with radio shows such as *Spelling Bee* and *Truth or Consequences* in the late 1930s and 1940s. Some of the shows were made into television programs, and more were created as the medium of TV caught on.

*Twenty One* was a popular quiz show in the late 1950s that featured two competitors, a challenger and a champion, who answered multiple-choice questions in separate booths with headphones on.



It ended badly when it was discovered that the show was rigged. Well-liked champions were being passed the correct answers during the program to ensure they won in order to return the following week and help boost ratings. The film *Quiz Show* is based on the scandal.

*The \$64,000 Question* was another popular 1950s quiz show. Its name was based on *The \$64 Question*, which was a radio show in the 1940s. The expression, “That’s the sixty-four dollar question” came into widespread use at the time to describe challenging questions and problems.

In the end, quiz shows of that era fell out of favor in the aftermath of the *Twenty One* scandal. Nevertheless, quiz shows managed to stage a comeback. *Jeopardy!* has been popular since its debut in 1964 and features trivia questions about history, literature, the arts, geography, popular culture, science, and sports. The show has a unique answer-and-question format, where contestants are given answers as clues and have to come up with the corresponding questions.

It seems that asking and answering questions really can be fun for us.

How else could you explain the popularity of board games like Trivial Pursuit? It’s one of the best-selling board games of all time. *Time* magazine called it the biggest phenomenon in game history. The game is based on answering trivia questions from a range of six categories. It’s so popular that the game has become entrenched in our culture, much like Monopoly. It even appears in *Seinfeld* (in the episode “The Bubble Boy”) where George’s game with the bubble boy ends in a struggle. George disputes his answer to the question, “Who invaded Spain in the eighth century?” The bubble boy correctly answers, “The Moors,” but the question card reads “Moops” due to a misprint. When George refuses to accept the answer, the bubble boy attacks him. These sorts of misprints and factual errors have come up in a number of lawsuits over the years where

“I think it’s wrong that only one company makes the game Monopoly.”  
*Steven Wright*

writers of trivia books have claimed that misspellings and other errors were deliberately included in their books to spot copyright infringements. None of the claims against Trivial Pursuit have stood up in court.

Have you ever noticed how much kids enjoy silly questions and riddles?

You can always tell if a riddle will be a hit with the under-eight set if it makes you groan. Here are a few examples:

- Why did the boy throw the clock out of the window?  
(*To see time fly*)
- What kind of tie does a ghost wear at a party? (*A boo-tie*)
- What kind of stones does Frankenstein have in his collection? (*Tombstones*)

The examples can go on and on, and are beneficial to learning because kids have fun juggling between the sense and nonsense. They also exercise imaginations and promote creative thinking.

Closely related to riddles are trick questions. They are intended to make you believe you should answer them in one way, when the real question is buried somewhere inside. There aren't any precise formal definitions that let you distinguish between the two. If you look at a book (or website) of riddles and compare them to trick questions, you will find a fair amount of overlap. The biggest thing they have in common is that

Reporter: "How did you find America?"  
John: "Turn left at Greenland."  
*The Beatles*

both certainly take some ingenuity to answer. Riddles are best described as involving some kind of pun or incongruity ("to see time fly") while trick questions often have easy, seemingly obvious answers but are usually written in such a way as to trick the reader. Examples of hidden meanings behind trick questions include:

- Why are 2011 pennies worth more than 2010 pennies? (*2011 is one more penny than 2010 pennies.*)
- What happened in 1961 and will not happen again until 6009? (*Both still read as numbers if you turn them upside down, and 6009 is the next one after 1961.*)
- Is it legal for a man to marry his widow's sister? (*Dead men can't get married.*)
- When is four one-half of five? (*If you take the IV in five as Roman numerals, it makes up half the word F(IV)E.*)

And then there is every young child's favorite: silly questions. They exhibit a complete lack of common sense, which makes them foolish and fun. In the *Cat's Quizzer*, the Cat in the Hat challenges very young readers with seemingly silly questions such as: "Do pineapples grow on pine trees or apple trees?"

"I bought some powdered water but didn't know what to add to it."  
*Steven Wright*

Small and seemingly trivial questions can sometimes lead to much bigger and important ones. In the end, the real trick is to make even the most challenging questions about difficult topics both interesting and fun.

#### Web Search Keywords

| *koko gorilla* | *sarah chimp* | *supersize* | *guinness book* | *64000 question*  
| *trivial pursuit* | *jeopardy* | *seinfeld bubble boy* | *seussville* | *geico*  
*rhetorical questions commercial* | *what's my line youtube* |

## Chapter 3

---

### A GOOD QUESTION ABOUT QUESTIONS

ONE GOOD QUESTION to ask about questions is “How many different ways are there to ask them?”

The simplest questions are intended to gather information as in, “What is the capital of Canada?” In addition to the Five Qs, many questions start with words like *which*, *does*, and *is*. They not only represent the most basic form of learning but led to the scientific method, where questioning fits in between observing something and explaining how it could be so with a theory.

Questioning is fundamental to the justice system. Leading and loaded questions sometimes come up in trials. They can lead or trick a defendant into a desired answer by including some assumption of guilt. Leading questions try to direct an answer: “You were near the crime scene, weren’t you?” The non-leading version would be, “Where were you on the night of the crime?” The most common example of a loaded question is this: “Have you stopped beating your wife?” There is no correct response, because both yes and no answers result in some admission of guilt. The only way to answer a question like that is to turn it around or rephrase it. “I have never beaten my wife,” would be a good reply. Courtroom judges, we hope, are always on the lookout for these kinds of questions.

Surveys and polls are all about questioning. They are used to gain an understanding of people's views and preferences by sampling a small group of people and applying what they learn to a larger population. Public opinion surveys and polls frequently cover topics such as:

- Politics (predicting the likely outcome of an election)
- Behavior (measuring lifestyle choices such as smoking)
- Economics (income and spending)
- Science (particularly regarding health-care issues)
- Marketing (how best to sell products)

Surveys pose questions requiring a yes or no response, selecting from a list (multiple-choice), scales (strongly agree ... don't care ... strongly disagree), or ranking agreement on a numeric scale such as from one to ten.

The most broadly-based survey is the census. Governments perform them to collect information about their populations. They usually take place on a regular schedule to provide an official count of population and its demographics. The census dates back many thousands of years, all the way to ancient China and appears several times in the Bible. The Roman Empire made extensive use of them as well, and the word itself is derived from Latin.

Focus groups are used extensively in marketing, where participants are usually paid for their opinions. In them, individuals in the group express their perceptions and opinions about products, services, concepts, advertisements, ideas, and packaging. Focus groups are intended to turn into group discussions about a given question, making them less rigid than a survey. The value added by focus groups has been a matter of some debate because they have occasionally led to the introduction of products, such as New Coke, that subsequently became major failures.

When is a question not really a question?

First, there are imperative sentences, which are written like questions, but are not really intended to be questions at all. They

are simply requests for some action such as, “Could I trouble you for the salt?”

There are also rhetorical questions that are meant to make a point by asking. Rhetorical questions don’t expect or even want an answer. They are most often used in speeches and lead listeners to arrive at the speaker’s point of view for themselves. In Monty Python’s *Life of Brian*, there is a line that asks, “What have the Romans ever done for us?” It makes listeners think, “The Romans have never done anything for us.” That comes across more persuasively than simply stating the point.

“All right, the aqueduct, the sanitation, and the roads. I’ll give them that.”

*Monty Python*

Rhetoric can also be used sarcastically with simple questions like: “Can’t you do anything right?” or “Shouldn’t you be working?” One commonly used sarcastic question is “Who knew?” which implies that the preceding statement should have been utterly obvious. “Smoking can lead to lung cancer. Who knew?” Rhetorical questions have also been used to set out on some course of action. “Hey, why not?” has probably led to more than its fair share of misadventures.

Sometimes it takes a rhetorical question to answer a rhetorical question. In the musical *The Sound of Music*, the question in the song *Maria*, “How do you solve a problem like Maria?” is answered with other questions like: “How do you catch a cloud and pin it down?” and “How do you hold a moonbeam in your hand?”

One of the most familiar forms of questioning, sometimes dreaded by students, has got to be multiple-choice.

This form of testing was first used to assess the intelligence of World War I military recruits. Sarcastic students often refer to them as multiple-guess tests. The easiest way to fix the flaw that rewards guessing is by scoring a blank response with zero, and introducing a penalty for an incorrect answer. SATs, for example, subtract one-quarter point for incorrect answers.

The \$64,000 question about multiple-choice questions has to be about changing answers. “Should I stay with my initial answer or



switch if I reconsider?” Conventional wisdom suggests you should always stick with your first choice. After numerous studies, it turns out that you are far better off to switch, but only after *careful* reconsideration. Some believe that the popular misconception of never switching arises from the *von Restorff effect*. It accounts for how our memories are stronger for standout events. The idea is that if you go back and check your scoring, incorrect answers that came after making a switch are more memorable than those where the correct switch was made.

“Our sins are more easily remembered than our good deeds.”  
*Democritus*

You can find all kinds of questions anywhere you look.

#### Web Search Keywords

| *monty python romans* | *how do you solve a problem like maria* | *bill cosby new coke* | *von restorff effect* |

the software part and are fantastically complicated. Even though our hardware is incredibly fast, the kinds of complex thoughts it takes to ask questions must require an extraordinary number of steps in our mental programming code. Using the computer analogy again, even though a chess-playing supercomputer is processing information at an astonishing rate, it can take quite a while to come up with its next move.

The simplest form of thinking is responding to a stimulus. An *orienting response* is an instinctive reaction to something. The term was coined by Ivan Pavlov (of “Pavlov’s dog” fame) and describes an involuntary response that is hardwired into us. Say there’s a loud noise somewhere nearby. Without thinking, we are compelled to turn toward it to see what it was. We respond first and save the *real* thinking for later. We’re all born with it—clap your hands and a baby will look. Orienting responses are everywhere in nature. Sharks have a sense that detects vibrations in the water and makes them instinctively turn toward a thrashing fish (or the swimmers in the film *Jaws*). In a noisy and flashy world, this response would drive us crazy if we didn’t learn to tune out familiar noises, as explained by Eugene Soklov’s *habituation* or *familiarity effect*.

There is a branch of experimental psychology known as *mental chronometry* (from the Greek *chronos*, meaning “time”). It studies the reaction time between seeing or hearing something and responding to it, although it could apply equally well to our other senses too. The simplest kind of experiment to gauge reaction time would be something like measuring how long it takes you to press a button after a light goes on. That can give us an idea of the processing speed of the brain. Reactions that require more thinking can be measured by including a number of differently colored lights and pressing the button only when a certain color (or combination of colors) flashes. There’s no end to the kinds of tasks where response times can easily be measured. The goals of these types of experiments include understanding how the mind processes information and how different tasks have differing response times, depending on how much thinking is involved. By using the reaction time of the simplest task as a benchmark, the timing of more complicated tasks

When something isn't immediately recognizable, it takes more thinking. People's minds seem to be naturally programmed to try to make sense out of all the chaos that our senses perceive. If you've never visited a disorganized junk shop, try it and you'll see what I mean. Take a look around and you will be flooded with so much visual stimulation that it's almost overwhelming. Not only are you looking at all that junk, your mind is going into overdrive trying to figure out what everything is and what you might want to do with it. In the 1990s, computer-generated 3D posters became popular. If you stared into the patterns long enough, objects eventually materialized in front of your eyes.

Why do you think *Where's Waldo?* became so popular? If you were to describe it simply for what it is—picking out a peculiar looking character from a sea of similar characters—you might wonder why anybody would ever be interested. However, when you actually look at a Waldo puzzle, they're fascinating. Kids of all ages love Waldo because it challenges their minds to sort through all the clutter. What started as a children's book now even comes as a smart phone application for all the big kids out there.

“Out of clutter find simplicity.”  
*Albert Einstein*

The game *Scrabble*, which has been popular since 1948, is even bigger. It involves finding order out of seven scrambled letter tiles. You have to combine them into words and also make the most out of them by deciding where best to place them on the board. Word jumbles, word search puzzles, and jigsaw puzzles are popular for the same reasons.

There is a great trick that you might be able to use when it comes to unscrambling groups of letters. It might even give some insight into how minds work. If you were given a sequence of letters such as:

| O | T | C | R | U | Y | N |,

saying and not to let your mind drift into thinking about how you're going to respond. Chief Executive Officers (CEOs), the leaders of large corporations, are known to be great questioners, but the best ones are great listeners too. I've heard it said that their listening can sometimes feel like a vacuum cleaner pointed at your head. Here's an important point that many people just don't seem to get. When you're listening, keep your mouth shut. It's as simple as that. You can't soak and squeeze that sponge at the same time. Don't interrupt. Just let people finish what they've started to say. In groups, sometimes it's a good idea just to keep quiet and listen.

None of us communicate as well as we could, so to become a great listener, you've also got to learn to sometimes interpret what people are trying to say. Afterward, you can always ask to make sure you got it right.

All of us are guilty of being poor listeners at least some of the time, especially when we're trying to make a point. I'm no different, so don't listen to me about listening. Instead, I offer the advice of some great listeners:

"That man's silence is wonderful to listen to."

*Thomas Hardy*

"We have two ears and one mouth so that we can listen twice as much as we speak."  
—Epictetus, *Ancient Greek philosopher and sage*

"It is greed to do all the talking but not to want to listen at all."  
—Democritus, *Ancient Greek philosopher*

"If speaking is silver, then listening is gold."  
—*Turkish proverb*

"Listen to many, speak to a few."  
—William Shakespeare

"He that speaks much is much mistaken."  
—Benjamin Franklin

“Courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen.”

—Winston Churchill

“Know or listen to those who know.”

—Baltasar Gracian, Spanish Jesuit *and* baroque *prose writer*

“Bore, n. A person who talks when you wish him to listen.”

—Ambrose Bierce, *journalist and satirist*

“You aren’t learning anything when you’re talking.”

—Lyndon B. Johnson

“To listen is an effort, and just to hear is no merit. A duck hears also.”

—Igor Stravinsky, *composer*

“The most important thing to do is really listen.”

—Itzhak Perlman, *violinist and conductor*

“Well I have a microphone and you don’t, so you will listen to every damn word I have to say!”

*Adam Sandler*

“You cannot truly listen to anyone and do anything else at the same time.”

—M. Scott Peck, *American psychiatrist*

“There is only one rule for being a good talker—learn to listen.”

—Christopher Morley, *journalist, writer and poet*

“Listen to the sound of silence.”

—Paul Simon, *singer and songwriter*



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