



# JREF

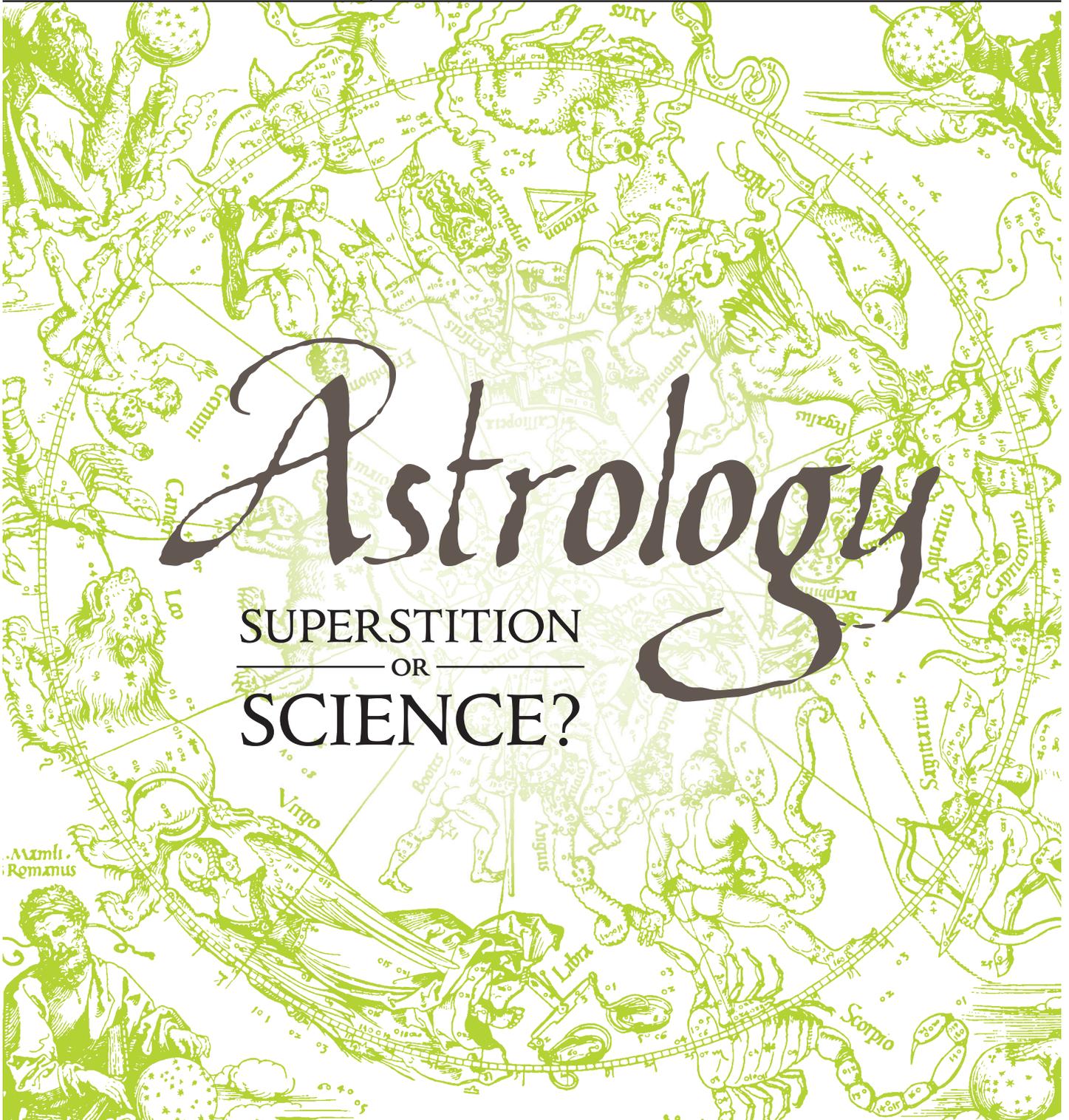
JAMES RANDI  
EDUCATIONAL  
FOUNDATION

JREF IN THE CLASSROOM MODULE 004 / v1.0 / 01/2013

*Astrology: Superstition or Science?*

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# Astrology

SUPERSTITION  
OR  
SCIENCE?

TEACHER EDITION

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### **IMPORTANT NOTE TO TEACHERS**

Before you introduce the topic, distribute copies of the last page to your students individually. Explain to each student that the readings were created specifically for them based on the birth date in their school records. Tell them that it is important that they keep their readings private and do not share them with classmates.

Ask the students to rate the accuracy of the personality assessment by assigning it a score from 0 to 5 as stated on the form. Record the ratings and calculate the average.

When you reach the last section of this curriculum module, share this average with your students and discuss their feelings about the accuracy of the description. At this point, reveal that all students received exactly the same reading. The distributed assessment was nearly identical to that used by Forer in the studies described in that section. Take some time to discuss the vagueness of each statement and how it might apply to almost everyone.

# about the JREF

The James Randi Educational Foundation is a not-for-profit organization founded in 1996. Its aim is to promote critical thinking by reaching out to the public and media with reliable information about paranormal and supernatural ideas.

The Foundation's goals include the following:

- Providing educational resources and grants to educators and students who are working to advance critical thinking and skepticism in their communities.
- Demonstrating to the public and the media, through educational seminars and workshops, the consequences of accepting paranormal and supernatural claims without sufficient evidence.
- Maintaining a comprehensive library of books, videos, journals, and archival resources which are available to the public online.
- Supporting local skeptical organizations by providing speakers, grants, promotional and educational resources, and training in grassroots organizing.
- Supporting and conducting scientific research into paranormal claims and publishing the findings online and in skeptic periodicals.

To raise public awareness of these issues, the Foundation offers a \$1 Million prize to any person or persons who can demonstrate psychic, supernatural, or paranormal ability of any kind under mutually agreed upon scientific conditions.

## SUPPORTING THE WORK OF THE JAMES RANDI EDUCATIONAL FOUNDATION

The James Randi Educational Foundation relies on the support of people like you in order to carry out its mission. Whether it is our support of grassroots skeptic outreach, our investment in resources for educators and students, our expanding digital educational offerings, or our speaking engagements, which promote skepticism with top thinkers around the world, your financial support makes our programs possible.

You may support the JREF through a charitable donation and by becoming a member at [randi.org](http://randi.org). You can ensure that your support is most effective in promoting skepticism for years to come by making a pledge of monthly support. For more information about pledges, please contact us at [development@randi.org](mailto:development@randi.org) or (213) 293-3092.

\* Donations are tax deductible for U.S. residents to the full extent of the law.



This module from the James Randi Educational Foundation explores the history, methods, and claims of astrology. Students will examine astrology in a way that promotes well-reasoned critical examination of unproven and pseudoscientific claims.

### **GRADE LEVEL AND TIME COMMITMENT**

The text in this module was written for students in grades nine through twelve. Teachers are encouraged to modify the exercises for use in lower grades or college classrooms.

Some of the activities can be completed in one or two class periods, or assigned to students in small groups to complete on their own. The time required will vary depending on the depth of instruction and specific assignments given.

### **NATIONAL SCIENCE STANDARDS**

Unifying Concepts and Processes

Science as Inquiry

Science in Personal and Social Perspectives

History and Nature of Science

### **AAAS SCIENCE LITERACY BENCHMARKS**

The Scientific Worldview

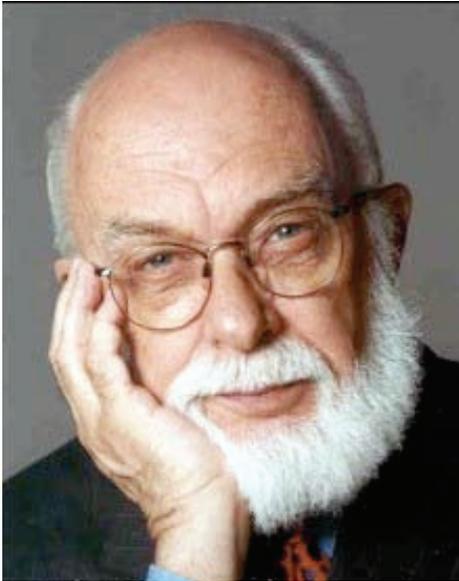
Scientific Inquiry

The Scientific Enterprise

### **ACKNOWLEDGEMENTS**

This module was developed with the assistance of James Randi, D. J. Grothe, Barbara Drescher, Daniel Loxton, Chip Denman, Michael Blanford, Matt Lowry, and Kylie Sturgess.

## to the **reader** . . .



Astrology is one of the oldest thinking errors of our species. That magnificent panorama, the night sky, had to awe—and puzzle—our ancestors, and to them, in that stage of our knowledge, its intricacy had to have many secrets concealed within the patterns, the movements, and the surprises it presented. Well, there were puzzles there to be revealed, and those have been shown to us—bit by bit—through astronomy. Astrology, though thoroughly debunked in so many ways, still attracts a large fraction of our planet's people, unfortunately.

But don't just accept my word for it. Here you have a really scientific method by which you, yourself, can examine the evidence about astrology and arrive at your own conclusions. It's an exciting journey, and as you move along on this experiment, stick with the rules, use your thinking skills, and see how easily the earlier members of our tribe fooled themselves.

And many of us still do...!

A handwritten signature of James Randi in black ink, written over a faint background illustration of a lion's head.

James Randi

# Leo the Lion



# introduction

Astrology is the idea that objects in the sky, such as planets and stars, affect human affairs. It has been around since people first recognized patterns in the sky and gave those patterns meaning. While many different systems of astrology were developed in different cultures and time periods, each is based on the same claim: that it can provide special insights into the nature of humans and predict future events.

## origin and history

More than 25,000 years ago, humans began to recognize that patterns existed in the movements of objects seen in the night sky. They noticed that the positions of the stars formed familiar shapes and that the sun, moon, and other planets moved in predictable cycles.

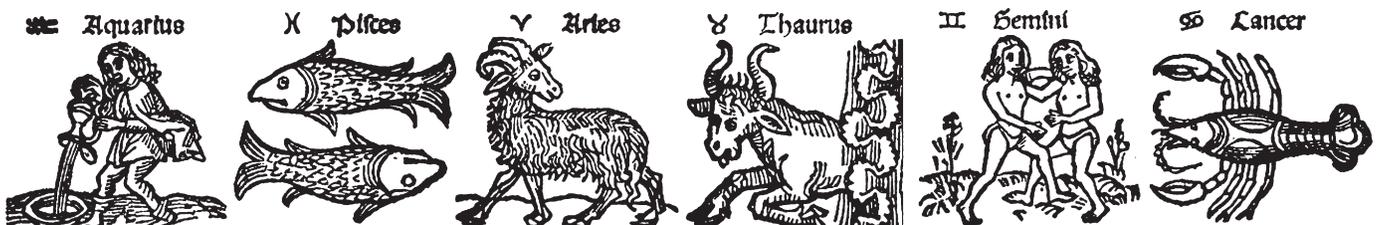
Over time, scholars used observations and calculations to gain a better understanding of astronomical objects and their movements. They discovered that the positions of the sun, moon, and other bodies corresponded to changes in the seasons, weather, rivers, and tides. It wasn't long before these early stargazers began to do more than just observe the sky; they looked for meaning and guidance in its celestial cycles.

Knowing there was a relationship between the heavens and earth, people began to look to the sky to explain and predict all kinds of events. Ancient astrologers in Europe, China, India, and the Americas created elaborate systems to do this. In many cultures, the bodies of the night sky were associated with gods, spirits, or divine messengers, all influencing the everyday lives of people, or so they thought.

Astrology started with calculations and observations, then filled the gaps with assumptions of the supernatural. In this way, the search for signs of what the gods would do next was part science, part superstition.

Several distinct and independent astrological systems arose at different times and in different places. The system most of us would recognize today goes back to at least 3000 BCE. By 600 BCE, the Babylonians had a system that looked much like the modern "sun-sign" astrology that dominates astrological belief today.

Both astronomers and astrologers (who were originally one and the same) imagined the sky as a giant sphere or dome covering the planet. They called it the "celestial sphere" and believed the sun moved across it, following a path known as the "ecliptic." The moon and visible planets were generally thought to move along the ecliptic as



JAN 20-FEB 18

FEB 19-MAR 20

MAR 21-APR 19

APR 21-MAY 20

MAY 21-JUN 21

JUN 22-JUL 22



**Fig. 1:**  
The traditional 12-sign western zodiac and a Babylonian cuneiform astrological clay tablet.

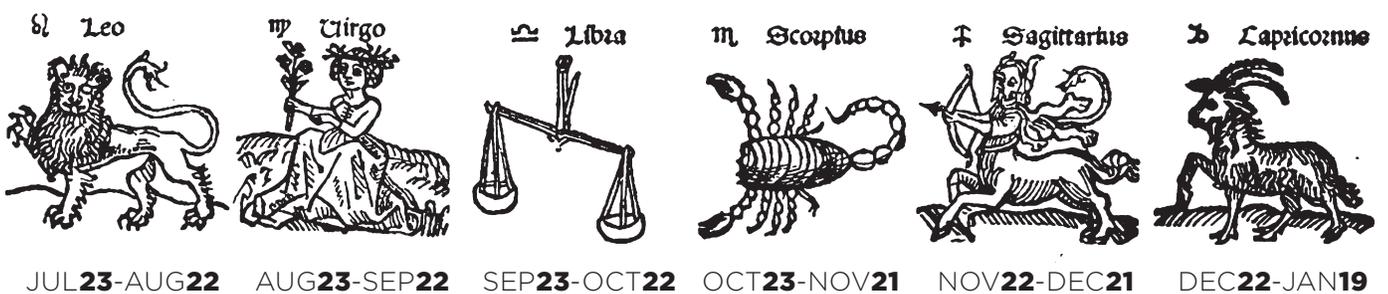
well. The term “sun-sign” (also called a “star sign” or “zodiac sign”) refers to the part of the sky the sun traveled through when a person was born.

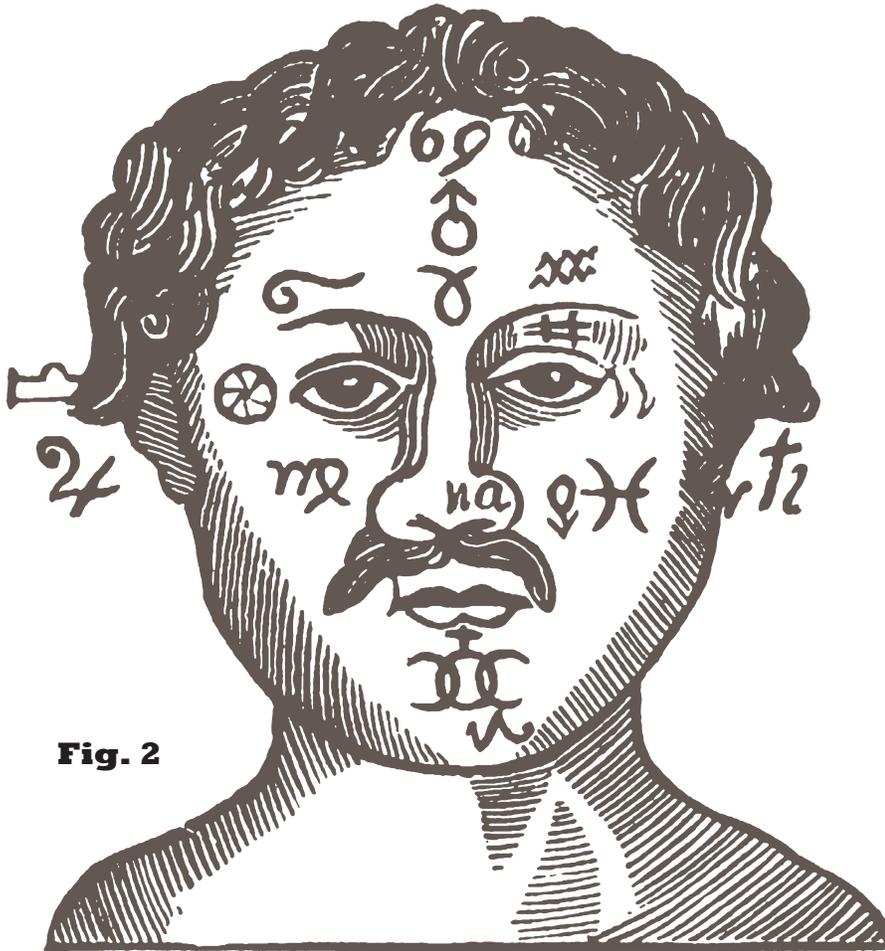
In western astrology, the zodiac is a circle centered on the ecliptic and divided into

twelve sections. Those twelve sections, each corresponding to a particular month of the year and constellation in the sky, are called the signs of the zodiac.

The Babylonians also created the earliest known horoscope. It was a simple chart that showed

the positions of the planets, relative to the zodiac, at the time of a person’s birth. Today, the word “horoscope” more commonly refers to written forecasts associated with different signs of the zodiac.





**Fig. 2**

According to this system, a person's zodiac sign determines much of their individual personality and their fate.

## ASK...

Do you think it would be fair to judge someone based on his or her zodiac sign? If it is not okay to refuse to hire someone because of their gender or race, is it okay to refuse to hire them because of their sign? Why or why not?

### **Fig. 2:**

16th century chart of a facial astrology "reading."

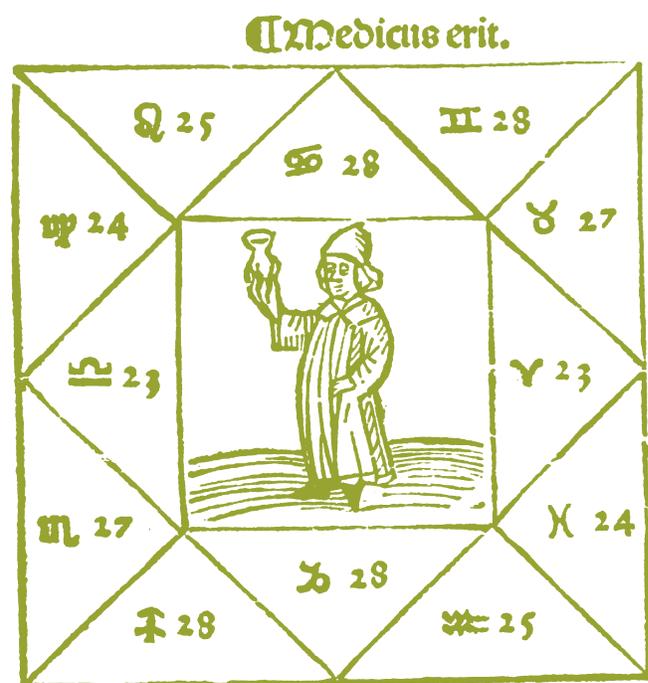
### **Fig. 3:**

14th century medical astrology table.

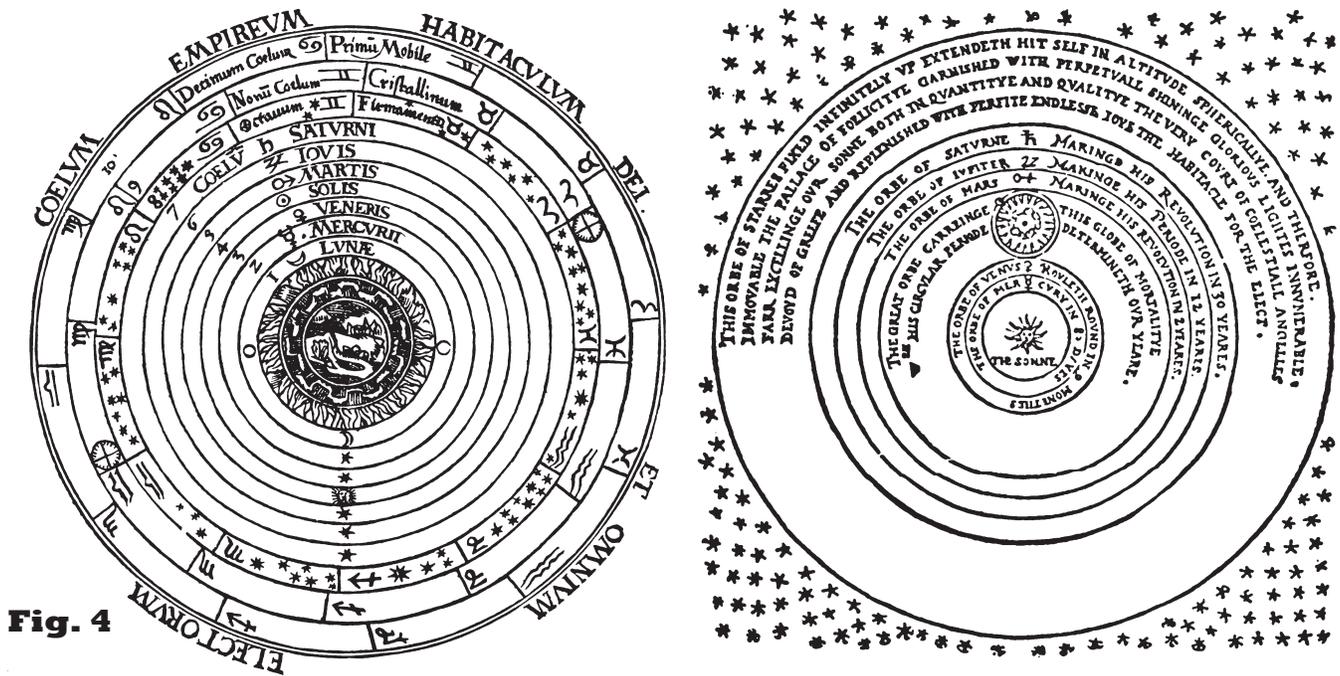
## THE RISE, FALL, AND RISE OF WESTERN ASTROLOGY

Before the advent of modern science, astrology was associated with nearly every area of study relating to the natural world and the universe. There was a time, for example, when doctors consulted with astrologers before scheduling risky procedures. However, it would be a mistake to think that astrology was always widely accepted. It has gone in and out of fashion many times in some cultures.

Astrology entered the Middle Ages (500-1400 CE) as the center of the scholarly world. The greatest minds of the time were convinced that it was the key to unlocking the mysteries of the natural world and perhaps even offered some human control over the universe. Philosophers once created and interpreted astrological charts in the courts of kings and popes.



**Fig. 3**


**Fig. 4**

But, as criticism from Christian scholars became more common, enthusiasm for astrology fell. By the end of this period, astrology had almost completely vanished from Europe.

Then came the Renaissance. Renewed interest in classical culture made astrology a popular subject once again. However, it no longer seemed to

fit with new scientific ideas. One of these ideas, Heliocentrism, completely changed our view of the universe and our place in it. It left little room for astrology. No longer seen as an area of philosophy or science, astrology quickly diminished along with other areas of occult knowledge and nearly disappeared as it had once before.

**Fig. 4:**

The Ptolemaic Geocentric System on the left and the Copernican Heliocentric System on the right.

## ASTROLOGY AND RELIGION

Religions differ in attitudes toward astrology. Early Muslim scholars relied on astronomy to help them determine how to place mosques and when to pray. This connection of astronomy and religion made it easy to accept the more speculative claims of astrology. In medieval times, some Muslims argued that human beings could not understand the way celestial bodies affect human affairs. This, they argued, was known only by God (Allah).

In the West, there was a time when many religious leaders embraced astrology, but by the early Middle Ages, the position of the Christian Church was clear: the practice of astrology was not to be tolerated. It was seen as a pursuit of secret knowledge using the mystical forces of the occult.

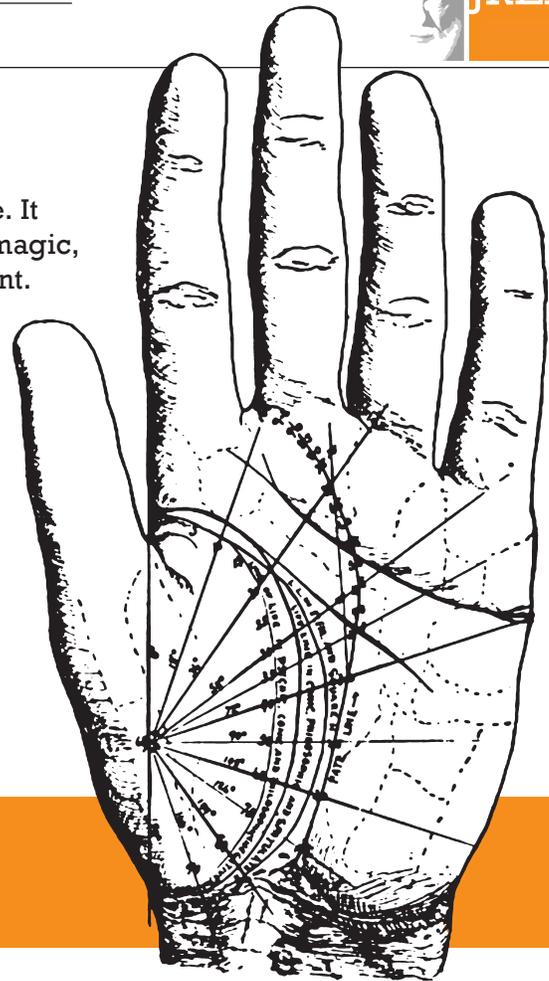
The basic claim made by astrology is not consistent with some of the doctrines of the Catholic Church, particularly the belief that human beings have free will. By the 15th century, the same Vatican that once employed a court astrologer now denounced astrology as dangerous and immoral.



## ASTROLOGY TODAY

More than 400 years ago, astrology was considered obsolete. It reappeared in the late 19th century alongside numerology, magic, and other occult practices as part of a new spiritual movement. Newspapers began to publish the astrological forecasts we now know as horoscopes during the First World War. Astrology found a place in American culture once again and remained there.

Astrology is as popular in America today as it has been anywhere in hundreds of years. Nearly all of us are familiar with it, and millions of people take its claims seriously, organizing their lives around its predictions. Recent surveys show that at least one quarter of Americans believe that the position of the moon and stars can affect people's lives, and 15 percent say they read their horoscope daily. Hundreds of millions of dollars each year are spent consulting with astrologers in the United States alone.



**Fig. 5:**

A Victorian hybrid of palmistry and astrology.

## ASK...

It is easy to understand why astrology was popular in the ancient world, when little was known about the laws of nature and the universe, but why do you think it is so popular today?

## does astrology **work?**

Like the ancient stargazers, modern astrologers claim that the position of the sun, moon, and planets at the time of a person's birth shapes his or her life. This, they say, allows them to describe and predict things like personality, romantic and other personal relationships, and economic fortune.

### PROBLEMS WITH THE THEORY

Even before we test whether the descriptions and predictions astrologers make are accurate, we should evaluate the theory itself. Doing so brings up a number of problems.

#### CONSISTENCY

All astrologers claim to make important predictions based on planetary positions. However, astrologers do not agree on which planetary positions cause specific traits or experiences. Whose system is correct, if any? Without a consistent set of rules about what the positions mean, predictions will not be consistent.

# does astrology **work?**

## NO MECHANISM

Most astrologers cannot explain how astrology works. The few explanations proposed are not consistent with our current scientific understanding of the universe and its natural laws.

For example, some have proposed that the gravitational forces of the various planets are responsible for human fates. This explanation can be quickly rejected after calculating those effects. Indeed, the gravitational forces you experienced from the people in the room at the time of your birth were greater than those of the planets.

None of this means that astrology doesn't work. However, it is important to recognize how implausible such a mechanism would be. It is hard to imagine an explanation that would not require us to completely rethink much of what we know of physics, chemistry, and biology.

## UNDISCOVERED PLANETS

Astrology is concerned with the precise charting of planets. It claims to accurately match the positions of these bodies to nearly every aspect of human personality and experience. Yet early astrologers could not take into consideration the existence of planets in our solar system beyond Saturn because these systems were developed before astronomers discovered those planets.

## THE NEW ZODIAC

Because the earth wobbles on its axis very slowly, astrological signs are not the same as they were when western astrology was developed thousands of years ago. Since then the relative positions of the zodiac have shifted so much that the dates given for modern horoscope signs are off by nearly a month. Astronomers have known about this problem since around 130 BCE, but astrologers have only recently recalculated the dates and have added a 13th sign, Ophiuchus (o-FY-a-kus). The new signs and dates can be found in the back of this booklet.

## ASK...

Scientists look for reliable knowledge about the natural world through careful observation and experimentation. Can science test the claim that astrologers are capable of making accurate and meaningful predictions based on astrological charts? What kind of evidence would you need to be convinced that astrology works? What evidence would you need to be convinced that astrology does not work? Can you think of ways to test the claims that astrologers make?



**Fig. 6:**

16th century woodcut of an astrologer at work.



# IS ASTROLOGY A SCIENCE?

Some of the language that astrologers use is scientific, and astrology was born from astronomy, which is a branch of science. For hundreds of years, astrology was considered a legitimate area of study and even necessary to understand other fields such as medicine and meteorology. Today, astrologers claim that the practice is supported by evidence.

Is astrology a science? Follow the checklist below to determine if astrology meets the definition of science.

## SCIENCE

## ASTROLOGY

Goal is to predict and explain what happens in the natural world.



Goal is to generate predictions and explanations for events and outcomes related to human affairs.



Generates theories and testable hypothesis.



Generates descriptions and predictions which can be compared to outcomes.



Scientists test their theories and consider alternatives. They are always looking for more knowledge and better explanations.



Modern astrology is a practice rather than a field of study. Some astrologers have conducted tests to find out if what they do works, but very few.



Involves peer review by a community of researchers. Scientists publish their findings in journals so that other scientists can review and replicate it as needed.



Astrologers tend to avoid scrutiny. Since few do research, they do not typically publish articles in scientific journals or present findings at scientific meetings.



Considers, and changes with, new evidence. One of the hallmarks of science is that theories are modified when the evidence shows that they should be.



Careful study has failed to provide evidence that astrology can do what it claims, yet astrology has not changed much in hundreds of years.



# testing astrology

Astrology has not been considered a scientific discipline for hundreds of years. Its central idea has been dismissed as unfounded and at odds with our current scientific understanding of the universe. However, science is open-minded and recognizes that

there may be forces we have yet to discover. If there is any truth to the claims that astrology makes, scientists want to know as much as everyone else.

Astrology itself may not be scientific, but the claims astrology makes can be tested scientifically. Some astrologers

have argued that we do not have the technology to measure the subtle effects to see how it works. However, we do not need to know how it works to ask the simple question, "Does it work?" And this question can be answered scientifically.

## SCIENTIFIC RESEARCH ON ASTROLOGY

Astrologers tell us the zodiac signs influence fundamental personality traits. If this is true, one's choice of career would be related to one's zodiac sign. To test this, physicist John McGervey<sup>1</sup> looked at the birth dates of 6,000 politicians and 17,000 scientists. Personality traits beneficial to each job are very different, yet the groups had about the same number of people born under each sign. Many similar studies have failed to find the expected patterns, including one by Barth and Bennett<sup>2</sup>, which also looked at medical problems, height, and longevity.

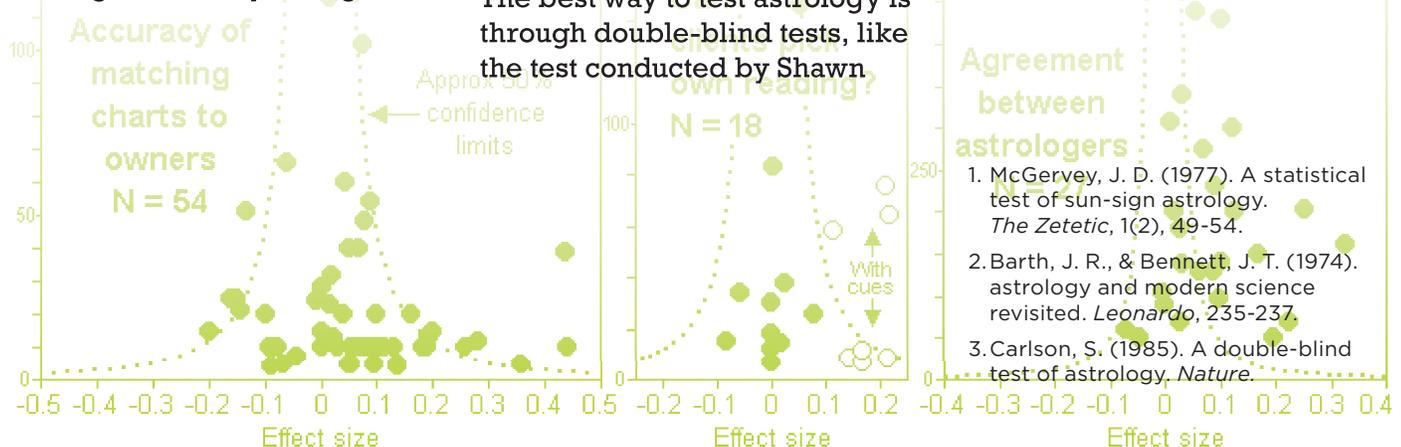
is a good way to break the ice when you meet someone new, the answer cannot tell you if you should ask them for a date. Compatibility cannot be predicted by the zodiac. This should not be all that surprising since studies have also shown that sun-signs are not related to personality traits.

Studies comparing "time twins" (persons born just a few minutes apart) have also failed. One such study followed more than 2,000 "twins" for several decades, recording more than 100 characteristics. The twins were no more similar to each other than they were to people born at different times.

Carlson<sup>3</sup>, which was published in the prestigious journal *Nature*. Astrologers created profiles from detailed information they were given about a number of participants. Then a different set of astrologers received the same information along with three of the profiles. Their task was to choose which of the three matched the participant. About one third chose correctly, which is exactly what we'd expect by chance. The results are no better when participants try to identify their own profiles. Numerous studies like this show that astrologers would be just as accurate if they flipped a coin.

Research also shows that although "What's your sign?"

The best way to test astrology is through double-blind tests, like the test conducted by Shawn





## try it!

### TEST IT YOURSELF

In the back of this booklet you will find three tests of astrology that you can do yourself or with a group:

- **Occupational Astrology**
- **Horoscope Matching**
- **What's My Sign?**

Completing one or more of these tests before reading the rest of this booklet will allow you to decide for yourself whether astrology works.

Please keep in mind: whatever your results may be, a single test is not usually enough to reject a whole theory, nor should it convince you that a claim is true. You should compare what you found to research that others have done. In some cases, studies should be repeated to see if the results are reliable.

## ASK...

Astrologists and scientists looking at the same evidence often come to opposite conclusions. Why do you think that happens? Do scientists and astrologers have the same goals in mind?

### WHY BELIEF IN ASTROLOGY PERSISTS

Astrology is an ancient practice based on ideas that clash with what we now know about the universe from science. Ask an enthusiastic believer in astrology why he or she believes and you will often hear, "Because it works. I've seen it." Yet, a large body of research shows that it cannot make reliable predictions.

Following is part of a description of one of the sun-signs, as posted to a popular website for horoscopes<sup>1</sup> :

"... you're constantly looking for meaning in your life, trying to figure out what makes the world tick, and planning and dreaming about how you can extract the maximum benefit from your time here. This is vitally important to you, so you'll go to great lengths to find what you're searching for."

Does this sound like you or someone you know? Can you guess which sign this describes?

Most horoscopes and profiles are just vague descriptions, general enough to apply to almost anyone. This is a property they share with many other personality systems which are rooted in pseudoscience.

Individuals are highly likely to accept a description as accurate if it is vague enough to apply to most people. For example, in the description above, who doesn't want to make the most of their life? Psychologists call this the Forer Effect<sup>2</sup> (for the psychologist who first documented it). This behavior has also been called the Barnum Effect, after the world-famous showman and innovative huckster, P.T. Barnum, who said, "we've got something for everyone."

1. [www.astrology.com.au](http://www.astrology.com.au) profile of Sagittarius. Accessed November 2, 2012.

2. Forer, B.R. (1949). The Fallacy of Personal validation: a classroom demonstration of gullibility. *Journal of Abnormal and Social Psychology*, 44, 112-123.

Likewise, when a prediction is vague, it can be matched to nearly any situation. Most astrological predictions involve future opportunities rather than describing current events in detail, so they can't actually fail.

Humans naturally look for the ways that a description or prediction matches a reading or a horoscope rather than the ways that it does not. We are also much more likely to notice and remember these matches. This is a type of Confirmation Bias, which is the

tendency to favor information that confirms what we currently think. We are more likely to notice, pay attention to, believe, and remember confirming information than we are neutral or contradictory information.

Humans want to believe that there is a simple way to predict the future and determine which choices are the best. That kind of information could protect us from failed relationships, bad investments, and physical harm. It would give us more control over our lives.

Furthermore, we do not like to admit when we are wrong. It is more than just fear of embarrassment. Being wrong means that we don't know what we thought we knew. If we don't know something, we can't predict or control it.

These common tendencies and ways of thinking often lead us to accept whatever answers we find, especially if they are the answers we expected or hoped to find.



## glossary

### **Astrology**

The practice of using the movements and relative positions of celestial bodies to describe or predict human affairs.

### **Astronomy**

A broad field of scientific study of the material in space (outside the earth's atmosphere), including the physics and chemistry of stars, planets, and other bodies.

### **Barnum Effect**

See "Forer Effect."

### **Confirmation Bias**

The tendency to favor information that confirms current beliefs.

### **Double-blind**

A property of a scientific study in which both the investigator and the participant are unaware ("blind to") the conditions. For example, a study in which neither the experimenter dispensing medication taking measurements nor the participant taking the medication knows whether that participant is receiving a drug or placebo is considered double-blind.

### **Forer Effect**

The tendency for people to rate sets of general statements as highly accurate for them personally when such statements apply to most people.

### **Heliocentrism**

A model of the solar system in which the Earth and planets revolve around a stationary sun at the center.

### **Horoscope**

A simple chart used to indicate the direction and angle of the planets relative to the zodiac at the time of a person's birth. In modern times, the word "horoscope" more commonly refers to written forecasts or descriptions associated with different signs of the zodiac.

### **Pseudoscience**

A field of study or practice which claims to be scientific, but either does not use the scientific method or is not supported by available evidence.



## OCCUPATIONAL ASTROLOGY

Astrology claims that one's personality is shaped, in part, by the position of the stars and planets at the time of their birth. To do the job of a president, or even to get elected to the office, requires specific personality traits. So, the theory of astrology predicts that a large portion of U.S. presidents will share a zodiac sign with other presidents.

- 1** Form a hypothesis. Make a list of the personality traits you think that most presidents will have. Choose two or three websites or books with descriptions of the personality traits common to each sun-sign and decide which sun-sign would be best for a president to be born under. You may choose more than one, but you should not choose more than three.
- 2** Sort the presidents. Using the zodiac chart in this booklet, tally and count the number of presidents born under each sign.
- 3** Look at the pattern. Are all of the presidents clustered under one or two signs? Does the sign (or signs) with the most presidents match your prediction?
- 4** Draw conclusions. What do your results tell you about whether personality is shaped by when you are born?

### REPEAT:

Try doing this with other occupations. What type of personality does it take to be a successful actor? Make a list of 30 actors and actresses, then do some research to find each birthday. Follow the steps above to form a hypothesis, sort the actors and actresses, examine the pattern, and draw conclusions.

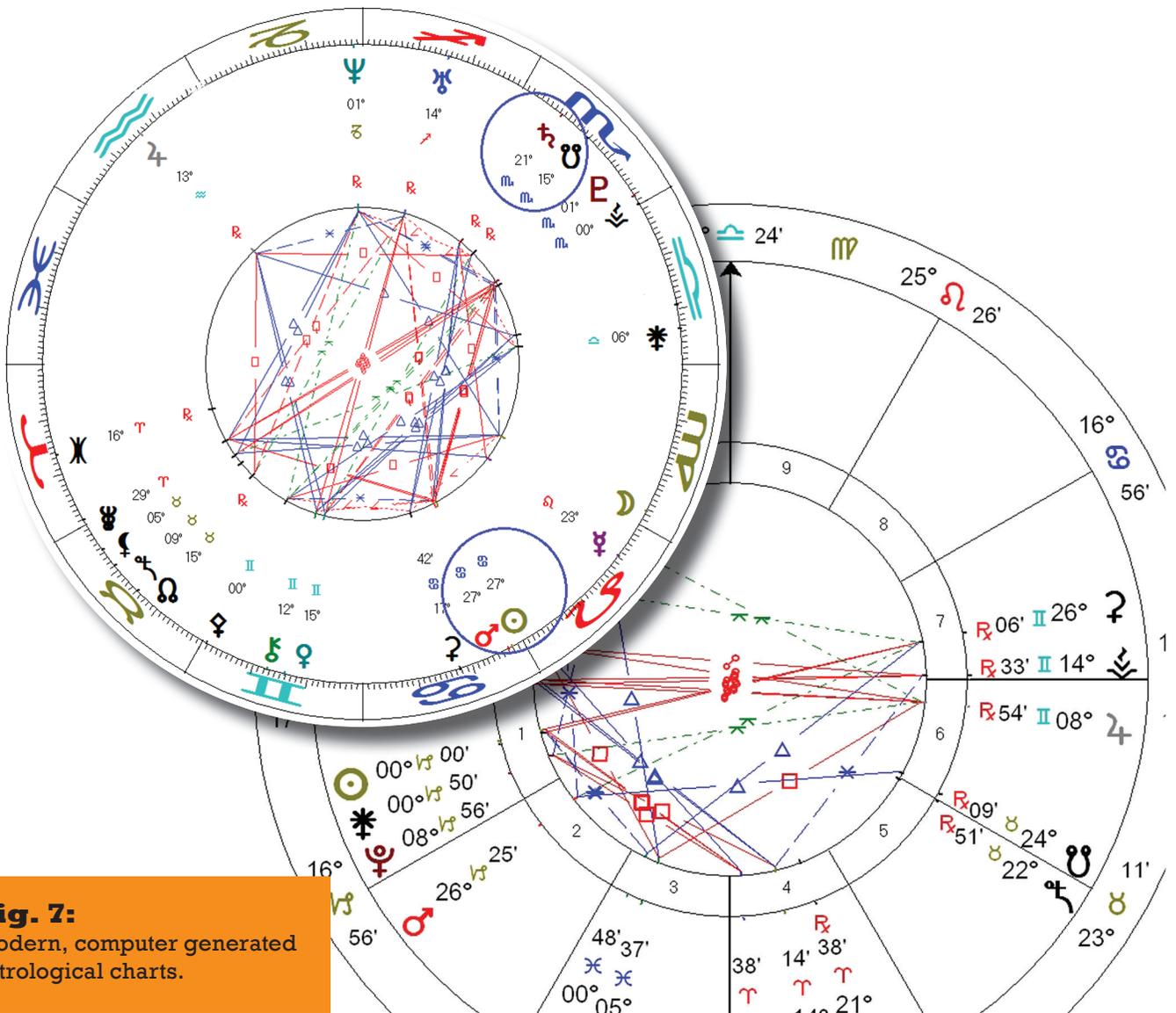
### U.S. PRESIDENTS

- |   |  |
|---|--|
| <b>1</b> George Washington: February 22, 1732     | <b>23</b> Benjamin Harrison: August 20, 1833   |
| <b>2</b> John Adams: October 30, 1735             | <b>24</b> William McKinley: January 29, 1843   |
| <b>3</b> Thomas Jefferson: April 13, 1743         | <b>25</b> Theodore Roosevelt: October 27, 1858 |
| <b>4</b> James Madison: March 16, 1751            | <b>26</b> William Taft: September 15, 1857     |
| <b>5</b> James Monroe: April 28, 1758             | <b>27</b> Woodrow Wilson: December 28, 1856    |
| <b>6</b> John Q. Adams: July 11, 1767             | <b>28</b> Warren G. Harding: November 2, 1865  |
| <b>7</b> Andrew Jackson: March 15, 1767           | <b>29</b> Calvin Coolidge: July 4, 1872        |
| <b>8</b> Martin Van Buren: December 5, 1782       | <b>30</b> Herbert Hoover: August 10, 1874      |
| <b>9</b> William Henry Harrison: February 9, 1773 | <b>31</b> Franklin Roosevelt: January 30, 1882 |
| <b>10</b> John Tyler: March 29, 1790              | <b>32</b> Harry Truman: May 8, 1884            |
| <b>11</b> James Polk: November 2, 1795            | <b>33</b> Dwight Eisenhower: October 14, 1890  |
| <b>12</b> Zachary Taylor: November 24, 1784       | <b>34</b> John Kennedy: May 29, 1917           |
| <b>13</b> Millard Fillmore: January 7, 1800       | <b>35</b> Lyndon Johnson: August 27, 1908      |
| <b>14</b> Franklin Pierce: November 23, 1804      | <b>36</b> Richard Nixon: January 9, 1913       |
| <b>15</b> James Buchanan: April 23, 1791          | <b>37</b> Gerald Ford: July 14, 1913           |
| <b>16</b> Abraham Lincoln: February 12, 1809      | <b>38</b> Jimmy Carter: October 1, 1924        |
| <b>17</b> Andrew Johnson: December 29, 1808       | <b>39</b> Ronald Reagan: February 6, 1911      |
| <b>18</b> Ulysses S. Grant: April 27, 1822        | <b>40</b> George H. W. Bush: June 12, 1924     |
| <b>19</b> Rutherford B. Hayes: October 4, 1822    | <b>41</b> William Clinton: August 19, 1946     |
| <b>20</b> James Garfield: November 19, 1831       | <b>42</b> George W. Bush: July 6, 1946         |
| <b>21</b> Chester A. Arthur: October 5, 1830      | <b>43</b> Barack Obama: August 4, 1961         |
| <b>22</b> Grover Cleveland: March 18, 1837        | (add to this list as needed)                   |

## HOROSCOPE MATCHING

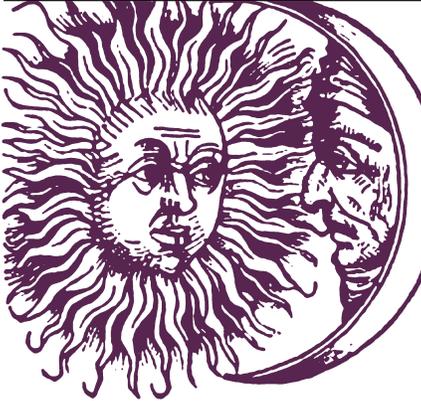
If astrology's central claim is true, then astrologers' forecasts should be similar to each other. To test this, compare horoscopes from different sources for the same time frame. You can choose daily horoscopes from newspapers and websites or monthly horoscopes from magazines.

- 1 Collect horoscopes from at least three different sources for the same time period.
- 2 Create "flashcards." Without reading them, cut out each horoscope and glue each to one side of an index card. Write the zodiac sign that matches the horoscope on the other side of the card. If you are working in a group, one person could copy the horoscopes and the other group members could complete the remaining tasks.
- 3 Match the horoscopes. Looking only at the side with the horoscope, read each and match the horoscopes from each source with the most similar horoscopes from the other sources.
- 4 Turn the cards over. How did you do?
- 5 Draw conclusions. What do your results tell you about whether astrology works?



**Fig. 7:**

Modern, computer generated astrological charts.



## SUN-SIGNS

Use this table to help you count the number of people born under each sign.

### CAPRICORN

Jan 20 – Feb 16

### WHAT'S MY SIGN?

Astrology claims that one's personality is determined by the position of the stars and planets at the time of their birth. If this is true, then individuals should be able to identify which sign is theirs by an astrologer's description alone.

- 1 Collect descriptions of personalities based on zodiac signs from a popular website or book on astrology.
- 2 Create "flashcards." Copy each description on one side of an index card. Write the zodiac sign on the other side.
- 3 Collect data. Ask at least 10 people to read each description and choose the one that they feel best matches their personality. Record their responses and their actual sign.
- 4 Examine your results. How many of your participants identified their sign correctly?
- 5 Draw conclusions. What do your results tell you about whether astrology works?

### AQUARIUS

Feb 16 – Mar 11

### PISCES

Mar 11 – Apr 18

### ARIES

Apr 18 – May 13

### TAURUS

May 13 – Jun 21

### GEMINI

Jun 21 – Jul 20

### CANCER

Jul 20 – Aug 10

### LEO

Aug 10 – Sep 16

### VIRGO

Sep 16 – Oct 30

### LIBRA

Oct 30 – Nov 23

### SCORPIO

Nov 23 – Nov 29

### OPHIUCHUS

Nov 29 – Dec 17

### SAGITTARIUS

Dec 17 – Jan 20

# YOUR ASTROLOGICAL READING:

You have a need for other people to like and admire you, and yet you tend to be critical of yourself. While you have some personality weaknesses, you are generally able to compensate for them. You have considerable unused capacity that you have not turned to your advantage. Disciplined and self-controlled on the outside, you tend to be worrisome and insecure on the inside. At times you have serious doubts as to whether you have made the right decision or done the right thing. You prefer a certain amount

of change and variety and become dissatisfied when hemmed in by restrictions and limitations. You also pride yourself as an independent thinker and do not accept others' statements without satisfactory proof. But you have found it unwise to be too frank in revealing yourself to others. At times you are extroverted and sociable, while at other times you are introverted, wary, and reserved. Some of your aspirations tend to be rather unrealistic.

HOW ACCURATELY  
DOES THIS  
READING  
DESCRIBE YOU ?

- 0 = NOT AT ALL ACCURATE
- 1 = MOSTLY INACCURATE
- 2 = SOMEWHAT INACCURATE
- 3 = SOMEWHAT ACCURATE
- 4 = MOSTLY ACCURATE
- 5 = ENTIRELY ACCURATE

YOUR RATING:

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YOUR RATING:



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