

Noticing Comparisons: More Practice

Excerpt 1

From *The Number Devil: A Mathematical Adventure* by Hans Magnus Enzensberger

"I see," said the number devil with a wry smile. "I have nothing against you, Mr. Bockel, but that kind of problem has nothing whatever to do with what I'm interested in. Do you want to know something? Most genuine mathematicians are bad at sums. Besides, they have no time to waste on them. That's what pocket calculators are for. I assume you have one."

"Sure, but we're not allowed to use them in school."

"I see," said the number devil. "That's all right. There's nothing wrong with a little addition and subtraction. You never know when your battery will die on you. But mathematics, my boy, that's something else again! . . .

"The thing that makes numbers so devilish is precisely that they are simple. And you don't need a calculator to prove it. You need one thing and one thing only: one. With one—I am speaking of the numeral of course—you can do almost anything. If you are afraid of large numbers—let's say five million seven hundred and twenty-three thousand eight hundred and twelve—all you have to do is start with

$$1 + 1$$

$$1 + 1 + 1$$

$$1 + 1 + 1 + 1$$

$$1 + 1 + 1 + 1 + 1$$

. . . and go on until you come to five million etcetera. You can't tell me that's too complicated for you, can you?"

Source: Enzensberger, H. M. (1997). *The number devil: A mathematical adventure*. New York, NY: Holt.

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Questions for Group Discussion

1. What comparison(s) is the author asking you to make?

2. What rules of notice did you apply in recognizing the importance of the comparison(s)?

3. What work does the author accomplish through the comparison(s)?

4. What is the topic and comment being made through the comparison(s)?

5. How do(es) the comparison(s) help you understand the topic and comment the author is making?

(Continued)

Excerpt 2

From "Space Probe" in *Astronomy & Space: From the Big Bang to the Big Crunch*, edited by Phillis Engelbert

A space probe is an unpiloted spacecraft that leaves Earth's orbit to explore the Moon, planets, asteroids, comets, or other objects in outer space as directed by onboard computers and/or instructions sent from Earth. The purpose of such missions is to make scientific observations, such as taking pictures, measuring atmospheric conditions, and collecting soil samples, and to bring or report the data back to Earth.

Numerous space probes have been launched since the former Soviet Union first fired *Luna 1* toward the Moon in 1959. Probes have now visited each of the eight planets in the solar system.

In fact, two probes—*Voyager 1* and *Voyager 2*—are approaching the edge of the solar system, for their eventual trip into the interstellar medium. By January 2008 *Voyager 1* was about 9.4 billion miles (15.2 billion kilometers) from the Sun and in May 2008 it entered the heliosheath (the boundary where the solar wind is thought to end), which is the area that roughly divides the solar system from interstellar space. *Voyager 2* is not quite as far as its sister probe. *Voyager 1* is expected to be the first human space probe to leave the solar system. Both *Voyager* probes are still transmitting signals back to Earth. They are expected to help gather further information as to the true boundary of the solar system.

The earliest probes traveled to the closest extraterrestrial target, the Moon. The former Soviet Union launched a series of *Luna* probes that provided humans with first pictures of the far side of the Moon. In 1966, *Luna 9* made the first successful landing on the Moon and sent back television footage from the Moon's surface. The National Aeronautics and Space Administration (NASA) initially made several unsuccessful attempts to send a probe to the Moon. Not until 1964 did a *Ranger* probe reach its mark and send back thousands of pictures. Then, a few months after *Luna 9*, NASA landed *Surveyor* on the Moon.

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In the meantime, NASA was moving ahead with the first series of planetary probes, called *Mariner*. *Mariner 2* first reached the planet Venus in 1962. Later *Mariner* spacecrafts flew by Mars in 1964 and 1969, providing detailed images of that planet. In 1971, *Mariner 9* became the first spacecraft to orbit Mars. During its year in orbit, *Mariner 9*'s two television cameras transmitted footage of an intense Martian dust storm, as well as images of 90 percent of the planet's surface and the two Martian natural satellites (moons).

Encounters were also made with Mars in 1976 by the U.S. probes *Viking 1* and *Viking 2*. Each *Viking* spacecraft consisted of both an orbiter and a lander. *Viking 1* made the first successful soft landing on Mars on July 20, 1976. Soon after, *Viking 2* landed on the opposite side of the planet. The *Viking* orbiters made reports on the Martian weather and photographed almost the entire surface of the planet.

Source: Engelbert, P. (Ed.). (1997). *Astronomy & space: From the big bang to the big crunch*. Farmington Hills, MI: Gale.

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(Continued)

mousetrap. No one is ever likely to lay claim to a “best” mousetrap, for that would preclude the inventor himself from coming up with a still better mousetrap without suffering the embarrassment of having previously declared the search complete. As with the mousetrap, so with the bag.

Source: Petroski, H. (2003). The evolution of the grocery bag. *American Scholar*, 72(4), 99.

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