Before Reading

On Nuclear Disarmament
Speech by Carl Sagan

What would make the world SAFER?

The newspapers are full of reports about war, epidemics, terrorism, and environmental crises. Some problems are so serious that they may threaten civilization. In his speech on nuclear disarmament, delivered in 1988, scientist Carl Sagan argues for rethinking ideas about how to maintain security.

SURVEY Ask six people to identify something that can be done to make the world a safer place. Present the results of your survey to the class.
TEXT ANALYSIS: RHETORICAL DEVICES

In persuasive writing, rhetorical devices can make the writer’s ideas more compelling and memorable. Carl Sagan uses the following devices in his speech “On Nuclear Disarmament”:

• Repetition—the use of the same word, phrase, or sentence more than once for emphasis

• Parallelism—the use of similar grammatical constructions to express related ideas. Sagan opens his speech with a sentence that includes the parallel phrases “ancestors of some of us, brothers of us all.”

As you read, notice how Sagan uses these rhetorical devices.

READING SKILL: ANALYZE INDUCTIVE REASONING

When you are led by specific evidence to form a general principle, or generalization, you are following inductive reasoning. Carl Sagan uses inductive reasoning when he presents evidence—examples and facts from past wars and then, from these, makes a generalization about warfare.

When you encounter inductive reasoning, examine the evidence and the concluding generalization to see whether

• the evidence is valid and provides sufficient support for the conclusion

• the writer overgeneralizes, or draws a conclusion that is too broad

As you read, use a graphic organizer like the one shown to help you analyze Sagan’s inductive reasoning.

Evidence

Cannons and rifles killed 51,000 in three days at Gettysburg.

Evidence

General Conclusion

VOCABULARY IN CONTEXT

In the speech you are about to read, Sagan uses the following words. In your Reader/Writer Notebook, write a sentence for the words you already know. After you have read the selection, check to see if you used those words correctly.

WORD LIST

annihilate
contending
precursor

carnage
malice
reconcile

Meet the Author

Carl Sagan
1934–1996

Popular Scientist

Carl Sagan’s gift for explaining science to the general public helped make him one of the most famous scientists of his time. The astronomer is best known for writing and narrating a television series about astronomy and related topics. The series, Cosmos, was watched by 400 million viewers, or, as Sagan put it, 3 percent of the world’s population.

No Nukes!

A staunch opponent of nuclear weapons, Sagan promoted the idea that even a limited nuclear war would devastate life on Earth by causing global temperatures to plunge. Although some scientists disputed this “nuclear winter” theory, it probably helped spur efforts in the 1980s to reduce the number of nuclear weapons held by the United States and the Soviet Union.

BACKGROUND TO THE SPEECH

The Cold War

In 1988, Carl Sagan delivered “On Nuclear Disarmament” in Gettysburg, Pennsylvania, to mark the 125th anniversary of a famous Civil War battle. At the time of the speech, the United States and the Soviet Union were still locked in a decades-long rivalry known as the cold war. Both nations had tens of thousands of nuclear warheads in their arsenals. According to some military strategists, these weapons prevented direct conflict because each side knew that it could be destroyed in a counterattack. This state of affairs was known as a balance of terror. However, many people feared that a crisis could spark a nuclear war between the superpowers.

Complete the activities in your Reader/Writer Notebook.
Fifty-one thousand human beings were killed or wounded here, ancestors of some of us, brothers of us all. This was the first full-fledged example of an industrialized war, with machine-made arms and railroad transport of men and materiel. This was the first hint of an age yet to come, our age; an intimation of what technology bent to the purposes of war might be capable. The new Spencer repeating rifle was used here. In May 1863, a reconnaissance balloon of the Army of the Potomac1 detected movement of Confederate troops across the Rappahannock River, the beginning of the campaign that led to the Battle of Gettysburg. That balloon was a precursor of air forces and strategic bombing and reconnaissance satellites.

A few hundred artillery pieces were deployed in the three-day battle of Gettysburg. What could they do? What was the war like then? . . . Ballistic projectiles, launched from the cannons that you can see all over this Gettysburg Memorial, had a range, at best, of a few miles. The amount of explosive in the most formidable of them was some twenty pounds, roughly one-hundredth of a ton of TNT.2 It was enough to kill a few people. A

But the most powerful chemical explosives used eighty years later, in World War II, were the blockbusters, so-called because they could destroy a city block. Dropped from aircraft, after a journey of hundreds of miles, each

1. Army of the Potomac: the Union army that defeated Confederate forces near the town of Gettysburg, Pennsylvania. The battle was a turning point in the Civil War.
2. TNT: a chemical compound used as an explosive.
carried about ten tons of TNT, a thousand times more than the most powerful
weapon at the Battle of Gettysburg. A blockbuster could kill a few dozen people.

At the very end of World War II, the United States used the first atomic
bombs to annihilate two Japanese cities. Each of those weapons had the
equivalent power of about ten thousand tons of TNT, enough to kill a few
hundred thousand people. One bomb.

A few years later the United States and the Soviet Union developed the
first thermonuclear weapons, the first hydrogen bombs. Some of them had
an explosive yield equivalent to ten million tons of TNT; enough to kill a few
million people. One bomb. Strategic nuclear weapons can now be launched to
any place on the planet. Everywhere on earth is a potential battlefield now.

Each of these technological triumphs advanced the art of mass murder by
a factor of a thousand. From Gettysburg to the blockbuster, a thousand times
more explosive energy; from the blockbuster to the atomic bomb, a thousand
times more; and from the atomic bomb to the hydrogen bomb, a thousand
times still more. A thousand times a thousand, times a thousand is a billion;
in less than one century, our most fearful weapon has become a billion times
more deadly. But we have not become a billion times wiser in the generations
that stretch from Gettysburg to us.

annihilate (ə-niˈə-lāt) v.
to destroy completely

thermonuclear (θərəˈmō-nōrəˈklear): based on the process of nuclear fusion, in which atomic nuclei
combine at high temperatures, releasing energy.
The souls that perished here would find the carnage of which we are now capable unspeakable. Today, the United States and the Soviet Union have booby-trapped our planet with almost sixty thousand nuclear weapons. Sixty thousand nuclear weapons! Even a small fraction of the strategic arsenals could without question annihilate the two contending superpowers, probably destroy the global civilization, and possibly render the human species extinct. No nation, no man should have such power. We distribute these instruments of apocalypse all over our fragile world, and justify it on the grounds that it has made us safe. We have made a fool’s bargain.

The 51,000 casualties here at Gettysburg represented one-third of the Confederate army and one-quarter of the Union army. All those who died, with one or two exceptions, were soldiers. The best-known exception was a civilian in her own house who thought to bake a loaf of bread and, through two closed doors, was shot to death; her name was Jennie Wade. But in the global thermonuclear war, almost all the casualties will be civilians, men, women, and children, including vast numbers of citizens of nations that had no part in the quarrel that led to the war, nations far removed from the northern mid-latitude “target zone.” There will be billions of Jennie Wades. Everyone on earth is now at risk.

Two months before Gettysburg, on May 3, 1863, there was a Confederate triumph, the Battle of Chancellorsville. On the moonlit evening following the victory, General Stonewall Jackson and his staff, returning to the Confederate lines, were mistaken for Union cavalry. Jackson was shot twice in error by his own men. He died of his wounds.

We make mistakes. We kill our own.

There are some who claim that since we have not yet had an accidental nuclear war, the precautions being taken to prevent one must be adequate. But not three years ago we witnessed the disasters of the Challenger space shuttle and the Chernobyl nuclear power plant, high-technology systems, one American, one Soviet, into which enormous quantities of national prestige had been invested. There were compelling reasons to prevent these disasters. In the preceding year, confident assertions were made by officials of both nations that no accidents of that sort could happen. We were not to worry. The experts would not permit an accident to happen. We have since learned that such assurances do not amount to much.

We make mistakes. We kill our own.

This is the century of Hitler and Stalin, evidence—if any were needed—that madmen can seize the reins of power of modern industrial states. If we are content in a world with nearly sixty thousand nuclear weapons, we are betting our lives on the proposition that no present or future leaders, military or civilian—of the United States, the Soviet Union, Britain, France, China, Israel,

4. apocalypse (ə-pö̅kˈə-tipsˈ): total devastation.
5. Challenger: an American space shuttle that exploded in 1986, killing all seven crew members.
6. Chernobyl (char-nöˈbəl): a town in the Ukraine (then part of the Soviet Union) that was the site of a major nuclear power plant accident in 1986.
India, Pakistan, South Africa, and whatever other nuclear powers there will be—will ever stray from the strictest standards of prudence. We are gambling on their sanity and sobriety even in times of great personal and national crisis, all of them, for all times to come. I say this is asking too much of us. Because we make mistakes. We kill our own. . . .

We have made a fool’s bargain. We have been locked in a deadly embrace with the Soviet Union, each side always propelled by the abundant malefactions of the other; almost always looking to the short term—to the next congressional or presidential election, to the next party congress—and almost never seeing the big picture.

Dwight Eisenhower, who was closely associated with this Gettysburg community, said, “The problem in defense spending is to figure out how far you should go without destroying from within what you are trying to defend from without.” I say we have gone too far. . . .

The Civil War was mainly about union; union in the face of differences. A million years ago, there were no nations on the planet. There were no tribes. The humans who were here were divided into small family groups of a few dozen people each. They wandered. That was the horizon of our identification, an itinerant family group. Since them, the horizons have expanded. From a handful of hunter-gatherers, to a tribe, to a horde, to a small city-state, to a nation, and today to immense nation-states. The average person on the earth today owes his or her primary allegiance to a group of something like a hundred million people. It seems very clear that if we do not destroy ourselves first, the unit of primary identification of most human beings will before long be the planet Earth and the human species. To my mind, this raises the key question: whether the fundamental unit of identification will expand to embrace the planet and the species, or whether we will destroy ourselves first. I’m afraid it’s going to be very close.

The identification horizons were broadened in this place 125 years ago, and at great cost to North and South, to blacks and whites. But we recognize that expansion of identification horizons as just. Today there is an urgent, practical necessity to work together on arms control, on the world economy, on the global environment. It is clear that the nations of the world now can only rise and fall together. It is not a question of one nation winning at the expense of another. We must all help one another or all perish together.

On occasions like this it is customary to quote homilies; phrases by great men and women that we’ve all heard before. We hear, but we tend not to focus. Let me mention one, a phrase that was uttered not far from this spot by Abraham Lincoln: “With malice toward none, with charity for all. . . .” Think of what that means. This is what is expected of us, not merely because our ethics command it, or because our religions preach it, but because it is necessary for human survival.
Here’s another: “A house divided against itself cannot stand.” Let me vary it a little: A species divided against itself cannot stand. A planet divided against itself cannot stand. And [to be] inscribed on this Eternal Light Peace Memorial, which is about to be rekindled and rededicated, is a stirring phrase: “A World United in the Search for Peace.”

The real triumph of Gettysburg was not, I think, in 1863 but in 1913, when the surviving veterans, the remnants of the adversary forces, the Blue and the Gray, met in celebration and solemn memorial. It had been the war that set brother against brother, and when the time came to remember, on the fiftieth anniversary of the battle, the survivors fell, sobbing, into one another’s arms. They could not help themselves.

It is time now for us to emulate them, NATO and the Warsaw Pact,7 Israelis and Palestinians, whites and blacks, Americans and Iranians, the developed and the underdeveloped worlds.

We need more than anniversary sentimentalism and holiday piety and patriotism. Where necessary, we must confront and challenge the conventional wisdom. It is time to learn from those who fell here. Our challenge is to reconcile, not after the carnage and the mass murder, but instead of the carnage and the mass murder.

It is time to act.

7. Warsaw Pact: an alliance of the Soviet Union and other Communist nations.
Comprehension

1. **Recall** What weapons were used in the Battle of Gettysburg?

2. **Recall** What developments in warfare occurred during and shortly after World War II?

3. **Summarize** According to Sagan, why should we reject assurances that a nuclear war will not occur?

Text Analysis

4. **Examine a Rhetorical Device** What idea does Sagan emphasize with his repetition of the statement, “We have made a fool’s bargain”?

5. **Examine an Argument** Sagan states that as society has evolved, humans have gone from identifying with small groups to identifying with enormous nation-states. How does this idea relate to the main claim of his argument?

6. **Make Inferences** What does Sagan mean when he says that “the real triumph of Gettysburg” was the behavior of surviving veterans who attended the 50th anniversary of the battle, in 1913?

7. **Analyze Inductive Reasoning** Review the graphic organizer you created as you read. Does Sagan provide sufficient support for his conclusion about nuclear weapons and security? Explain why or why not.

8. **Analyze a Conclusion** At the end of his speech, Sagan says it is “time to act” to prevent nuclear war. In a chart like the one shown, identify specific actions that individuals and groups can take in response to Sagan’s call for action.

9. **Compare Texts** Compare and contrast the techniques of argument used in Sagan’s speech and Alan Blinder’s editorial “Abolishing the Penny Makes Good Sense.”

10. **Make Conclusions** Sagan became famous for helping the general public understand scientific concepts. How well does he explain the complex issues involved with nuclear weapons? Cite evidence to support your opinion.

**What would make the world SAFER?**

Is nuclear disarmament still an important issue? Why or why not?
Vocabulary in Context

**VOCABULARY PRACTICE**

Decide whether the words in each pair are synonyms or antonyms.

1. annihilate/preserve
2. carnage/bloodshed
3. contending/cooperating
4. malice/hatred
5. precursor/aftermath
6. reconcile/antagonize

**ACADEMIC VOCABULARY IN SPEAKING**

- cite
- controversy
- convince
- objective
- statistic

Is Carl Sagan’s speech “On Nuclear Disarmament” as relevant today as it was in 1988? Share your opinion in a discussion. Support your ideas with facts and reasons to convince others that your opinion is logical. Use the Academic Vocabulary words in your discussion.

**VOCABULARY STRATEGY: SPECIALIZED VOCABULARY**

Specialized vocabulary is vocabulary specifically suited to a particular occupation or field of study. Politicians and military personnel often use specialized vocabulary when talking about war. This vocabulary includes terms such as ballistic, which refers to the movements of missiles and other weapons propelled through the air. It is often possible to figure out the meaning of a specialized vocabulary term from context. Otherwise, look up the term in a dictionary.

**PRACTICE** Write the term that matches each definition. If you need to, check a dictionary.

- arsenal
- casualties
- deploy
- disarmament
- reconnaissance

1. military people lost through death, injury, sickness, or capture
2. a stock of weapons
3. the reduction of a nation’s military forces and equipment
4. an inspection of an area to gather military information
5. to position troops or equipment in readiness for combat
Language

◆ GRAMMAR AND STYLE: Use Rhetorical Devices

Review the Grammar and Style note on page 657. Using repetition and parallel structure, as Sagan does in his speech, can reinforce important messages and ideas. Use these techniques to revise your responses to the prompt:

1. **Repeat powerful words or phrases that will draw attention to a key point.** In this example, Sagan repeats the participial phrase “divided against itself” to stress the necessity of nations working together:

   ... “A house divided against itself cannot stand.” Let me vary it a little: A species divided against itself cannot stand. A planet divided against itself cannot stand. (lines 122–124)

2. **Use repetition and parallel structure to link related ideas.** Repeating important words or phrases in a parallel grammatical structure can indicate to readers that ideas appearing at different points in the piece are related.

Notice how the revisions in blue strengthen the message in this first draft.

**STUDENT MODEL**

Sagan believes it is a mistake to seek safety in terrible weapons, trust politicians to make the right decisions, and set nation against nation.

**READING-WRITING CONNECTION**

Explore the message in “On Nuclear Disarmament” by responding to this prompt. Then use the revising tip to improve your writing.

**WRITING PROMPT**

Short Constructed Response: Write Across Texts

Is the world a safer place today than it was when Sagan gave his speech? Use Sagan’s speech and the nuclear weapons chart on page 663 to write a one- or two-paragraph response.

**REVISING TIP**

Review your response. Did you use repetition to draw attention to key points and to link related ideas? If not, revise your response.
When Carl Sagan delivered his speech “On Nuclear Disarmament” in 1988, the United States and the Soviet Union had about 60,000 nuclear weapons pointed at each other. This chart shows estimated amounts of nuclear weapons 20 years later. Note that the end of the cold war led to reductions in some nuclear stockpiles.

*Estimates of the nuclear stockpiles of these countries are much harder to make because the countries have never joined with other nations in signing the Treaty on the Non-Proliferation of Nuclear Weapons, which was established to limit the spread of nuclear weapons.

**Source:** Center for Defense Information