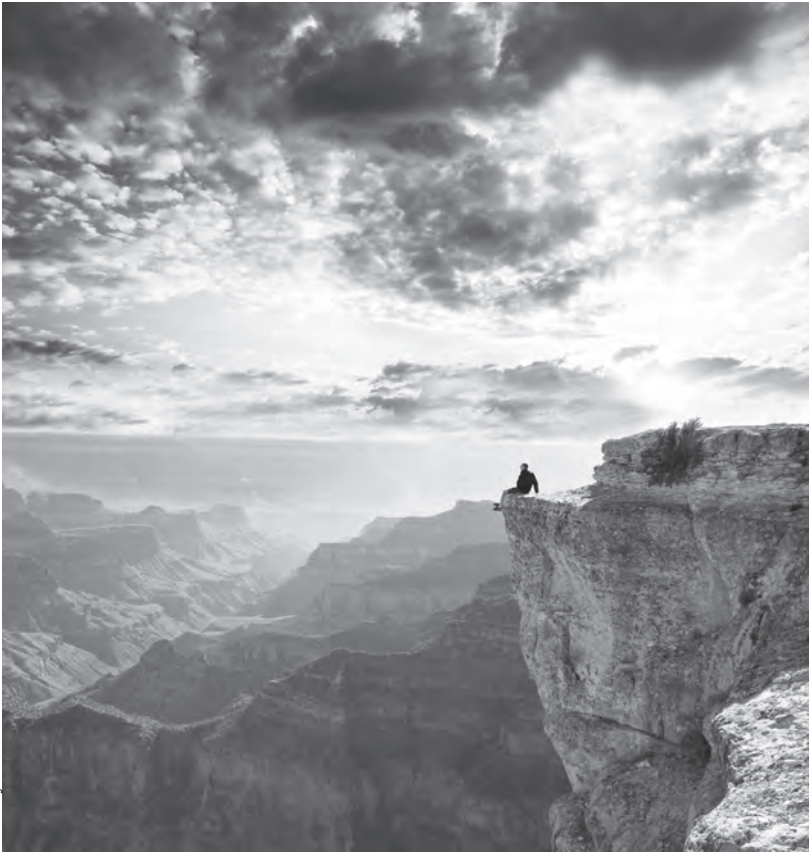


UNIT SEVEN

COOPERATION AND CONNECTION: THE INDIVIDUAL, THE SOCIETY, THE EARTH

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CHAPTER 1

SCIENCE FROM AWAY: COOPERATION

MARK M. GREEN, WESTVIEW NEWS

This reading addresses the role of cooperation in people's lives. It surprises us with the idea that cooperation may be wired in our genetic makeup. The author present Darwin's early discoveries about cooperation.

PREVIEW THE ISSUES

1. Which is a stronger need in humans: to be cooperative or to be individualistic? Explain your opinion.
2. Do you often ask for help if you need to finish a project, a task, or to succeed at something?

Mark M. Green, "Science From Away: Cooperation" *West View News* February, 2010. Copyright © 2010. Reprinted by permission.

SCIENCE FROM AWAY: COOPERATION

By *Mark M. Green*

Our bodies work using principles of cooperativity. How else could the trillions of cells we are made of work together for a common purpose to keep us alive and keep us on our chosen path^o? Much of the organic matter of which we are made comes in the form of polymers: proteins, DNA, RNA, starch, for some examples. Polymers are an ideal form of matter demonstrating the principles of cooperation—many units strung together^o have to act together. Nature's polymers are often helical, that is, coiled, like the old-fashioned shock absorbers every car used to have. Shock absorbers work by cooperation—every turn of the helix contributes to softening the blow of the bump in the road. To accomplish this task the coil has to be entirely right- or entirely left-handed. Then all the turns can work together. Nature's polymers are also entirely of a single handedness. The helical portion of all proteins is right-handed as is the double helix of DNA. That means if you look along the length of the coil, the turns twist to the right.

Darwin was perplexed by the cooperative activities he saw in nature and especially in social insects. Worker bees' labor does not lead to their own reproduction. Worker ants have no offspring and instead feed their queen's offspring. At first, Darwin thought that cooperative behavior might be fatal to his theory of natural selection, which saw individual competition as a driving force for evolution, "for survival of the fittest." However, later, Darwin conjectured that cooperation among individuals in a group could lead to enhanced survival of the group and this could be a factor working against competition among individuals in the group.

Darwin's idea about cooperation in groups is seen in military activities, which would be impossible without cooperation. Many soldiers firing their weapons in concert demonstrate the concept of Gestalt; the whole is greater than the sum of the parts. Soldiers working together are a far more powerful force than the individual soldiers fighting independently of each other. All military training enhances cooperative behavior among the soldiers. (whc.net/rjones/USN/USN_team.html)

Families, extended families^o, clans^o, and tribes and even nations where the individuals share some portion of a genetic heritage offer one reason for cooperation—so that their shared DNA will survive or have offspring^o. But even in the absence of shared DNA, coop-

eration has value. Science has come up with mathematical models supporting the value of cooperation and its role in the evolution of complex organisms and complex societies in all forms of life reaching an apex^o in humans. Biology now sees “natural cooperation” besides “natural selection” as a pillar of evolution.

Cooperation leads to amplification^o of the force necessary for survival. This was so clear to the ancient Chinese that they did not have separate words for cooperation and amplification, rather using a single symbol representing the idea that a large number of small forces yield a large force. The Japanese use this symbol today. Life and its evolution demand cooperation.

ZOOM IN ON VOCABULARY

- keep us on our chosen path (idiom): help us stay on the right course
- string together (v): put together
- extended (adj): made larger; extended family: grandparents, uncles, and aunts
- clan (n): a group of people that keeps itself separate from others
- offspring (n): children, grandchildren, those that come after parents
- reach an apex (phrase): get to the top; realize a plan, achieve a goal
- amplification (n): increase

Zoom in on Syntax

“How else could the trillion . . . ” [paragraph 1, line 1]

Structures using inversion serve to add emphasis to the idea expressed in the sentence. This structure also adds a dramatic tone to the sentence. It is used as a rhetorical question—one that does not need an answer. It only highlights the issue.

Here are some more examples: Why did you ever? How could you ever? Why else would she do it?

Write your own example. Share with your class.

4. What is the relationship between Darwin and the theory of cooperativity?
5. What reasons are given for family cooperation?
6. What are some examples of cooperation in your family?

MAKE INFERENCES

What inferences can you make about Darwin’s work?

Global Learners

If you have lived or traveled abroad, share your experiences with your class:

1. What is more socially valued in your native country—individualism or cooperation?

BLOG IT!

- What is your reaction to the cooperative principles cited in this chapter’s reading?

Website It!

- Find Internet sources that address the lack of collaboration in the work place. Choose one web article and present it to your class.

BECOME A WRITER

1. Summarize the article using the summary form in the back of the book. Peer-evaluate your work.
2. Write an essay in response to the following topics:
 - a. In your experience, have the people in your life shared their knowledge, resources, time, or money with you? Explain and illustrate your response.
 - b. In the United States, in general, each person is expected to fight for him- or herself. Some people promote this attitude because they believe that it helps success and development. Others see this attitude as an extension of individualism and selfishness. Which idea do you support and why?
 - c. Write an essay in which you make suggestions how to improve one's willingness to be cooperative and share in the classroom or in the workplace.

TIPS FOR SUCCESS: READING AND WRITING IN ANOTHER LANGUAGE

Strategies for Global Learners:

- Language learning requires practice. You need to make structures, expressions, and words be your own. By trying to make a sentence and use it in speech or in writing, you make language your own. You can achieve this by practicing to write original sentences with the vocabulary you have been studying in this textbook.

HAVE THE LAST WORD!

Write down the most memorable idea from the reading.

ON CAMPUS

Find out what your peers think.

Survey Questions

1. Are you a cooperative person?
2. Do you help your friends when they call you?
3. Do you prefer to study with classmates or alone?
4. Do you have a study group in your class?
5. Do your teachers encourage cooperation?
6. Is it important to work with others to be successful?

