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UNIT 1 The Evolutionary Perspectives

Eight articles examine evolutionary perspectives from Darwin's theories to creationism to new genetic concepts.

Unit Overview

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- 1. The Growth of Evolutionary Science**, Douglas J. Futuyma, from *Science on Trial*, Pantheon Books, 1982

Before the rise of *science*, the causes of orderly events were sought in the *divine purposes* they were thought to have served. Today, patterns and designs are seen to be the result of *natural selection*.

2
- 2. A Theory Evolves**, Thomas Hayden, *U.S. News & World Report*, July 29, 2002

While scientists have confirmed virtually all of *Charles Darwin's postulates*, new research shows that *evolution* works in ways that Darwin could not have possibly imagined.

12
- 3. Darwin's Influence on Modern Thought**, Ernst Mayr, *Scientific American*, July 2000

As Ernst Mayr points out, our conception of the world and our place in it is, at the beginning of the twenty-first century, drastically different from the *Zeitgeist*, or "spirit of the times," at the beginning of the nineteenth century. The one person most responsible for this change is *Charles Darwin*.

17
- 4. 15 Answers to Creationist Nonsense**, John Rennie, *Scientific American*, July 2002

Opponents of evolution are trying to tear down real science by setting forth a series of specious arguments. In reality, they intend to use the *intelligent-design theory* as a "wedge" in order to reopen science classroom to the discussion of *God*. This article consists of a series of rebuttals to some of the most common "scientific" arguments raised against the idea of evolution.

21
- 5. Survival of the Kindest: Of Selfish Genes and Unselfish Dogs**, Frans de Waai, from *The Ape and the Sushi Master*, Basic Books, 2001

Some evolutionary biologists flinch at calling a *behavior "altruistic,"* whereas others flinch at calling the same behavior *"selfish."* In fact, both may be right within their respective frameworks. When we freely jump from one level or *perspective* to another, we run the risk of forgetting to keep our *language* straight.

28
- 6. Curse and Blessing of the Ghetto**, Jared Diamond, *Discover*, March 1991

Tay-Sachs disease is a choosy killer, one that for centuries targeted Eastern European Jews above all others. Jared Diamond reports that, by decoding its lethal logic, we can learn a great deal about how *genetic diseases* evolve—and how they can be conquered.

34
- 7. The Saltshaker's Curse**, Jared Diamond, *Natural History*, October 1991

Physiological adaptations that at one time helped West Africans and their descendants cope with unusually high *salt loss* may now be predisposing African Americans to *hypertension* and a premature *death*.

39

8. **What You Can Learn From Drunk Monkeys**, Meredith F. Small, *Discover*, July 2002

A remarkable National Institutes of Health (NIH) study on **alcoholism** sheds insight regarding the relationship between **heredity and environment**. It turns out that an individual is just as likely to become an alcoholic from a bad childhood as from bad genes.

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UNIT 2

Primates

Nine selections examine some of the social relationships in the primate world and how they mirror human society.

Unit Overview

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9. **Machiavellian Monkeys**, James Shreeve, *Discover*, June 1991

Deception plays such an important role in primate survival that it may not simply be the result of great **intelligence**. James Shreeve indicates that it may also be a driving force behind the development of intelligence.

50

10. **What Are Friends For?**, Barbara Smuts, *Natural History*, February 1987

Barbara Smuts reports that an understanding of **friendship bonds** among baboons is not only destroying our stereotypes about monkeys in the wild, but it is also calling into question traditional views concerning the **relationships** between the **sexes** in early hominid evolution.

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11. **Fossey in the Mist**, Robert M. Sapolsky, *Discover*, February 2001

The memory of **Dian Fossey** will be forever filled with contradictions and controversy. She began as a scientist studying gorillas in the wild and quickly became a **conservationist**. Her methods, however, would ultimately lead to the murders of both the gorillas and herself.

59

12. **The Mind of the Chimpanzee**, Jane Goodall, from *Through a Window*, Houghton Mifflin, 1990

It has long been recognized that the differences in anatomy and physiology between apes and humans are a matter of degree. Because of the work of Jane Goodall, we have come to realize that there is continuity in **mental and emotional development** as well.

63

13. **Got Culture?**, Craig Stanford, from *Significant Others*, Basic Books, 2001

The **rudimentary cultural abilities** of the **chimpanzee** not only sharpens our understanding of our uniqueness as humans, but it also suggests an **ancient ancestry** for the **mental abilities** that we and the chimpanzees have in common.

68

14. **Dim Forest, Bright Chimps**, Christophe Boesch and Hedwige Boesch-Achermann, *Natural History*, September 1991

Contrary to expectations, forest-dwelling **chimpanzees** seem to be more committed to **cooperative hunting** and **tool use** than are savanna chimpanzees. Such findings may have implications for the course of human evolution.

72

15. **To Catch a Colobus**, Craig B. Stanford, *Natural History*, January 1995

When **chimpanzees** in Gombe National Park band together to **hunt** red colobus monkeys, the most important ingredient seems to be the number of males and the presence of at least one estrous female. Craig Stanford indicates that their goals appear to be more **social** than dietary.

76

16. **Disturbing Behaviors of the Orangutan**, Anne Nacey Maggioncalda and Robert M. Sapolsky, *Scientific American*, June 2002

Some adolescent male orangutans experience an arrested state of development in the presence of an adult male. Recent research indicates that, rather than being a stress-induced response (as was once thought), **delayed maturation** is actually an **alternative reproductive strategy**.

79

17. **Are We in Anthropodenial?**, Frans de Waal, *Discover*, July 1997
To endow animals with *human emotions* and *mental qualities* has long been a *scientific taboo*, but the more we learn about them, especially our closer relatives, the more it seems that there really are similarities, as Frans de Waal's research indicates.

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UNIT 3

Sex and Society

Seven articles discuss the relationship between the sexes and the evolution of a social structure.

Unit Overview

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18. **The Myth of the Coy Female**, Carol Tavaris, from *The Mismeasure of Woman*, Simon & Schuster, 1992

It may be impossible for us to observe the behavior of other species in a way that does not mirror the assumptions of our own way of life. In this light, Carol Tavaris maintains that *primate behavior* and the *theories* it generates need to be handled with care.

88

19. **The Evolution of Human Birth**, Karen R. Rosenberg and Wenda R. Trevathan, *Scientific American*, November 2001

"The difficulties of *childbirth* have probably challenged humans and their ancestors for millions of years—which means that the modern custom of *seeking assistance during delivery* may have similarly ancient roots."

92

20. **Mothers and Others**, Sarah Blaffer Hrdy, *Natural History*, May 2001

In many species, including our own, *mothers are assisted* by others in rearing their offspring. The more we adhere to this evolutionary heritage of "*cooperative breeding*," the more likely we are to raise *emotionally healthy children*.

98

21. **A Woman's Curse?**, Meredith F. Small, *The Sciences*, January/February 1999

Meredith Small reports on an anthropologist's study of the *ritual of seclusion* surrounding *women's menstrual cycles*, which has some rather profound implications regarding human evolution, certain cultural practices, and *women's health*.

104

22. **Why Women Change**, Jared Diamond, *Discover*, July 1996

The winners of evolution's race are those who leave behind the most offspring to carry on their progenitors' genes. So, asks Jared Diamond, doesn't it seem odd that human females should experience *menopause*?

108

23. **What's Love Got to Do With It?**, Meredith F. Small, *Discover*, June 1992

The *bonobos'* use of sex to reduce tension and to form *alliances* is raising some interesting questions regarding human evolution. In Meredith Small's review, this question is raised: Does this behavior help to explain the origins of our *sexuality*, or should we see it as just another primate aberration that occurred after humans and primates split from their common lineage?

113

24. **Apes of Wrath**, Barbara Smuts, *Discover*, August 1995

Whether or not males beat up females in a particular species seems to have a great deal to do with who is forming *alliances* with whom. Barbara Smuts indicates that this, in turn, has powerful implications as to what can be done about *sexual coercion* in the human species.

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UNIT 4

The Fossil Evidence

Four selections discuss some of the fossil evidence for hominid evolution.

Unit Overview

25. **Father of Us All?**, Michael Lemonick and Andrea Dorfman, *Time*, July 22, 2002
The quest to reconstruct the **hominid family tree** has just gotten more complicated. New finds from **sub-Saharan Africa** are not only **older than any other hominids** previously found, but they also conjure up an image far different from what anyone would have suspected.
26. **Scavenger Hunt**, Pat Shipman, *Natural History*, April 1984
Microscopic analyses of tooth wear and cut marks on bone, combined with an increased understanding of the advantages of **bipedalism**, point in the direction of a "**man the scavenger**" model rather than "**man the hunter**," Pat Shipman reports.
27. **Erectus Rising**, James Shreeve, *Discover*, September 1994
Most paleoanthropologists used to agree that **Homo erectus** was confined to Africa until one million years ago. James Shreeve notes that new finds and a new **dating method** are challenging that view.
28. **The Scavenging of "Peking Man,"** Noel T. Boaz and Russell L. Ciochon, *Natural History*, March 2001
Excavations from 1921 to 1982 at **Dragon Bone Hill** in China uncovered the remains of 45 individuals, **Homo erectus pekinesis**, with their tools and debris, dating from 300,000 to 600,000 years ago. The authors try to determine whether these relatives of ours used **fire**, and whether they were **cannibals, hunters, or the hunted**.



UNIT 5

Late Hominid Evolution

Six articles examine archaeological evidence of human evolution.

Unit Overview

29. **Hard Times Among the Neanderthals**, Erik Trinkaus, *Natural History*, December 1978
In spite of the coarseness of their lifestyle and the apparent **violence** between individuals, **Neanderthal** skeletal remains reveal a prehistoric record of affection and respect, and they should be accorded the status of **human beings**.
30. **When Humans Became Human**, John Noble Wilford, *New York Times*, February 26, 2002
Archaeologists have long believed that **modern human behavior** originated 40,000 years ago in Europe. However, several recent discoveries in Africa and the Middle East support the idea of an older, more **gradual evolution** of modern behavior elsewhere.
31. **Old Masters**, Pat Shipman, *Discover*, July 1990
Systematic analyses of the **cave paintings** in Europe reveal Cro-Magnons' intimate knowledge of the **animals hunted** and, perhaps, even purposeful **ritual** associated with the images.
32. **The Gift of Gab**, Matt Cartmill, *Discover*, November 1998
While the **origin of human language** is rooted in aspects of psychology and biology that we share with our close animal relatives, Matt Cartmill proposes that our kind of communication seems to be associated with **making tools and throwing weapons**.

33. **The Dating Game**, James Shreeve, *Discover*, September 1992
James Shreeve writes that newly discovered **dating methods** are challenging previous notions about the evolution of *Homo sapiens*. The accuracy of these methods, however, is still a matter of controversy. 161
34. **Archaeologists Rediscover Cannibals**, Ann Gibbons, *Science*, August 1, 1997
From digs around the world, researchers have unearthed strong new evidence of **cannibalism**. People may have eaten their own kind from the early days of human evolution through recent prehistory, as indicated by author Ann Gibbons. 166



UNIT 6

Human Diversity

Four articles examine human racial evolution and diversity.

Unit Overview

35. **The Lost Man**, Douglas Preston, *The New Yorker*, June 16, 1997
Recent skeletal findings of "Kenewick Man" indicate that the **first Americans** might not be who we think they were. Before the evidence could be adequately studied, however, the U.S. government withheld the bones. Native Americans want to rebury the bones, and archaeologists have gone to court to reclaim them. Douglas Preston asserts that, in the process, issues of **race** and **ethnicity** have been brought to a steaming head. 170
36. **Black, White, Other**, Jonathan Marks, *Natural History*, December 1994
With regard to classifying human beings, Jonathan Marks notes that the central message of anthropology is, "You may group humans into a small number of **rac**es if you want to, but biological evidence does not support it." 173
37. **Racial Odyssey**, Boyce Rensberger, *Science Digest*, January/February 1981
Despite the many attempts over the past 200 years to classify humans into separate and "pure" **rac**es, Boyce Rensberger reports that the consensus among geneticists and anthropologists is that there are overlapping differences among us that are matters of degree rather than of kind. 182
38. **The Tall and the Short of It**, Barry Bogin, *Discover*, February 1998
Rather than being able to adapt to a single environment, we can—thanks to our **genetically endowed plasticity**—change our bodies to cope with a wide variety of environments. In this light, Barry Bogin reports on research that suggests that we can use the average **height** of any group of people as a barometer of the **health** of their society. 185



UNIT 7

Living With the Past

Five articles discuss evolutionary theory and the impact of genetic heritage on our present and our future.

Unit Overview

39. **Profile of an Anthropologist: No Bone Unturned**, Patrick Huyghe, *Discover*, December 1988
Patrick Huyghe reports that the skills displayed by **physical anthropologists** and **archaeologists** in the analysis of old bones have resulted in the development of a whole new field: **forensic anthropology**. 190

40. **The Viral Superhighway**, George J. Armelagos, *The Sciences*, January/February 1998

According to George Armelagos, international travel as well as **environmental disruptions** have accelerated the occurrence of serious, new **diseases in humans**. However, protective cultural practices could provide a countervailing effect to fight the encroachments of many diseases.

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41. **Dr. Darwin**, Lori Oliwenstein, *Discover*, October 1995

Lori Oliwenstein reports that the application of **Darwin's theory of evolution** to the understanding of **human diseases** will not only help us to better treat the symptoms of diseases, but it also promises to help us understand how microbes and humans have evolved in relation to one another.

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42. **An Embarrassment of Chimpanzees**, Joseph D'Agnese, *Discover*, May 2000

"There are more than 1600 **laboratory chimps** in the United States—the last Western country that still uses them for **medical research**. A federal law promised **sanctuary** for these animals, but only a handful have found it."

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43. **Kansas Recants**, Leon Albert, *McGraw-Hill/Dushkin*, 2002

Recent efforts to limit the **teaching of evolution** in the classroom and to replace it with the concepts of "**Scientific Creationism**" or "**Intelligent Design**" serve to highlight the differences between modern science on the one hand and **simplistic folk theology** on the other.

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