普通高等教育“十一五”国家级规划教材

新世纪大学英语系列教材

总主编　秦秀白

阅读教程

主编　黄源深

COLLEGE ENGLISH

8

Learning to Read:
An English Reading Course

学生用书
Student's Book

上海外语教育出版社
外教社 SHANGHAI FOREIGN LANGUAGE EDUCATION PRESS
www.sflep.com

普通高等教育“十一五”国家级规划教材

新世纪大学英语系列教材

总主编　秦秀白

阅读教程

Learning to Read: An English Reading Course

主　编　黄源深
副主编　蔡龙权
编　者　蔡龙权　纪小凌　李天琦
　　宋学东　汪腊萍

学生用书

Student's Book

上海外语教育出版社
外教社 SHANGHAI FOREIGN LANGUAGE EDUCATION PRESS

图书在版编目（CIP）数据

阅读教程. 第8册 / 黄源深主编；蔡龙权等编. —上海：上海外语教育出版社，2012
（新世纪大学英语系列教材）
学生用书
ISBN 978-7-5446-2844-0

Ⅰ. ①阅… Ⅱ. ①黄…②蔡… Ⅲ. ①英语—阅读教学—高等学校—教材
Ⅳ. ①H319.4

中国版本图书馆CIP数据核字（2012）第160548号

出版发行：上海外语教育出版社
（上海外国语大学内） 邮编：200083
电　　话：021-65425300（总机）
电子邮箱：bookinfo@sflep.com.cn
网　　址：http://www.sflep.com.cn　http://www.sflep.com
责任编辑：吴文子

印　　刷：上海新艺印刷有限公司
开　　本：787×1092　1/16　印张 18　字数 522千字
版　　次：2013 年 1 月第 1 版　2013 年 1 月第 1 次印刷
印　　数：3 000 册

书　　号：ISBN 978-7-5446-2844-0 / H · 1385
定　　价：33.00 元

编委会名单

总　　序

2004年1月，教育部颁布了《大学英语课程教学要求（试行）》，将大学英语的教学目标确定为“培养学生的英语综合应用能力，特别是听说能力，使他们在今后工作和社会交往中能用英语有效地进行口头和书面的信息交流，同时增强其自主学习能力，提高综合文化素养，以适应我国社会发展和国际交流的需要”，提出了分层次（即“一般要求”、“较高要求”和“更高要求”）和分类指导的教学要求。与此同时，教育部在全国180所院校开展多媒体网络教学的试点，推广具有个性化学习特征的多媒体网络教学系统，并于2005年2月颁布了《全国大学英语四、六级考试改革方案（试行）》，2007年7月又下发了修订后的《大学英语课程教学要求》。这些举措进一步推动了我国高校大学英语教学全方位的改革和教学质量的全面提升。新世纪的教学改革呼唤新的教材不断诞生。这既是时代的召唤，也是历史的必然。

正是在这样的时代背景下，上海外语教育出版社于2004年初组织全国数十所高校启动了“新世纪大学英语系列教材”建设项目。项目开始之初，外教社以书面问卷、个别访谈和集体座谈等形式在全国数十所高校中进行了广泛的调查研究，并请专家对编写方案进行了多次论证。在上海外语教育出版社庄智象社长的直接领导和筹划下，经过三年多的努力，我们编写了这套“新世纪大学英语系列教材”，力图为新世纪形势下的我国大学英语教材建设做出新的尝试和努力。经教育部认定，本套教材已被列入“普通高等教育‘十一五’国家级规划教材”。

在编写过程中，我们力求体现以下一些编写理念和特色：

（一）坚持人本主义教育观。在确立“新世纪大学英语系列教材”的指导思想时，我们强调教学过程中的人的因素，强调“以学生为中心”，重视开发学习者的自我潜能，注重“情感”和“态度”在学习活动中的作用和力量，力图使学生成为“自我实现者”。与此同时，我们认为，教师必须在课堂内外发挥指导作用，指导学生学会学习。

（二）尊重外语教学的普遍规律和在国内学习英语的客观条件，充分考虑“人”、“语言”和“社会”之间存在的互为依存、互动互促、密不可分的关系，开拓学习者的跨文化交际视野，让学生置身于广阔的社会文化情景之中，养成用英语进行思维的习惯，做到学有所思、思有所得、得有所用，从而不再感到英语是身外之物，实现英语综合运用能力和学习者人格、素质的同步提升。

（三）立足国情，博采众长，充分吸收我国外语教学长期积累下来的宝贵经验和行之有效的教学方法，全面而辨证地审视国外盛行的教学理念，汲取其精髓和内涵，兼收并蓄地注入我们的教学理念中，确保教材具有更好的系统性、科学性、完整性、针对性和实用性。

（四）全面落实《大学英语课程教学要求》提出的教学原则、教学内容和所倡导的教学方法，确保“分层次教学”和“分类指导”的落实，让不同地区、不同群体、不同层次乃至不同时期的学习者各尽其能、各取所需地选用学习资源。为此，系列教材的主干教程共分8册，旨在实现“一般要求”（1—4册）、“较高要求”（3—6册）和“更高要求”（5—8册）的学习目标。不同类别的学校可根据各自的情况从中选择各自的教学起点。

（五）为了体现人本主义的教育观并贯彻“个性化学习”、“自主式学习”、“合作学习”等先进学习理念，“新世纪大学英语系列教材”在课堂教学活动和课后学习活动的设计和安排等方面为教

师和学生都提供了较为广阔的空间，教师和学生都可以根据各自的情况和面对的教学条件选择恰当的教材起点、教学模式和学习模式，实现《大学英语课程教学要求》提出的教学模式的改变，即从“以教师为中心、单纯传授语言知识与技能的教学模式”向“以学生为中心、既传授一般的语言知识与技能，更注重培养语言运用能力和自主学习能力的教学模式”的转变。

（六）在教学内容的安排上，本系列教材讲求科学性和系统性；在培养学生英语综合运用能力方面，本系列教材注重听说训练，强调听、说、读、写、译等诸方面技能协调而全面的发展；在练习设计上，本系列教材突出实用性、新颖性和可操作性。

（七）为适应新形势下我国高校英语教育的需求，“新世纪大学英语系列教材”增加了诸如“经贸类”和“文化类”的选修课教程。这些用英文撰写的选修课教程旨在拓宽学生的相关专业知识，进一步提高学生的英语思维能力和听、说、读、写、译诸方面的语言应用技能。

“新世纪大学英语系列教材”由《综合教程》、《阅读教程》、《视听说教程》、《写作教程》、《快速阅读》和选修课系列教程等部分组成。除《快速阅读》外，各教程均配有教师手册。《综合教程》和《视听说教程》配有学习光盘和电子教案；《写作教程》配有电子教案；《快速阅读》配有学习光盘。各教程虽自成体系，但理念相通、联系密切、相得益彰，为学生和教师提供了比较完整的、多元的、立体化的英语教学平台。

“新世纪大学英语系列教材”各教程及主编如下：

教材名称	主　　编
综合教程	秦秀白　（华南理工大学）
阅读教程	黄源深　（上海对外贸易学院）
视听说教程	杨惠中　（上海交通大学）
写作教程	刘海平　（南京大学）
快速阅读	束定芳　（上海外国语大学）
经贸类选修课教程	黄震华　（对外经济贸易大学）
文化类选修课教程	石　坚　（四川大学）

新世纪呼唤新教材，新教材体现新理念。和外语界的众多前辈一样，我们在特定的历史条件下做了一件我们认为有意义的工作。我们培育的这棵新苗需要更多园丁的抚育和护理。我们期待着她的成长、壮大、开花、结果。

秦秀白

前　言

《阅读教程》7–8册系《阅读教程》1–6册的延展，1–4册适应《大学英语课程教学要求》所提出的阅读教学“一般要求”的目标，5–8册仍紧扣《大学英语课程教学要求》，旨在达到《大学英语课程教学要求》所规定的“较高要求”和“更高要求”的教学目标。7–8册的难度和教学要求比5–6册更高。

教材力求体现以下特色：

1. 培养通过阅读获取信息的能力。这主要通过阅读课文和完成练习的方式来实现。练习围绕理解“中心大意”、“主要事实”和“有关细节”来设计，形式与5–6册相近，以体现延续性。

2. 训练以正常速度阅读的能力。按《大学英语课程教学要求》规定的阅读速度（每分钟70–90词），主要选文中标出了每10分钟需要完成的阅读量，使学生做到心中有数，知道自己的阅读速度是否已经达标。

3. 训练阅读过程中注意力的持久性。7–8册选文的长度远远超过前几册，目的在于训练学生的阅读耐心，为将来工作时阅读参考文献作好准备。

《阅读教程》7–8册延续5–6册的目标，在培养学生阅读理解能力和获取信息能力的同时，狠抓学生阅读速度的提高和注意力持久性的培养。7–8册主课文及练习的长度明显增加，阅读量均在4 200–6 400词之间，阅读时限为1小时左右。这种注重提高阅读速度和培养阅读耐心的尝试，在国内尚属首次。

英国专家Tony Ward对文稿的细心审读有助于保证本书的质量。

教材编写是一项艰巨的任务，有些设想又属于试验性的，错误和疏漏难以避免，恳请同行指正。

编　者

写给同学的话

每当谈论读书，人们常会引用英国学者弗朗西斯·培根的话来说明读书的功能和方法。

“读书足以怡情，足以傅彩，足以长才。”（Studies serve for delight, for ornament, and for ability.）这讲的是读书的功能。循培根的思路来看，独处幽居时，常人茫然，读书人怡情；需要论说时，常人多捉襟见肘，读书人却能高阔而傅彩；逢处事判断，常人易冲动失策，读书人则前后斟酌而长才。《新世纪大学英语系列教程》中《阅读教程》的编写秉承培根的思想，让同学们在有限的课内时间和可能的课外时间里尽可能多地读点东西，并进而引发自己读书的兴致，或专业，或课外，从而逐渐在读书中怡情、傅彩、长才。

1.《阅读教程》7–8册的选材

“读史使人明智，读诗使人灵秀，数学使人周密，科学使人深刻，伦理学使人庄重，逻辑修辞之学使人善辩。”（Histories make men wise; poets witty; the mathematics subtile; natural philosophy deep; moral grave; logic and rhetoric able to contend.）据培根对内容的宽泛思考，读书的范围当可五花八门，形形色色。事实上，要通过读书怡情、傅彩、长才，唯有广泛阅读，博览群书，方可寻各方视野形我思，求百家观点成己见。《阅读教程》7–8册的选材既参考培根的评判，又遵循《大学英语课程教学要求》对阅读教学提出的“较高要求”标准，力图培养学生在与时俱进的发展目光中读懂英语文学、新闻、公文以及科学研究论文等各种题材和体裁。

因此，《阅读教程》7–8册每册的选文在6个单元共计24篇文章的框架中包含了社会类的民生评说、政治类的竞选辩论、新闻类的时事报道、科研类的学术论文、人物类的生平描述、文学类的短篇小说等6类体裁，内容涵盖政治、社会、经济、伦理、科学、气象、城市、环境、医疗、学校、就业、音乐、绘画、电影、心理、思维、语言、人才、妇女、儿童、科幻、神奇现象等许多话题。所缺诗歌留待你自取，以成个人灵秀。

2.《阅读教程》7–8册的读法

就读书方法，培根说：“书有可浅尝者，有可吞食者，少数则须咀嚼消化。换言之，有只须读其部分者，有只须大体涉猎者，少数则须全读，读时须全神贯注，孜孜不倦。”（Some books are to be tasted, others to be swallowed, and some few to be chewed and digested; that is, some books are to be read only in parts; others to be read, but not curiously; and some few to be read wholly, and with diligence and attention.）培根的鉴别视野宽阔，分析精深，论说细致。阅读需要针对自己的目标有所选择，有所放弃，“有所为有所不为”。

读《阅读教程》7–8册各篇的方法也可仿鉴于此。同前几册一样，《阅读教程》7–8册每单元的选文分3个板块：“读取信息”（Reading for Information）、“读出乐趣”（Reading for Pleasure）和“测试你的阅读”（Test Your Reading）。粗略地看，“读取信息”和“读出乐趣”两块文字只须读其部分，

大体涉猎，找出中心大意和主要事实，而“测试你的阅读”因为要检测你的阅读结果而你又不知道要检测哪方面的内容，则须全读，且读时须全神贯注。假如细辨的话，“读出乐趣”部分也大可潜心品味，理由是要读出乐趣，首先取决于读懂有趣的内容，然后更讲究在字里行间鉴赏与品尝出或隐或显的韵味。只追求内容而忽视话语的内涵情趣是很难真正读出文章的乐趣的。

这就让我们不得不引用培根的另一句话来探讨读书的方法。“读书时不可存心诘难作者，不可尽信书上所言，亦不可只为寻章摘句，而应推敲细想。”（Read not to contradict and confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider.）诘难作者与尽信所言是两个极端，培根的想法似乎可以解释为不要事先带着敌对的眼光去读别人的文章。科学的阅读方法是敢于怀疑辨析，善于推敲细想，同时也要有宽容谦逊的态度。用寻找“真善美”的目光看待读书，读书的乐趣自在其中。

倘若说“敢于”和“善于”都不容易，那么还有一个问题可能更加困难：读书的耐心。藉读书怡情、傅彩、长才确实考验耐心，尤其在急促的社会发展中，能够静下心来读书难能可贵。《阅读教程》7–8册“读取信息”和“测试你的阅读”中每篇4 000词以上的选文不仅试图帮助你练就每分钟70–90词的阅读速度，更加重要的是在生理和心理上帮助你培养持续一小时左右动眼和动脑的承受能力。为了有效地保证这个效果，我们在选文中标出了每10分钟需要完成的阅读量，提示你的阅读进展。选文长是《阅读教程》7–8册重要的标志性特点。当然，因为注意到这样的长时间阅读并不容易，“读出乐趣”板块的2篇选文各3 000词左右，作为一个缓冲。另外，各板块后面的练习，无论是“读取信息”的综合信息问答题和综合信息摘要题，“读出乐趣”的核心内容问答题，还是“测试你的阅读”的信息分析选择题，至少都可以被用作眼动的缓冲。顺便提示一下，作为《阅读教程》7–8册与前几册的另一个标志性区别，“读取信息”的综合信息摘要题要求用中文撰写，你既可藉此提高自己的汉语能力，也可以此微调自己的语言环境，同时成就自己的概括能力。这样一举三得的读书着实可以使人充实。

培根确实说过“读书使人充实……”（Reading maketh a full man...）为了更加强这样的充实，《阅读教程》7–8册包括“读前题”在内的许多问答题都是开放性的，你的回答可以来自自己的生活，也可以参考他人的经历。“读取信息”和“读出乐趣”这2个板块还为你提供了许多有关背景信息的注释，你可以在阅读时酌情摄取，充实自己。

3. 对《阅读教程》7–8册的希望

对于不读书培根是这样看待的：“……不常读书者须欺世有术，始能无知而显有知。”（... if he read little, he had need have much cunning, to seem to know, that he doth not.）显而易见，装点门面、欺世盗名地活着读着很累很累。不过也有人认为读书本身很累，对于这个问题培根并不全然反对，但是他指出：“读书费时过多易惰……”（To spend too much time in studies is sloth...）我们衷心希望你的阅读是自然欣悦的：获取信息，增添乐趣，在不知不觉中怡情、傅采、长才。

蔡龙权

CONTENTS

Unit One

PART I Reading for Information

Pre-reading Questions

1. Do you think that animals are able to think too?
2. Which animal you know is very intelligent?

TEXT

Animal Minds

By *Virginia Morell*

1 In 1977 Irene Pepperberg, a recent graduate of Harvard University, did something very bold. At a time when animals still were considered automatons, she set out to find what was on another creature's mind by talking to it. She brought a one-year-old African gray parrot she named Alex into her lab to teach him to reproduce the sounds of the English language. "I thought if he learned to communicate, I could ask him questions about how he sees the world."

2 When Pepperberg began her dialogue with Alex, who died last September at the age of 31, many scientists believed animals were incapable of any thought. They were simply machines, robots programmed to react to stimuli but lacking the ability to think or feel. Any pet owner would disagree. We see the love in our dogs' eyes and know that, of course, Spot has thoughts and emotions. But such claims remain highly controversial. Gut instinct is not science[1], and it is all too easy to project human thoughts and feelings onto another creature. How, then, does a scientist prove that an animal is capable of thinking—that it is able to acquire information about the world and act on it?

automaton /ɔːˈtɒmətən/ *n.* 自动机器

spot /spɒt/ *n.* 斑头鸽

3 "That's why I started my studies with Alex," Pepperberg said. They were seated—she at her desk, he on top of his cage—in her lab, a windowless room about the size of a boxcar, at Brandeis University. Newspapers lined the floor; baskets of bright toys were stacked on the shelves. They were clearly a team—and because of their work, the notion that animals can think is no longer so fanciful.

stack /stæk/ *v.* 堆积，堆放于

4 Certain skills are considered key signs of higher mental abilities: good memory, a grasp of grammar and symbols, self-awareness, understanding others' motives, imitating others, and being creative. Bit by bit, in ingenious experiments, researchers have documented these talents in other species, gradually chipping away at what we thought made human beings distinctive while offering a glimpse of where our own abilities came from.[2] Scrub jays know that other jays are thieves and that stashed food can spoil; sheep can recognize faces; chimpanzees use a variety of tools to probe termite mounds and even use weapons to hunt small mammals; dolphins can imitate human postures; the archerfish, which stuns insects with a sudden blast of water, can learn how to aim its squirt simply by watching an experienced fish perform the task. And Alex the parrot turned out to be a surprisingly good talker.

motive /'məʊtɪv/ *n.* 动机
ingenious /ɪn'dʒi:njəs/ *adj.* 巧妙的
scrub jay 灌丛鸦
stash /stæʃ/ *v.* 贮藏
termite mound 白蚁穴
mammal /'mæməl/ *n.* 哺乳动物
dolphin /'dɒlfɪn/ *n.* 海豚
archerfish /'a:tʃəfɪʃ/ *n.* 射水鱼
blast /bla:st/ *n.* 一股（水流）
squirt /skwɜ:t/ *n.* 细的喷流

5 Thirty years after the Alex studies began, Pepperberg and a changing collection of assistants were still giving him English lessons. The humans, along with two younger parrots, also served as Alex's flock, providing the social input all parrots crave. Like any flock, this one—as small as it was—had its share of drama. Alex dominated his fellow parrots, acted huffy at times around Pepperberg, tolerated the other female humans, and fell to pieces over a male assistant who dropped by for a visit. ("If you were a man," Pepperberg said, after noting Alex's aloofness toward me, "he'd be on your shoulder in a second, barfing cashews in your ear.")

flock /flɒk/ *n.* 鸟群
crave /kreɪv/ *v.* 渴望
huffy /'hʌfɪ/ *adj.* 发怒的
barf /ba:f/ *v.* 呕吐
cashew /kæ'ʃu:/ *n.* 腰果

6 Pepperberg bought Alex in a Chicago pet store. She let the store's assistant pick him out because she didn't want other scientists saying later that she'd deliberately chosen an especially smart bird for her work. Given that Alex's brain was the size of a shelled walnut, most researchers thought Pepperberg's interspecies communication study would be futile.

walnut /'wɔ:lnət/ *n.* 胡桃

7 "Some people actually called me crazy for trying this," she said. "Scientists thought that chimpanzees were better subjects, although, of course, chimps can't speak."

chimpanzee /ˌtʃɪmpən'zi:/ *n.* 黑猩猩
chimp /tʃɪmp/ *n.* 黑猩猩
bonobo/'bɒnəbəʊ/ *n.* 倭黑猩猩
gorilla /gə'rɪlə/ *n.* 大猩猩

8 Chimpanzees, bonobos, and gorillas have been taught to use

sign language and symbols to communicate with us, often with impressive results. The bonobo Kanzi, for instance, carries his symbol-communication board with him so he can "talk" to his human researchers, and he has invented combinations of symbols to express his thoughts. Nevertheless, this is not the same thing as having an animal look up at you, open his mouth, and speak.

9 Pepperberg walked to the back of the room, where Alex sat on top of his cage preening his pearl gray feathers. He stopped at her approach and opened his beak.

preen /priːn/ *v.*（鸟）用嘴整理

10 "Want grape," Alex said.

11 "He hasn't had his breakfast yet," Pepperberg explained, "so he's a little put out."

put out 使不高兴

12 Alex returned to preening, while an assistant prepared a bowl of grapes, green beans, apple and banana slices, and corn on the cob.

cob /kɒb/ *n.* 玉米棒

13 Under Pepperberg's patient tutelage, Alex learned how to use his vocal tract to imitate almost one hundred English words, including the sounds for all of these foods, although he calls an apple a "banerry."

tutelage /'tjuːtɪlɪdʒ/ *n.* 监护

14 "Apples taste a little bit like bananas to him, and they look a little bit like cherries, so Alex made up that word for them," Pepperberg said.

15 Alex could count to six and was learning the sounds for "seven" and "eight." ***(10 min)***

16 "I'm sure he already knows both numbers," Pepperberg said. "He'll probably be able to count to ten, but he's still learning to say the words. It takes far more time to teach him certain sounds than I ever imagined."

17 After breakfast, Alex preened again, keeping an eye on the flock. Every so often, he leaned forward and opened his beak: "Ssse ... won."

18 "That's good, Alex," Pepperberg said. "Seven. The number is seven."

19 "Ssse ... won! Se ... won!"

20 "He's practicing," she explained. "That's how he learns. He's thinking about how to say that word, how to use his vocal tract to make the correct sound."

21 It sounded a bit mad, the idea of a bird having lessons to practice, and willingly doing it. But after listening to and watching Alex, it was difficult to argue with Pepperberg's explanation for his behaviors. She wasn't handing him treats for the repetitious work or rapping him on the claws to make him say the sounds.[3]

repetitious /ˌrepɪ'tɪʃəs/ *adj.* 重复的

rap /ræp/ *v.* 敲，叩

22 "He has to hear the words over and over before he can correctly imitate them," Pepperberg said, after pronouncing "seven" for Alex a good dozen times in a row. "I'm not trying to see if Alex can learn a human language," she added. "That's never been the point. My plan always was to use his imitative skills to get a better understanding of avian cognition."

avian /'eɪvɪən/ *adj.* 鸟类的

23 In other words, because Alex was able to produce a close approximation of the sounds of some English words, Pepperberg could ask him questions about a bird's basic understanding of the world. She couldn't ask him what he was thinking about, but she could ask him about his knowledge of numbers, shapes, and colors. To demonstrate, Pepperberg carried Alex on her arm to a tall wooden perch in the middle of the room. She then retrieved a green key and a small green cup from a basket on a shelf. She held up the two items to Alex's eye.

approximation /əˌprɒksɪ'meɪʃən/ *n.* 近似

perch /pɜːtʃ/ *n.* 栖木

24 "What's same?" she asked.

25 Without hesitation, Alex's beak opened: "Co-lor."

26 "What's different?" Pepperberg asked.

27 "Shape," Alex said. His voice had the digitized sound of a cartoon character. Since parrots lack lips (another reason it was difficult for Alex to pronounce some sounds, such as "ba"), the words seemed to come from the air around him, as if a ventriloquist were speaking. But the words—and what can only be called the thoughts—were entirely his.

digitize /'dɪdʒɪtaɪz/ *v.* 将…数字化

ventriloquist /ven'trɪləkwɪst/ *n.* 口技表演者

28 For the next 20 minutes, Alex ran through his tests, distinguishing colors, shapes, sizes, and materials (wool versus wood versus metal). He did some simple arithmetic, such as counting the yellow toy blocks among a pile of mixed hues.

hue /hjuː/ *n.* 色彩

29 And, then, as if to offer final proof of the mind inside his bird's brain, Alex spoke up. "Talk clearly!" he commanded, when one of the younger birds Pepperberg was also teaching mispronounced the word "green." "Talk clearly!"

30 "Don't be a smart Aleck," Pepperberg said, shaking her head at him. "He knows all this, and he gets bored, so he interrupts the others, or he gives the wrong answer just to be obstinate. At this stage, he's like a teenage son; he's moody, and I'm never sure what he'll do."

obstinate /'ɒbstɪnət/ *adj.* 倔强的

moody /'muːdɪ/ *adj.* 情绪化的

31 "Wanna go tree," Alex said in a tiny voice.

32 Alex had lived his entire life in captivity, but he knew that beyond the lab's door, there was a hallway and a tall window framing a leafy elm tree. He liked to see the tree, so Pepperberg put

her hand out for him to climb aboard. She walked him down the hall into the tree's green light.

33 "Good boy! Good birdie," Alex said, bobbing on her hand.

34 "Yes, you're a good boy. You're a good birdie." And she kissed his feathered head.

35 He was a good birdie until the end, and Pepperberg was happy to report that when he died he had finally mastered "seven."

36 Many of Alex's cognitive skills, such as his ability to understand the concepts of "same" and "different," are generally ascribed only to higher mammals, particularly primates. But parrots, like great apes (and humans), live a long time in complex societies. And like primates, these birds must keep track of the dynamics of changing relationships and environments.

37 "They need to be able to distinguish colors to know when a fruit is ripe or unripe," Pepperberg noted. "They need to categorize things—what's edible, what isn't—and to know the shapes of predators. And it helps to have a concept of numbers if you need to keep track of your flock, and to know who's single and who's paired up. For a long-lived bird, you can't do all of this with instinct; cognition must be involved."

38 Being able mentally to divide the world into simple abstract categories would seem a valuable skill for many organisms. Is that ability, then, part of the evolutionary drive that led to human intelligence? *(20 min)*

39 Charles Darwin, who attempted to explain how human intelligence developed, extended his theory of evolution to the human brain: Like the rest of our physiology, intelligence must have evolved from simpler organisms, since all animals face the same general challenges of life. They need to find mates, food, and a path through the woods, sea, or sky—tasks that Darwin argued require problem-solving and categorizing abilities. Indeed, Darwin went so far as to suggest that earthworms are cognitive beings because, based on his close observations, they have to make judgments about the kinds of leafy matter they use to block their tunnels. He hadn't expected to find thinking invertebrates and remarked that the hint of earthworm intelligence "has surprised me more than anything else in regard to worms."

40 To Darwin, the earthworm discovery demonstrated that degrees of intelligence could be found throughout the animal kingdom. But the Darwinian approach to animal intelligence was cast aside in the

bob /bɒb/ *v.* 上下快速移动

ascribe /əs'kraɪb/ *v.* 把…归因于
primate /'praɪmeɪt/ *n.* 灵长目动物
dynamics /daɪ'næmɪks/ *n.* 动态

organism /'ɔːgənɪzəm/ *n.* 生物

invertebrate /ɪn'vɜːtɪbrət/ *n.* 无脊椎动物