The Alex Studies: Cognitive and Communicative Abilities of Grey Parrots

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Can a parrot understand complex concepts and mean what it says? Since the early 1900s, most studies on animal-human communication have focused on great apes and a few cetacean species. Birds were rarely used in similar studies on the grounds that they were merely talented mimics--that they were, after all, "birdbrains." Experiments performed primarily on pigeons in Skinner boxes demonstrated capacities inferior to those of mammals; these results were thought to reflect the capacities of all birds, despite evidence suggesting that species such as jays, crows, and parrots might be capable of more impressive cognitive feats.

Twenty years ago Irene Pepperberg set out to discover whether the results of the pigeon studies necessarily meant that other birds--particularly the large-brained, highly social parrots--were incapable of mastering complex cognitive concepts and the rudiments of referential speech. Her investigation and the bird at its center--a male Grey parrot named Alex--have since become almost as well known as their primate equivalents and no less a subject of fierce debate in the field of animal cognition. This book represents the long-awaited synthesis of the studies constituting one of the landmark experiments in modern comparative psychology.

The Alex Studies: Cognitive and Communicative Abilities of Grey Parrots Details

Date	:	Published April 30th 2002 by Harvard University Press (first published 2000)
ISBN	:	9780674008069
Author	:	Irene M. Pepperberg
Format	:	Paperback 448 pages
Genre	:	Science, Animals, Birds, Nonfiction, Psychology, Environment, Nature, Humanities, Language

From Reader Review The Alex Studies: Cognitive and Communicative Abilities of Grey Parrots for online ebook

Diana says

I have read several accounts of animal language experiments. This is the one I enjoyed the most. Not only does Pepperberg describe her methods for teaching a parrot to communicate, as well as noting similarities to human children learning language and the differences, she also gives fun and fascinating glimpses into Alex's personality.

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dragonhelmuk says

Tgift, really fun but dense book about Alex the parrot and the codes he learnt to communicate with humans. It was written while he was still alive, so it's not fully up to date. The writing is also quite dense, using lots of psychological ideas and terminology, although Pepperberg explains these as she goes.

I might have preferred a more anecdotal book, but I loved how authoritative the book could be. The experiments Alex participated in seem to show at a fundamental level that non-mammal species can learn advanced cognitive processes and even the codes of language. Language is the subject of most of the book. Alex's language was intentional, referential and creative. He could count and knew the difference between different colours, matters and sizes. He even knew which qualities were colours and which were matters, e.g. - he knew that blue and green are colours, but metal and hide were matters, and that these are different kinds of quality.

Pepperberg compares Alex's abilities to those of children at various levels, but also to the great apes and dolphins. The book is sufficiently technical that in the introductions to each of the sections you barely go a sentence without a citation. That was actually another really great part of the book for me, Pepperberg obviously knows cognitive psychology really well, and since she starts with the basics each time I got a real overview of cognitive psychological theory.

The only trouble with the book is it was a bit dense. There were parts I hardly understood, and subtle distinctions which I think escaped me. I expect I'm not the target audience for the book though, so that's okay.

Four quotes, summing up the best parts:

{Piaget’s cognitive development conservation tests on birds}
Fred, the macaw, was most cooperative; he was fully flighted and flew to the test site when experimenters entered his house. He provided an arresting interruption during Task 13: Rather than repeat the task, he flew from the test site to the floor to search beneath the coffee table, where he had seen his owner place a seed cup before testing began.
...
When Griffin was 33 weeks old, his food preferences stabilized, so we could test this possibility [whether he would be surprised when his favourite snack was switched]. On his first trial, we presented a cashew (a favored item) but hid a less desired Bird Diet nugget during a successive invisible displacement. Griffin upended the final box and stared at the pellet. He immediately turned over the other boxes, then ran to the experimenters. He repeated this behavior on a trial with a different box as the final hiding place. We then

replicated the procedure without substitution; Griffin uncovered and ate the cashew without continuing his search.

Before testing Alex, we reacquainted him with the procedures because he had not had such tasks in several years. On a standard Task 14 trial, he promptly chose the last screen and obtained a cashew. We then administered Task 16: After upending the box and finding a pellet, Alex turned from the apparatus to the experimenters, narrowing his eyes to slits, a behavior we have come to interpret as "anger."' To ensure cooperation on the next trial, we gave him the expected nut. His reaction to finding a pellet on the final trial was similar to his reaction on the first, except that he banged his beak on the table-another sign of frustration or displeasure.

{true referent language vs conceptual or operant association}
I had two reasons for teaching "want" and for studying how Alex acquired and used the term. First, I needed to determine whether, when he incorrectly identified objects with labels for more favored items, he was attempting to obtain treats rather than making errors (see Chapter 3). Specifically, if I could separate requests from errors, I would have a better indication of Alex's labeling capacity (Premack 1976). Second, I wanted to determine the extent of his communicative competence-a term generally defined as the ability to convey intent and to respond to the intent of others (Fay and Schuler 1980; see Smith 1991 for a discussion in terms of information processing). Could Alex convey his wants and needs by means of what to him was an artificial communication system? Given that his most frequent identification errors involved labels for treats (e.g., foods not freely available, such as nuts) or items with which he generally interacted for extended periods of time (e.g., corks he chewed to shreds), his behavior suggested some level of intent and thus communicative competence. Also, he would often toss an object he had identified and received from a trainer and immediately produce the label for a more favored object or food. Alex thus seemed a good subject for studying whether a nonhuman might use "want" in a referential, intentional way.
...
I also suggest that some spontaneous combinations of signing chimpanzees-such as use of "water-bird" on the appearance of a swan (Fouts and Rigby 1977)-fit into the contextual/
conceptual category. The chimpanzee has some concept of what constitutes a bird (wings, beak, etc.), of what constitutes water (wetness, etc.), and the context (interaction with humans) in which labeling occurs. Without further information about how such a term is used, however, we cannot designate it as referential.

{Linguistic creativity}
One incident, involving his response to apples, nevertheless suggests that Alex has some capacity for intentional creativity (Pepperberg 1990c). We were examining the effect of another parrot's presence during training and were limited to using a colleague's pet-one that did not talk and would attend only if we used her favorite food, apples. We thus made an exception to our rule against training food labels, and in fall 1984 began training "apple." At that time Alex already used the labels "banana," "cherry," and "grape." During formal sessions, he began to produce a /p/. At the end of the season for fresh apples, he refused these fruits, and his vocalizations remained at this level. We thus removed apples from training and the laboratory. Apples were reintroduced in the spring, were eaten, and /p/ reappeared in the first training session. During the second week of training, however, Alex looked at the fruit, said, "Banerry ... I want banerry," and snatched a bite. He not only persistently identified the fruit as "banerry" in subsequent sessions, but also slowed production and sharpened his elocution ("ban-err-eeee"), much as trainers do when teaching a new label (Pepperberg 1990c).

{Fun anecdotes}
My students and I have also successfully mapped many of Alex's requests for information (Pepperberg 1990c). Thus whether or not his queries "What's that?" "What color?" and so forth, are intentional, we treat them as such. Although Alex repeatedly asked about the shape of wooden plant stakes ("long" wood), round objects ("no-corner"), or the label for the board above his gym ("shelf'), he never acquired the appropriate labels. He did, however, learn "grey" by querying a student about the color of his reflection in a mirror

(Pepperberg 1983b), and began uttering "rock" after querying us about a lava-stone beak conditioner he repeatedly tossed from the top of his cage. We answered his query ("What's that?") about covers in the Piagetian object permanence study (Chapter 10) with "box"; he produced "bock" (Pepperberg and Kozak 1986). "Bock" and "box" are now used interchangeably to label square or rectangular containers. After asking about the vegetable we were eating and its color, he began to ask for "carrot" and acquired functional use of that label and of "orange." He identified novel "grey" and "orange" objects, on first trials, without subsequent training (Pepperberg 1990c); few errors were made on later identifications (Table 13.2).6

Morgan says

Read awhile back, ut need to reread. Didn't finish it. Sort of a technical training manual for CAGs, particulary for Alex and Ms. Pepperberg's research parrots/friends. Very useful as we hav a CAG--however I didn't follow through. Need to reread it.

Petra CigareX says

This is an extremely academic book, deep, readable but not really entertaining. The other book Dr Pepperberg wrote, Alex & Me: How a Scientist and a Parrot Discovered a Hidden World of Animal Intelligence--and Formed a Deep Bond in the Process, when Alex died a few years ago is exactly the opposite, very entertaining but not enough rigorous scientific research. Maybe one day there will be one in the middle!

John Baker says

Thoughtfully and thoroughly researched, entertaining, yet extremeley academically written. Not an easy read, but for those interested in animal cognition, this is a must have. Dr. Irene Pepperberg has, and always will be my hero in the field of animal psychology. R.I.P., Alex.

Carol says

I read this book a long time ago, when it was new, and thought I would reread it.

The information about Alex remains fascinating, but this time I was somewhat put off by the use of jargon. (Why say allospecific instead of cross-species, for example?) Still, I did appreciate the careful scientific view of what the Alex studies can tell us. And it was interesting also, to follow her analysis of why the methods used for training Alex were so successful, when other experimenters failed to get birds to communicate with people the way Alex could.

African Greys are excellent mimics, and many of the videos (on you-tube) show mostly rote memorization. But I know that sometimes birds really do use their verbal skills in ways that require something like thinking skills.

Our Grey repeats a lot of things my husband has said. But he also does some surprising things with words.

He had learned to sing the song from the movie South Pacific, about Bloody Mary, who was always "chewing betel nuts." One day, he varied it by replacing the name Mary with the name of one of our other parrots. I'm not sure he had any clue as to what sort of thing a betel nut might be, but it seemed that he know Mary was someone's name, and he put in somebody else's name.

It will be quite a while before I read this again, but it stays on our shelves, because my husband read it too.

Laura says

DNF. It seems excellent, but it's too technical for me. I'm going to try her more general-audience book about Alex.

Maureen says

GREAT INFORMATION! But a very tedious read... As a reseacher interested in the topc or replicating her studies, it's a must see; I gained a lot out of it in this sense.

Emily says

This is the sciency companion to Alex and Me, which I believe should actually be read first even though it was published later. Alex and Me is not only more fun because it is centered around anecdotes which were often outside testing, but it also provides some groundwork for who Irene Pepperberg and Alex are as individuals, and thus explains some things which are otherwise rather hard to understand in The Alex Studies. Knowing the personal motivations and connections between the trainers and their subjects also provides a foundation which makes The Alex Studies overall more interesting.
That said, in itself The Alex Studies is fairly thorough and methodical in explaining what experiments were done, how they were done and why without being overly tedious about it. There are a mountain of references to other authors, books and experiments, but not knowing who these are isn't too much of a handicap (however, reading the notes when the numbers for them show up is pretty essential, so expect to flip to the back of the book an awful lot).
I definitely appreciated that the vaguest, perhaps least interesting studies were at the back of the book, and that the author was always clear about things which were theorized but not known, and was very careful in exactly what conclusions she drew from each study.
Most of all, I appreciated that the book never wavered from its subject, and did not go off on any little tangents about the author's life or personal opinions on various matters. She saved all of that for Alex and Me, which is where such things belong.
With the exception of chapters 15-16 (which discuss the mechanics of parrot sound production), I found all of the material to be relevant to my interests. The book is exactly what it purports to be by its title: a study of the cognitive and communicative abilities of grey parrots, and one should expect nothing more or less of it.
It's no mystery why Alex and Me is more popular. For one thing it is cheaper on average, but more importantly it is a storybook about a scientist and her parrot, told in a personal way, whereas The Alex Studies is a scientific work, aimed at people interested in such topics. I am interested in such topics, and yet I will restate the fact that I am glad I read Alex and Me first, as I think that makes The Alex Studies much more interesting and comprehensible.

Mark says

If you are looking for more than a series of scientific papers which read rather dryly, then perhaps this book isn't for you. I picked it up so I might learn a little science which might help me to better understand my African Grey, Buddy. To date, he hasn't yet responded to any of the techniques used in the book for training Alex, perhaps because he was already three years old when I bought him. Having said that, it does help me to be aware that he has cognitive capacities that far exceed the near-mindless ability to "parrot." Each time he says "hello" to me when I come home in the evening, or whenever he imitates my dog whistle while I am playing with the dog, it demonstrates that he is a sentient being, albeit on a different level.

Jennifer says

A fascinating study of the process of language acquisition in parrots, Irene Pepperberg's text provides very thorough context for her experiments with Alex the African gray and explains in great detail what she was able to learn from them. My one criticism of this book is that it is very academic in nature. Clearly Peppererg has had to defend her theories many times over the years and therefore explains in painstaking detail her scientific methods and conclusions. While I appreciated the text for what it is, I also felt that, from the casual reader's perspective, it would have been nice to read more anecdotal details about Irene's work with Alex. That said, I found *The Alex Studies* an absorbing and thought-provoking read.

Jacob says

Dr. Pepperberg is a pioneer in the field of avian cognition and language development. Her work with Alex was groundbreaking and created the first crack in the bird brain stereotype. While at times a heavy and technical book, “The Alex Studies” is an incredibly detailed yet readable overview of her work with Alex. Truly shines a light on these amazing animals who are more like us than some might be willing to think. Alex not only learned a human based communication code but could use it functionally and referentially, form class categorizations, understand absence of information, and count, among many other remarkable achievements. Highly recommend for anyone interested in Avian cognition.