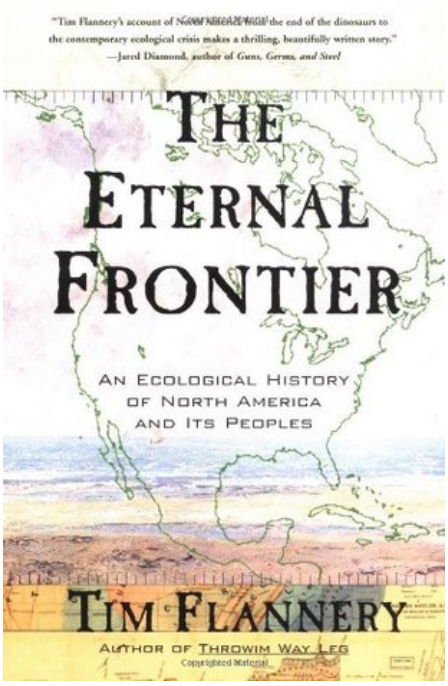

The Eternal Frontier: An Ecological History of North America and Its Peoples

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In The Eternal Frontier, world-renowned scientist and historian Tim Flannery tells the unforgettable story of the geological and biological evolution of the North American continent, from the time of the asteroid strike that ended the age of dinosaurs 65 million years ago, to the present day. Flannery describes the development of North America's deciduous forests and other flora, and tracks the immigration and emigration of various animals to and from Europe, Asia, and South America, showing how plant and animal species have either adapted or become extinct. The story takes in the massive changes wrought by the ice ages and the coming of the Indians, and continues right up to the present, covering the deforestation of the Northeast, the decimation of the buffalo, and other facets of the enormous impact of frontier settlement and the development of the industrial might of the United States. Natural history on a monumental scale, The Eternal Frontier contains an enormous wealth of fascinating scientific details, and Flannery's accessible and dynamic writing makes the book a delight to read. This is science writing at its very best -- a riveting page-turner that is simultaneously an accessible and scholarly trove of incredible information that is already being hailed by critics as a classic. "Tim Flannery's account ... will fascinate Americans and non-Americans alike." -- Jared Diamond, author of Guns, Germs, and Steel "No one before Flannery ... has been brave enough to tackle the whole pageant of North America." -- David Quammen, the New York Times Book Review "Tim Flannery's book will forever change your perspective on the North American continent ... Exhilarating." -- John Terborgh, The New York Review of Books "Full of engaging and attention-catching information about North America's geology, climate, and paleontology." -- Patricia Nelson Limerick, the Washington Post Book World "Natural history par excellence." -- Kirkus Reviews (starred review) "This gutsy Aussie may have read our landscape and ecological history with greater clarity than any native son." -- David A. Burney, Natural History "A fascinating, current, and insightful look at our familiar history from a larger perspective." -- David Bezanson, Austin-American Statesman "The scope of [Flannery's] story is huge, and his research exhaustive." -- Lauren Gravitz, The Christian Science Monitor

The Eternal Frontier: An Ecological History of North America and Its Peoples Details

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Its Peoples Tim Flannery

From Reader Review The Eternal Frontier: An Ecological History of North America and Its Peoples for online ebook

Jimmy Videle says

The fossil record of our history in North America is so limited that it would be hard to draw conclusions on our mammalian past. But a prevailing view of Tim Flannery's work is that instead of species evolving in North America some came over from Beringia or the Bering Strait over 10,000,000 years ago, supposedly like people did about 15,000 years ago. My question would be Why would that be?, or better would be that We are writing fiction for science to try and create a history based on in some cases three teeth. (as is the case of the North American Camel, that supposedly migrated all the way from Africa...

Bruce says

Most of the book is a solid but dry description of the floral/faunal history of N. America from about 65 mill. yrs. ago to the present. There is a lot of interesting information but the narration is poor; too much of this material reads something like "animal X migrated over pathway y to get to N. America z million years ago." The final 50 pages or so is a typical misplaced screed against the standard foe (hint: males of European ancestry) who have destroyed every aspect of N. America's ecology etc. Words from a single page: "rape", "extirpate", "stupid and unforgivable", "mindless development", "catastrophe", "culprits". I know the perpetrators were/are the devil incarnate, as I've read many times - I don't need to see this stuff any more. (Spraying vitriol is not the way to improve things.)

Guy says

Not as good as his brilliant "The Future Eaters" about Australia, but still very good. Flannery's basic thesis is that North America has been "the frontier" for one species after another ever since that "Most unfortunate day for North America 65 million years ago" when a massive meteorite struck in the Gulf of Mexico and wiped out almost all life in North America south of the Arctic Circle.

For millions of years thereafter, as one land bridge after another opened and closed, new species arrived and then displaced or found an accomodation with those already there. The last, and most destructive, of these was the Clovis culture of Homo Sapiens some 13,000 years ago, who in all likelihood wiped out almost all of North America's megafauna in a thousand bloody years (although ultimately we of Homo Europa may end up outdoing our forerunners by nickel and diming many more smaller animals and plants into extinction).

There are aspects of the book that will not appeal to all readers. The first half is basically a long list of descriptions of the arrival, rise, and fall of in the meantime mostly extinct animal and plant families, which, if you were never the sort to get excited when reading about short-faced bears, giant ground sloths, mastodons, or sabre toothed cats, might drag. The last sixth, dealing with the ecological sins of post-1800 America is fairly scathing and will no doubt irritate the "my country right or wrong" crowd. But anyone who quits early or even skips a chapter will do themselves a disservice -- there are so many interesting observations along the way.

So, read "The Future Eaters" first, then come back to this one.

Adam says

I'd read fragments of North America's story elsewhere and become intrigued. I knew, for instance, that bison were not "from" here in deep time, but horses were, and now the situation had ironically been restored (kind of) to its original state. I knew there used to be a rich mammalian fauna that was killed off and largely replaced by Eurasian species at the end of the Pleistocene. But these were just hints of a much larger story, and I wanted to go deeper and see the complete picture.

The Eternal Frontier was exactly the book I'd been looking for, and it for the most part lived up to its promise. It links all the disparate bodies of research - North American paleontology, geology, paleoecology and climatology, and history - into one big environmental history of the continent. It begins with the bottleneck 65 mya at the Chicxulub impact, when the continent was left with most of its niches open. Flannery traces the process of recovery from that event, with its strangely deciduous trees in tropical climates and rapidly diversifying mammals. He moves on to cover the various migration events between North America and its neighbors - first Europe, then Eurasia many many times, and finally once with South America. The origin of each mammal group and its peregrinations back and forth across the continents illustrates the historic depth of discussions of "native" species. Horses and camels evolved here, migrated to Eurasia, went extinct here (except llamas and alpacas) and returned with humans. There are also a lot of bite-sized explanations for modern phenomena, which was a treat. The coevolution between squirrels and nut trees, which resulted in North America possessing among the best suite of edible nuts in the world, stuck out to me. I'm interested in restoring a nut-based diet in North America.

Overall, the book is a superb history. Going much deeper into the past than most environmental histories, it gives an unusually strong sense of the age and majesty of the continent and of evolution. Unlike other books with similarly deep timescales Life: A Natural History of the First Four Billion Years) it is place-specific. That combination of traits makes it an unparalleled text for deep ecology connectivity-thinking. Connie Barlow thought so much of it that she turned it into a seemingly much too long and detailed children's activity. As she puts it, "any telling less than this is shallow ecological history."

For all the awesome material here, there are a few flaws. Flannery concentrates heavily on mammals, with a few pages dedicated to reptiles, amphibians, and birds. He did talk about trees a fair amount, but in general plants were nearly absent, to the extent that he barely noted the emergence of grasses. Extending a similar net to plant evolutionary histories might be more difficult - I'm sure the research isn't nearly as thorough - but it would be appreciated.

In Barlow's review, she praises Flannery's "breathtakingly beautiful prose." Flannery's a fine prose stylist, but this is gross hyperbole. It is serviceable, but not especially eloquent.

I found the central theme a bit weak for some reason. Barlow is deeply taken by it, and I can see why, but Flannery didn't pull it off I think as well as he might have. It is essentially the message of Barry Lopez's Rediscovery of North America (EuroAmericans are trashing the continent because they treat it as exploitable frontier, not as long-term home) applied fractally across deep time. The continent was shaped by ecological release after the Chicxulub impact, and constantly altered by waves of immigrants coming in and out of larger Eurasia. Paleo-indians (Flannery is strongly in the Clovis-first camp, btw) are just a more recent expression of this theme, which of course reaches its apogee in the modern industrial US.

The culmination of this theme was a discussion of interesting modern issues - what to do about non-native plants, whether we ought to exercise prejudice against non-native plants, and most intriguingly, whether to introduce surrogates for the keystone roles we lost in the Pleistocene extinctions and earlier (lions, cheetahs, giraffes, elephants, camels, wild horses). I suppose these are each rich topics for books in their own right, and since Flannery wasn't writing any of them, it's not fair to expect him to hit any of them too hard. But I wasn't really satisfied. It would be interesting to read more about those issues and have a group discussion about them with experts.

Tina says

I found this book fascinating. It was easy to read and filled with information about how the flora and fauna and landscape of North America evolved. I never knew there used to be tigers in America until I read this book!

Adam Cherson says

I rate this book a 4.12 on a scale of 1 to 5 with 5 being best. Another exceptional environmental history from Flannery. A staggering tale of evolution, migration, invasion, and hybridization of life. The scope of this narrative is mind boggling as it tells the story of the evolution of life in the North America from the dawn of time until the present. A must read for naturalists.

There is no more splendid example of North America’s capacity to act as a great amplifier than this: the Earth cools by an average of four to five degrees Celsius [referring to the Last Glacial Maximum, 18000BP], but America’s heartland chills by around ten degrees Celsius, and North America overtakes Antarctica as the great accumulator of ice. If any nations that have special cause to fear global climate change, it is surely those that call this great climatic amplifier home. P. 151

On question of whether climate or humans caused Mastodon and Mammoth extinctions:
Although the sample size is still small, the tale told by [Dan] Fisher’s tusks is unequivocal. They were, by and large, from well-nourished individuals and the females were- by elephant standards- breeding furiously, producing new young every four years. Only considerable predation, not a deteriorating climate, could account for such a pattern. P 201 (tusks show how many young and at what intervals and also stunted growth due to undernourishment or disease.)

Because the Haida survived into modern times, we know rather more about them than we do of the Californians. They had strict hiererarchical societies with three levels or classes – chiefs and there families, commoners, and slaves – with slaves representing as much as a third of the population. P 242 (slavery here on this continent before arrival of Europeans)

The very essence of the frontier experience lies in the extent of its resources, and when resources are boundless, why conserve them or even utilize them efficiently? The principal goal is to exploit them as quickly as possible, then move on. It is this frontier attitude to resource utilization that lies at the heart of much capitalism, and which presents such a major challenge to conservationists today. In this sense, the legacy of the American frontier is still very much with us today. P292

Over the past 60 million years, North America has rarely been free from new invaders from Asia or South America yet, as is the case with the historic introductions documented here, few if any extinctions are emphatically attributable to them. Where extinctions do occur in the fossil record they correlate with climate change more than immigration, and it is hard to escape the conclusion that climate change was the cause. P298

Although estimates vary widely, by 1492 the human population of the America's may have reached 57 million, of whom 21 million lived in Mesoamerica. Eight years later it had shrunk to 18 million. P305

I believe that the great question faced by park managers in North America today is whether, where it is suitable, they should reintroduce elephant, camel, Chacoan peccary, llama, panther, and lion into their reserves. p??

Hundeschlitten says

I am conflicted about this book: the first 2/3, when Flannery discusses the ecological history of North America up until 1492, gets 5 stars in my book, while all the politically charged clap-trap in the final third would get 2 stars (and even there I am probably being generous).

Flannery introduced a couple of interesting notions that I'd never really thought about:North America's inverted wedge exaggerates global temperature shifts, impacting the ecological history of this otherwise fertile continent for at least the last 65 million years; and the driving force behind human exploration for at least 13,000 years has been to sate our virtually unlimited lust as a carnivorous primate to kill other creatures. Flannery got me to think a bit more deeply about the middle American landscape, and that has made me love it all the more deeply.

It is when Flannery starts talking about human societies that he loses me. Besides his selective use of facts to push all the obvious buttons about the evils of American capitalism that the well-kept show ponies in academia (like himself) love to push, Flannery's biological determinism may be trendy, but it is intellectually weak. Flannery's own oratory refutes his larger point in a single sentence: the most powerful force in literate societies is language, because "words-especially written words-bind us in a way nothing else can." Thus our ideas can override our biology. Hey dude, you just refuted your own argument. Game, set, match. Next subject.

But I still give this 4 stars, because the first part of the book actually got me to look at the world in a new way. Which is no small thing.

Dan Allosso says

Although I liked the entire book quite a bit, I think the title is a bit misleading. Flannery's story of pre-human America, brilliantly described in the first half of the book, is much more comprehensive than his story of humans in the Americas.

Most of the reading I've done about prehistory, recently, has focused on the rise of humans. Flannery offers a detailed view of the story leading up to humans. Beginning with the asteroid impact that wiped out the

dinosaurs 65 million years ago, Flannery traces the re-population of the planet by the plants and animals that survived the disaster. This material really made up the meat of the book, and I learned quite a bit about the evolution and migration of mammals across the planet. I had not known, for example, that "North America can be thought of as having given rise, at an early stage, to virtually all of the larger herbivorous mammal lineages inhabiting the planet today" (53). Hadn't really thought about America as a "climatic trumpet" whose geography amplifies climate changes and even seasonal weather extremes. And it was interesting to watch Flannery apply the rules of his specialty, and explain how "Centripetal evolution constantly generates new species at the centre of a group's range," but leaves peripheral species unchanged (78). I was a little more skeptical when Flannery started applying the rules of his specialty to American society.

In the introduction, Flannery says he is seeking "the quintessential determinants of life in North America" (6). In the concluding chapter, he sums these factors up as "the founder effect, ecological (and social) release, and adaptation" (394). Although I'm fascinated by idea that adaptation really doesn't begin until we begin to hit environmental limits, I thought the way Flannery equated ecological and social release was a little too casual.

I also had a problem with Flannery's casual dismissal of Tim Dillehay's discoveries in Monte Verde. I tried to remind myself that Flannery was writing in 2000, and a lot has changed in the field since then. But even so, I had a bit of a negative reaction to his rejection of anything pre-Clovis and then his immediate embrace of a "Nadene" migration at a time when Beringia was again submerged by rising post-Glacial sea-levels. Flannery says it is hard to believe people sailed all the way from Beringia to southern Chile, as if they never stopped along the way. They may in fact have stopped all along the way, and left remains that were then erased as the coastlines of the glacial era disappeared under the rising ocean. Flannery also seems to suggest that human migration (like animal migration?) had to be an all or nothing affair, when more recent evidence suggests there were several waves of migration from Beringia/Alaska into America. So maybe there's something a bit more variable happening in "social release" than there would have been in ecological release?

Flannery's interest in Frederick Jackson Turner is evident from the book's title, and he returns to Turner in his conclusion. Flannery suggests that academic historians' rejection of Turner might be a bit faddish and premature, which is probably a fair assessment. But the portion of his story dealing with the historic period might have benefited from a bit more engagement with the work historians have done in the field. Flannery leans heavily on Jared Diamond's *Guns, Germs and Steel*, and Marc Reisner's *Cadillac Desert*. While I think one of those sources was an excellent choice, Flannery should probably have read a few more books before writing these chapters outside his own specialty.

But these later chapters still have a lot of interesting material in them. Flannery's description of bison changing in response to Indian hunting is fascinating, and seems to occupy an interesting middle ground between evolution and selective breeding that probably deserves more study–especially for people interested in the beginnings of agriculture and animal husbandry. The way western society often made "ruthless exploitation, greed and senseless environmental destruction…an honored tradition" is also described clearly and Flannery connects this with "breakdown of authority" in an interesting way. Finally, Flannery's suggestion that "a society genuinely adapted to North American conditions" won't emerge until we confront the end of the growth economy is interesting and appropriately ominous.

Marcus says

Quite profound romp through millions of years of North America's ecological history. Astounding changes, destruction and rebounds; poignant permanent losses of species are well written, and a grim if ever hopeful outlook for a conclusion.

Christine says

I've been trying to write this review for a month now, and things keep going wrong. Hopefully third time's the charm. This is quite the book. He really does cover the history of the entire North American continent, from the moment it starts to exist up to just a little into the future. There are some points where it just became overwhelmingly technical. Flannery makes long lists of all the historical species that existed in North America (and often on other continents for comparison's sake). When these are commonly known animals (mammoth, bison, panther, camel, horse) he'll use the Latin name once for specificity and then use its common name. But ones that aren't well known don't have common names, and seeing list after list of Latin names made my eyes glaze over. Once the history got into more recent eras that problem faded away. Flannery also does well distinguishing between what is fairly accepted in the paleontological community and what is debated theory or his own hypothesis, which I appreciated since I don't have enough of a knowledge base to tell for myself. Flannery delves a little into the future of the frontier; what will happen to North America and the attitude of the frontier (conspicuous consumption) as people realize that no resource is inexhaustible, and that the frontier attitude has to end because eventually something will run out. My favourite part is an extended quote by Keynes:

> "What will you do," he asked, 'when you have built all the houses and roads and town halls and electric grids and water supplies and so forth which the stationary population of the future require?" p352-353

And if we don't keep consuming, capital can't keep increasing in value. And if capital doesn't keep increasing in value, it will lose its value. And if it loses its value, what will we do?

What, indeed, will we do.

Anna says

Good lawd this was hard to get through! Like more than a year of slogging, picking up, putting down, reading two pages a night before falling asleep. I think this content would've worked well in a textbook form-- smaller chunks, pictures, figures... but instead it's just text text text. The first 1/2 (or 2/3... or 4/5?) was particularly difficult, with lots of mentions of lots of of alien-sounding prehistoric animals that are nearly impossible to keep straight.

It's saving grace was the last few chapters. Once you hit bison and other familiar, modern species, plus historic humans that allow for more narrative story-telling, things really pick up.

This book is for real nerds only. If you only have a casual interest in the subject, skip to the end.

Alex says

Supremely engaging, but such an overwhelming flood of information that I found my brain expelling factoids from prior chapters as quickly as it absorbed the new.

Thomas says

It was tough reading the first half of the book, which was primarily a treatise on the various dinosaurs and megafauna that roamed over the N.A. land way back in time. The the humans show up, about 14,000 years ago. I really enjoyed reading about the ice age and imagined what it must have been like to have to deal with mastadons and mammoths, and gigantic lions. Things sort of deteriorate, as the Northeast is deforested, and then our forefathers turned to decimating the buffalo and the passenger pidgeons. The ecology of industrialization and the politics of farming made for more interesting lessons. All well written and engaging, and made me hungry to explore more about the history of the western US around California.

David Kessler says

Enjoyed the book very much. The ecology of N. America after the asteroid struck it 65 million yrs ago. What animals survived the blast and which animals emigrated on land bridges? The story of what plants and animals have and had lived in North America over this long expanse of time is based upon solid science: recent geology and 80 yrs of paeleantologists digging and digging in North America.

Rob Bauer says

This is an extended review of this quality book on the history of the North American continent.

Strolling through the museum, you arrive at the newest exhibit, “America: 50 Million Years Ago.” Visitors finds themselves looking at unfamiliar creatures, things they would expect to find in a science-fiction or horror movie. The most feared carnivore is a flightless bird almost six feet tall with an ax-like beak that can swallow most American mammals whole. There are soft-shelled turtles with snouts like a pig, horses the size of a fox, and a shrew grown to the size of a cow. The early relatives of camels are hard to pick out, because they are the size of hare. At times, it looks as though the designers of this exhibit took known animals and rearranged their features like a kind of twisted Mr. Potato Head game.

Descriptions of these unusual creatures are only one of the attractions of Tim Flannery’s book, The Eternal Frontier. An Australian, Flannery (not to be confused with the former San Diego Padres utility infielder) typically writes about ecology in his native land, but in The Eternal Frontier he ventures across the Pacific to look at the long-term history of the North American continent. In the process, he has written an engaging book full of insights into North America’s continental history that go beyond descriptions of long-extinct flora and fauna to discuss climate, ecology, population migrations, and eventually, humans.

Flannery begins with a discussion of a North America divided into two parts, with a shallow intervening sea known as the Bearpaw. This description of ancient North America, 75 million years ago (MYA), quickly

leads into the most devastating known event in world history, the collision of an asteroid with the earth about 65 MYA. With minor exceptions, this meteorite impact (in the present-day Yucatan Peninsula of Mexico) simultaneously ended the age of the dinosaurs in the northern hemisphere (because of the trajectory of the meteorite, the southern hemisphere largely escaped significant damage) and wiped away virtually all life from the North America landscape. Before shunting the dinosaurs aside, however, Flannery does note that their disappearance cleared the way for a heretofore little-noted group of creatures, the mammals. As long as dinosaurs ruled the earth, mammals were unable to evolve into anything larger than a house cat, despite about 100 million years of trying, but that was about to change.

From this point, Flannery follows several main themes throughout The Eternal Frontier. One is the use of geologic evidence, or its lack, to infer important conclusions about the history of North America. For example, before the meteor impact, physical connections existed between all the continents, demonstrated by the fact that they shared many species of dinosaur and flowering plants. Another of the themes Flannery brings forward is how and why some species are successful when entering new habitats because many species did from time to time when changing climate created new land connections between continents. Again drawing evidence from the fossil record, he shows that when North America and Europe connected via Greenland about 46 MYA, the migration was definitely from North America to Europe. The reason? Species from the larger continent usually prevail in such situations because continents with a greater number of species have greater competition between species, and thus more pressure to evolve adaptations that aid in species survival. Another result is that when a bridge opened between Asia and North America about 6 MYA, Asian species crossed and many established themselves in their new home, meaning that roughly half of North American species were not American in origin, but migrants from Asia. Another of the factors contributing to successful species migrations is that those who have adapted to marginal or difficult environments stand the best chance of success.

The final overarching theme of The Eternal Frontier is Flannery's conception of the continent as a "climatic trumpet." He demonstrates that due to the shape of North America, wide toward the North Pole and narrow at its southern terminus, with the Rocky and Appalachian Mountains creating a corridor through which most weather systems pass, it creates an amplifying effect continentally on global climate changes. This means that when an event effecting world climate takes place, such as the cooling episode brought on by Australia separating from Antarctica 33 MYA, North America magnifies the result, producing new conditions that result in extinction for some species and new opportunities for others. In general, the big-picture significance is that when the climate warms, life flourishes in North America, including pronounced species diversification; when things cool, the reverse occurs, and many species die out.

Eventually, Flannery discusses the impact of humans on North American history. He sounds off on the cause of the Clovis extinctions, seeing strong evidence in support of humans being the primary cause. Flannery recognizes that this event, regardless of cause, is rather unique in North American history, but leaves no doubt about his feelings on the matter, coming up with the self-titled "black hole theory": "If our current chronology is accurate and humans were indeed the cause of the extinctions of America's megafauna, it had taken just 300 years to dispatch into oblivion, through the black hole that lay between Clovis nose and Clovis chin, a continent full of giants." (204) Also, and perhaps not surprisingly for a book titled The Eternal Frontier, Flannery proves an enthusiastic supporter of Frederick Jackson Turner's Frontier Hypothesis of American history. Flannery also sees the frontier attitude as important in another way. Recognizing the costs of the reckless use of natural resources in support of the capitalist economic system pursued throughout the American frontier, he points out that this attitude towards the frontier is alive and well today, with an "audacity and imbecility of which leaves one gasping for breath." (302) The result is that "in the process, men blind to nature would blast marvels from the face of the Earth, destroying forever the best of America's wildlife." (312)

There are many strengths to The Eternal Frontier. For one, Flannery's style is easy to read, yet he still manages to explain evolutionary concepts clearly for the non-specialist. His description of how ecology, climate, and life interact is music to the ears of readers who appreciate a long-term view of history and ecology. The descriptions of the physical traits of long-extinct species, and how those traits connect with evolution and the surrounding environment, is both interesting and informative, if sometimes a bit short on detail due to the fragmentary evidence left by the fossil record. Some of the stories are entertaining, such as when 1870s archaeologists traveled up the Platte River under military escort to protect them from Sioux warriors, their party complete with Pawnee scouts and, for a time, Buffalo Bill Cody himself. Others are instructive, such as when Flannery recalls a dramatic warming episode of 50 MYA where, due to large concentrations of carbon dioxide in the atmosphere, oceanic circulation changed and global temperatures rose substantially. Our current industrial society may want to take note.

Despite the many strengths of this work, it could have been better on a few fronts. The most glaring issue is the endorsement of Turner's hypothesis despite the large body of evidence pointing toward other explanations of American development. In addition, the description of the impacts of invasive species transported by humans lacked depth considering its current ecological importance in all regions of the continent. A description of the impact of zebra mussels or the destruction of San Francisco Bay's native ecology would have been appropriate as a representative example. The final evaluation is that the first three quarters of the book are a delight to read, but in the final section discussing American history the reader should proceed with caution.
