Fact and Fantasy: The Beak of the Finch by Jonathan Weiner

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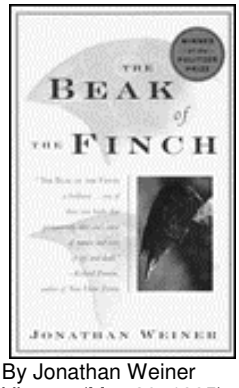

By Jonathan Weiner
Vintage (May 30, 1995)

The sun sets on a small island off the coast of South America. Thirteen species of Galapagos finches settle in their various homes for the evening. Peter and Rosemary Grant along with their crew settle in, as well, and you feel like you are right there with them thanks to Jonathan Weiner. Weiner presents the story of Darwin's finches and the Grants as if it were just that: a fabulous story. It's no wonder, however, that Weiner's book is a Pulitzer Prize winner.

Along with the Grants' tale, Weiner ties in Darwin's theories of Evolution and Natural Selection, examples outside of the finches, and even philosophy making the book both a key source of public understanding and an entertaining read.

Weiner reconstructs the research of the Grants' twenty years after they first discover their amazing finches and follows them back and forth through time in his interviews. While the Grants and their colleagues struggle to discern exactly what the finches mean, we struggle along with them. Bit by bit, Darwin's finches reveal to the Grants that evolution is not a slow process, in so doing; other common misconceptions about evolution are cleared up.

Weiner presents the argument that perhaps the finches, because they can still interbreed and produce viable offspring, are in a sort of transitional phase. They are separate species but are recently diverged from a common ancestor and are constantly evolving. (This was first seen by Darwin, which is why they are termed Darwin's finches.)

Had it not been for the periods of drought and excessive rain, we may not have realized that evolution, the process of change in organisms, need not be slow. The gene pool of the finches varies from generation to generation depending upon their environment. Each successive generation is consequently better suited for their environment.

For instance, in periods of drought, birds with larger beaks are better able to survive and reproduce, thus the next generation has, on average, a larger beak size and a better chance of survival. If this were to be repeated over many generations, we may see a new species of birds with larger beaks.

This leads the reader to question the idea of speciation, or how new species arise. Why are there so many species of finches and what did they evolve from? Weiner quotes Thomas Henry Huxley saying that, "A race does not attract our attention until it has, in all probability, existed for a considerable time, and then it is too late to inquire into the conditions of its origin." Thankfully, the Grants noticed Darwin's finches in time to learn so much.

Many may argue that Darwin never addresses this in his *Origin of Species.* However, Darwin does describe the idea of speciation. He never claims that natural selection is the only mechanism working in evolution to create new species. Over time, as natural selection tinkers with the variations within a population, adaptations accumulate. Eventually, after so many adaptations have built-up, whether between two separated populations or within a single population, a new species is observed.

These ideas apply to all species of organisms, including plants, as well as us. Weiner uses the story of Cleopatra to demonstrate this. "If Cleopatra's nose had been shaped a little less like the Grecian ideal, and a little more like Cleopatra's Needle, there would have been no Alexandrine War, no sea-fight at Actium. The whole arc of the Roman Empire would have been reshaped by Cleopatra's beak." One day, *Homo sapiens* may be obsolete and some species of *Homo somethingorother* may be the dominant species on the earth. It is important to study both the process and its relation to our lives.

Analogies like these allow a reader, who may not be adept in the sciences, to clearly comprehend the process of evolution. Weiner's method of alternating the Grant's story and Darwin's principles of evolution, with non-science philosophies, succeed in driving his ideas home. While some readers may find certain ideas familiar, they will find them juxtaposed with an exceptionally engaging story.

Time and time again, Weiner revisits Daphne Major with the Grants and their colleagues. Every time, slightly more of the island and the puzzle are revealed. One drought, one rainy season, hybrids, beak variations, adaptations, the list continues today as more people study Darwin's finches. Each occasion the Grants visit the island, Weiner makes it seem as though instead of being on scientific study, they are there for pure adventure.

We forget that the finches are the exemplar of Darwin's theories and begin to think of them as a child thinks of the peacock at the zoo. They are not a spectacle of science, just a spectacle. Weiner is quick to remind us, though, that they are indeed spectacles of science. And extraordinary ones at that; the finches show us that evolution is not unidirectional as previously thought, but bi-directional and capable of reversing itself.

An adaptation that is beneficial to one generation may be a hindrance to the next. In turn, the variation that led to the most survivors in the previously generation, such as large beak size, may be the downfall of the next generation. This shows that life itself is more evolutionary than we thought. Weiner says, "The closer you look at life, the more rapid and

* This paper was written for an independent study with Dr. Anne Houde.

intense the rate of evolutionary change. The further back in time you stand, the less you see."

It's easy to see that Weiner researched this subject very well. Nonetheless, the book can feel a little drawn out. Sometimes, the reader may wonder at the connections between a sub-topic and Darwin, but with a little further reading and brainpower, the haziness soon vanishes. The timeline can seem a little muddled at times, but may be for clarity and aesthetic purposes.

Despite these few minor qualms, Weiner does prove, in essence, his statement that, "The beak of the finch is an icon of evolution the way the Bohr atom is an icon of modern physics, and the study of either one shows us more primal energy and internal change than our minds are built to take in."

It's clear that Weiner's aim is to further impress the knowledge of evolution as well as entertain the reader. He succeeds. For those of us who already know the outcome, we are immersed in a wonderful story. For those concerned with understanding evolution, there is much to be learned from this book.