Magic of Transforming a Fox Into a Dog!

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How to Tame a Fox (and Build a Dog)
Visionary Scientists and a Siberian Tale of Jump-Started Evolution
Authors: Lee Alan Dugatkin and Lyudmila Trut
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This book tells the story of the Russian geneticist Dmitri Belyaev’s idea. In his own words, the idea was ‘to make a dog out a fox’. My very first question upon getting the book in my hands was – why would anyone want to do this? The two animals are perceived to be opposites. The fox is labeled as the most cunning animal while the dog is a human’s most loyal friend. The fox is solitary while the dog is social. The fox is a wild animal that stays away from humans as much as possible while the dog is a domesticated, beloved pet who sits in your living room resting its head on your knees. But the domesticated dog was once a wild animal, known to have descended from wolf ancestors. Our ancestors domesticated those wolves into dogs over a period of thousands of years. Dmitri Belyaev wanted to mimic this process, with the silver fox, in order to understand the process of domestication. He was especially interested in the initial part of the process – how domestication of a wild animal began. He chose the silver fox – a close genetic cousin of the wolf – for this experiment. Dmitri Belyaev’s experiment started in the early 1950s and it continues till today, even after his death in 1985, having gone through fifty-seven generations of domesticated, tamed silver foxes to date. Some of these foxes have become household pets! This is one of the longest run experiments in biology, but perhaps a short one for evolution.

The book is written by Lee Alan Dugatkin who is an evolutionary biologist and historian of science in the Department of Biology at the University of Louisville, along with Lyudmila Trut, Professor of Genetics at the Institute of Cytology and Genetics in Siberia who has been associated with the fox-taming project since 1959. Together, the author duo describes the evolution of this experiment right from its inception. They delve into the science behind it – evolution, animal behaviour, animal domestication and biology of the fox. They also
outline the history and politics of the USSR (Union of Soviet Socialist Republics) and how it affected the science and the scientists of that time. The picture of the effect of history and politics appears black. However, silver rays penetrate this dark cloud in the form of brave scientists who strove to do their science, to stand up against political hindrance, and to ensure that their country would not lose the rich scientific heritage it once had. They risked everything, sometimes lost their careers, were locked behind bars, lost their loved ones, or even lost their own lives. Dmitri Belyaev emerges as a charismatic person, a visionary scientist, a skilled administrator, and a brave soldier. He suffered many personal losses but remained a warm-hearted individual, always thoughtful of the people associated with him. He wanted to learn from the experts all over the world and went out of his way to contact them.

The story of the fox domestication experiment can easily fit into a thrilling science fiction. Belyaev wanted to select foxes for their tameness and breed them over generations hoping to get glimpses of the early stages of domestication. He was a trained geneticist, however, when he began his career he was prohibited from doing research in genetics. His job as a lead scientist in Russia’s state-owned fur industry was to help mass breeders of foxes and minks to produce more beautiful furs. He accepted the job so that he could carry out his studies under the cover of the job. Even then, he could not start his own fox domestication experiment under the oppressive political conditions imposed by Josef Stalin and Trofim Lysenko (who vehemently opposed Mendelian genetics and geneticists practising it). Therefore, Belyaev asked an Estonian colleague, Nina Sorokina, to start the experiment under a different pretext in 1952. Over the next few years, political conditions started becoming less unfavourable. Belyaev became the Head of the Institute of Cytology and Genetics. By then, the foxes with his Estonian colleague were also showing subtle behavioural and morphological changes. Encouraged by these events, Belyaev decided to expand the experiment and looked for a person highly trained in animal behaviour. Now, this is quite interesting and I would like to draw the attention of undergraduate students. Lyudmila Trut (yes! the co-author of the book) was that highly trained person and she was just about to finish her undergraduate studies! The book describes in detail how Lyudmila Trut got the job and I do not want to break the suspense. I urge undergraduate students and their teachers to read the book!

Lyudmila Trut decided to work on the fox-domestication project by going to the institute that was being newly formed. The institute was being set up in a city called Novosibirsk in Siberia, more than three thousand kilometers away from Moscow where Lyudmila and her family were located. Lyudmila had just married and had a baby girl. However, when she decided to go, her husband whole-heartedly supported her by agreeing to go along with her and finding a job in the new location. Her mother too joined them soon afterwards to
look after the baby. This was happening in the late 1950s and this is the kind of family support many women scientists even today dream about; luckily, the number of those who get this support is slowly increasing.

This is a slim book of about two hundred pages with a photograph of a cute fox on the cover. It is written lucidly and it carries the reader with the flow of events which get more and more interesting, and some very heart-warming. Even before I realized it, the book was over and I wished it just went on! The experiment started with behavioural observations of the foxes but went on to investigate changes in fur colouration, facial features, hormones, reproductive cycle and differential gene expression. These changes were all associated with domestication. The book describes this extended experiment in detail and provides a good number of references. The book is not for undergraduate students alone. It demands attention of the experts in the fields like evolutionary biology, genetics, developmental biology, history of science, anthropology and perhaps animal ethics. And this book is for you if you are an animal lover!

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