

Nature and evolution

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ABSTRACT. In Darwin you will trust. This is a general introduction to evolution, mainly biology, but with some other illustrations too, written for science students.

Preface

Are we humans superior to the other animals? In fact, are we animals at all, or something else, of more divine nature? How shall we behave, with respect to the general evolution rule for the animal kingdom, shall we comply to that, with awe and pride, or on the opposite, try to fight it? How shall we behave, with respect to the various animal species? What about our organization, as humans, are we made to be rather solitary, as bears, or to live in small groups, as lions, or in large groups, as ants? And so on.

These are all good questions, as old as mankind, and perhaps as old as the animal kingdom too, because right now, as I type and as you read, a horse for instance, once done with his work and meals, might be well thinking at these questions too.

There is no easy, commonly accepted answer to the above questions, at least in our present, modern times. Long time ago, in the golden age of humanity, meaning Stone Age, things were quite simple and luminous. Animals are we, living in small groups, and hunting this and that smaller animals, for food, and beware of not being hunted ourselves, by lions and such. And whenever someone was dying, young or old, by disease or accident, that was surely not very funny, but this is how this life is made, and life goes on.

With time passing by, things got more complicated than this. Human life became increasingly abstract, and away from nature and its rules, and although modern humans are less and less performant, as animals, they tend to think of themselves as more and more advanced, and being above, and not bound to, the general rules of nature.

There are of course many schools of thought here. Traditionally, the main split was between science and religion, with science being in favor of, well, science, and with religion being in favor of, well, religion. More recently, however, with religion increasingly becoming a personal affair, the split became more subtle, and less obvious to spot. In the academia, for instance, the main split nowadays is between science and humanities, and with this being reminiscent of the original split between science and religion.

Moreover, inside academic science you can surely spot some differences too, with some branches of science being still guided, God thanks, by science, while some other being seemingly more and more involved into building some new sort of religion.

Quite complicated all this, and the question is now, shall we further talk about all this, which after all might bring us into quite delicate life and academia questions?

Hell yes, I would say, as scientists at least, we are here for talking about things, and the hotter the topic, and better, this is how science always advances, by looking at hard questions, and certainly not by ignoring them. And this book will be here for that, talking first about evolution, and Darwin, with a broad introduction to the subject, and then going into a long discussion about evolution denial, with the main aim of identifying the evolution deniers, inside our present academic system, and society in general.

Many thanks to my cats, and to the other cats in this world, small or big. And in the hope that these cats will remain as they are, and not get involved into some form of religion. That would be bad news for us humans, with them being smarter than us.

Cergy, January 2025

Teo Banica

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Part I

Nature, evolution

Sun shines in the rusty morning
Skyline of the Olympus Mons
I think about it
Sometimes

CHAPTER 1

1a.

1b.

1c.

1d.

1e. Exercises

Exercises:

EXERCISE 1.1.

EXERCISE 1.2.

EXERCISE 1.3.

EXERCISE 1.4.

EXERCISE 1.5.

EXERCISE 1.6.

EXERCISE 1.7.

EXERCISE 1.8.

Bonus exercise.

CHAPTER 2

2a.

2b.

2c.

2d.

2e. Exercises

Exercises:

EXERCISE 2.1.

EXERCISE 2.2.

EXERCISE 2.3.

EXERCISE 2.4.

EXERCISE 2.5.

EXERCISE 2.6.

EXERCISE 2.7.

EXERCISE 2.8.

Bonus exercise.

CHAPTER 3

3a.

3b.

3c.

3d.

3e. Exercises

Exercises:

EXERCISE 3.1.

EXERCISE 3.2.

EXERCISE 3.3.

EXERCISE 3.4.

EXERCISE 3.5.

EXERCISE 3.6.

EXERCISE 3.7.

EXERCISE 3.8.

Bonus exercise.

CHAPTER 4

4a.

4b.

4c.

4d.

4e. Exercises

Exercises:

EXERCISE 4.1.

EXERCISE 4.2.

EXERCISE 4.3.

EXERCISE 4.4.

EXERCISE 4.5.

EXERCISE 4.6.

EXERCISE 4.7.

EXERCISE 4.8.

Bonus exercise.

Part II

Fine mechanisms

*Don't wanna hear about it
Every single one's got a story to tell
Everyone knows about it
From the Queen of England to the Hounds of Hell*

CHAPTER 5

5a.

5b.

5c.

5d.

5e. Exercises

Exercises:

EXERCISE 5.1.

EXERCISE 5.2.

EXERCISE 5.3.

EXERCISE 5.4.

EXERCISE 5.5.

EXERCISE 5.6.

EXERCISE 5.7.

EXERCISE 5.8.

Bonus exercise.

CHAPTER 6

6a.

6b.

6c.

6d.

6e. Exercises

Exercises:

EXERCISE 6.1.

EXERCISE 6.2.

EXERCISE 6.3.

EXERCISE 6.4.

EXERCISE 6.5.

EXERCISE 6.6.

EXERCISE 6.7.

EXERCISE 6.8.

Bonus exercise.

CHAPTER 7

7a.

7b.

7c.

7d.

7e. Exercises

Exercises:

EXERCISE 7.1.

EXERCISE 7.2.

EXERCISE 7.3.

EXERCISE 7.4.

EXERCISE 7.5.

EXERCISE 7.6.

EXERCISE 7.7.

EXERCISE 7.8.

Bonus exercise.

CHAPTER 8

8a.

8b.

8c.

8d.

8e. Exercises

Exercises:

EXERCISE 8.1.

EXERCISE 8.2.

EXERCISE 8.3.

EXERCISE 8.4.

EXERCISE 8.5.

EXERCISE 8.6.

EXERCISE 8.7.

EXERCISE 8.8.

Bonus exercise.

Part III

Further examples

*All I need is
Co-ordination
I can't imagine
My destination*

CHAPTER 9

9a.

9b.

9c.

9d.

9e. Exercises

Exercises:

EXERCISE 9.1.

EXERCISE 9.2.

EXERCISE 9.3.

EXERCISE 9.4.

EXERCISE 9.5.

EXERCISE 9.6.

EXERCISE 9.7.

EXERCISE 9.8.

Bonus exercise.

CHAPTER 10

10a.

10b.

10c.

10d.

10e. Exercises

Exercises:

EXERCISE 10.1.

EXERCISE 10.2.

EXERCISE 10.3.

EXERCISE 10.4.

EXERCISE 10.5.

EXERCISE 10.6.

EXERCISE 10.7.

EXERCISE 10.8.

Bonus exercise.

CHAPTER 11

11a.

11b.

11c.

11d.

11e. Exercises

Exercises:

EXERCISE 11.1.

EXERCISE 11.2.

EXERCISE 11.3.

EXERCISE 11.4.

EXERCISE 11.5.

EXERCISE 11.6.

EXERCISE 11.7.

EXERCISE 11.8.

Bonus exercise.

CHAPTER 12

12a.

12b.

12c.

12d.

12e. Exercises

Exercises:

EXERCISE 12.1.

EXERCISE 12.2.

EXERCISE 12.3.

EXERCISE 12.4.

EXERCISE 12.5.

EXERCISE 12.6.

EXERCISE 12.7.

EXERCISE 12.8.

Bonus exercise.

Part IV

Evolution denial

*And still I stand this very day
With a burning wish to fly away
I'm still looking
Looking for the summer*

CHAPTER 13

13a.

13b.

13c.

13d.

13e. Exercises

Exercises:

EXERCISE 13.1.

EXERCISE 13.2.

EXERCISE 13.3.

EXERCISE 13.4.

EXERCISE 13.5.

EXERCISE 13.6.

EXERCISE 13.7.

EXERCISE 13.8.

Bonus exercise.

CHAPTER 14

14a.

14b.

14c.

14d.

14e. Exercises

Exercises:

EXERCISE 14.1.

EXERCISE 14.2.

EXERCISE 14.3.

EXERCISE 14.4.

EXERCISE 14.5.

EXERCISE 14.6.

EXERCISE 14.7.

EXERCISE 14.8.

Bonus exercise.

CHAPTER 15

15a.

15b.

15c.

15d.

15e. Exercises

Exercises:

EXERCISE 15.1.

EXERCISE 15.2.

EXERCISE 15.3.

EXERCISE 15.4.

EXERCISE 15.5.

EXERCISE 15.6.

EXERCISE 15.7.

EXERCISE 15.8.

Bonus exercise.

CHAPTER 16

16a.

16b.

16c.

16d.

16e. Exercises

Congratulations for having read this book, and no exercises for this final chapter.

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