

The Future without Animal Products - Detailed Table of Contents

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<https://thefuturewithoutanimalproducts.com/>

I. Futurology and knowledge generation

1. **Introduction** - Everyone is familiar (at least vaguely) with the moral and environmental reasons for transitioning away from animal products. This book is about a third argument - the technological reasons for moving away from animal products. Using animal technology should elicit the same derision as using wood fire engines today - there should be better options all around.
2. **What can we predict in the future?** We can predict some events well (e.g. a comet's orbit, the synchronized release of sperm and eggs of coral in the Great Barrier Reef), but not others (the weather next week, which stocks in the market will succeed). I introduce futurology in this chapter and discuss why we are able to predict some events but not others and what underlies such predictions. I transition into prediction of societal advancement, technological developments, and knowledge generation. Ultimately, I posit that knowledge generation is the primary driver for societal, technological, and moral advancement. We currently produce knowledge at an unprecedented rate, and knowledge generation is the key to replacing animals.
3. **Knowledge and technological innovation** - Here, I discuss how knowledge and new technologies are generated. Importantly, I repudiate common notions about knowledge generation/technological development and highlight the best model we currently have. I proceed with concepts essential to the rest of the book - disruptive technology, nucleation, bandwidth, and tractability. These concepts set the stage for seeing the inferiority and replaceability of animal technology.

II. Animals as a (terrible) technology

4. **Processes, animal processes, and prospective competitors** - In this chapter, I discuss industrial processes. Processes, not the products themselves, determine the goods that come into our lives. I then introduce animals (e.g. livestock, birds, and seafood) as a process technology. Likewise, I highlight putative competitors (e.g. cell-free technology, in vitro meat, microorganisms, fungi) and what limits them from recapitulating the properties of animals.
5. **Animals by the numbers - Yield and productivity** - Here, I begin to introduce metrics to highlight the ceiling and fundamental inefficiencies of animal technology. In particular, I focus on two highly relevant process metrics: yield and productivity and show that animals fare much, much worse compared to putative competitors.

6. **The intractability of animal technology** - Animals are intractable technology, meaning that they are incredibly difficult to innovate, especially compared to the prospective competition. This means that competing technologies will catch up to and leave animals in the dust as soon as they surpass animals. I also discuss genetically-modified organisms (GMO). I assert that GMO technology would help widen the tractability chasm between animals and the potential replacers. Animal rights activists would be strategic to support GMO technology if they want animal products replaced sooner.

III. Replacing animals in our food

7. **The nutrition of animals** - Animal products provide a few known essential nutrients such as Vitamin B₁₂ and Zinc. I will discuss those micronutrients briefly and refute ideas presented by others about nutritional benefits from animal products. I will talk at length about protein nutrition and show that amount of protein needed in a diet is far lower than what we think.
8. **Valence** - Another oft touted reason to eat meat is the taste and satisfaction imparted by it. Here, I introduce the concept of valence, or how we associate goodness and/or badness to certain sensory inputs, gastronomical or otherwise. I challenge the notion that our valences are immutable. We have the ability to change what we derive satisfaction from even as adults. Meditation and the hedonic treadmill come into this chapter. I predict a "Meditation revolution", which will drastically enhance ability to mutate valences in the greater population, also furthering the end of animal product usage.
9. **The Expanse of Amazing Foods** - Most foods we eat today are relatively new due to global trade (within the last 500 years). Despite the notion of tradition often associated with food, we've been constantly iterating our gastronomical options. The corollary is that there is the entire unknown possibility space of foods. By sheer physical possibility, this means there must be foods that are just better all around compared to what we currently have, and we should boldly, optimistically explore this space. Given the intractability of animal technology, exploring this space would be easier without considering animal products.

IV. Catalyzing a future free of animal products

10. **Lessons from other technological developments** - Many advancements in energy, computing, and engineering are the outgrowth of a variety of knowledge-generating entities, specifically academia, government, and industry. Currently, we seemingly concede animal-replacement efforts to industry, particularly luminescent companies such as Beyond Meat and Impossible Foods. Here I discuss the role of each institution in shaping the potential future without animal products. I'm not convinced that a purely industrial thrust will get us there most efficiently; therefore, this chapter discusses roles for government and academia in order to accelerate the Future without Animal Products.

11. **What can I do?** - If I performed my job correctly, the reader should see the inevitability of a Future without Animal Products and want to get there sooner than later. The obvious recommendations are increasing demand for animal replacers and lobbying efforts for more research. I also discuss more subtle ideas such as creating democratizing technologies that allow anyone to explore The Expanse of Amazing Foods more readily and increase the overall bandwidth that humanity can push versus the problem.
12. **Moral arguments for dispensing animal products** - I acknowledge that presenting moral arguments deters readers. Strategically, I do so at the end. Also, I do not seek to pummel the reader with depressing torture stories and numbers. Instead, I take a rational compassionate approach, focusing more on arguments and common refrains. I seek to explain the moral argument extremely well - hopefully to inspire the reader to make meaningful personal changes.