

The Enduring Problem of a Darwinian World

The total amount of suffering per year in the natural world is beyond all decent contemplation. During the minute that it takes me to compose this sentence, thousands of animals are being eaten alive, others are running for their lives, whimpering with fear, others are being slowly devoured from within by rasping parasites, thousands of all kinds are dying of starvation, thirst and disease. It must be so.

– Richard Dawkins, *River Out of Eden* (1995)



For centuries, this was an accepted, unchangeable law of nature. A technical revolution now makes it an **ethical choice**.

We Face Four Futures for the Biosphere



1. Pleistocene Rewilding

Restoring the planet to its state before significant human impact. The focus is on a historical ecological baseline.



2. The Status Quo (Traditional Conservation)

Maintaining wildlife parks and minimal intervention. The goal is the abstract health of species and ecosystems, with no regard for the subjective well-being of individual animals.



3. Compassionate Biology ("High-Tech Jainism")

Actively reducing suffering for all sentient beings through technology. This includes gene drives, cross-species fertility-regulation, and creating a "pan-species welfare state."

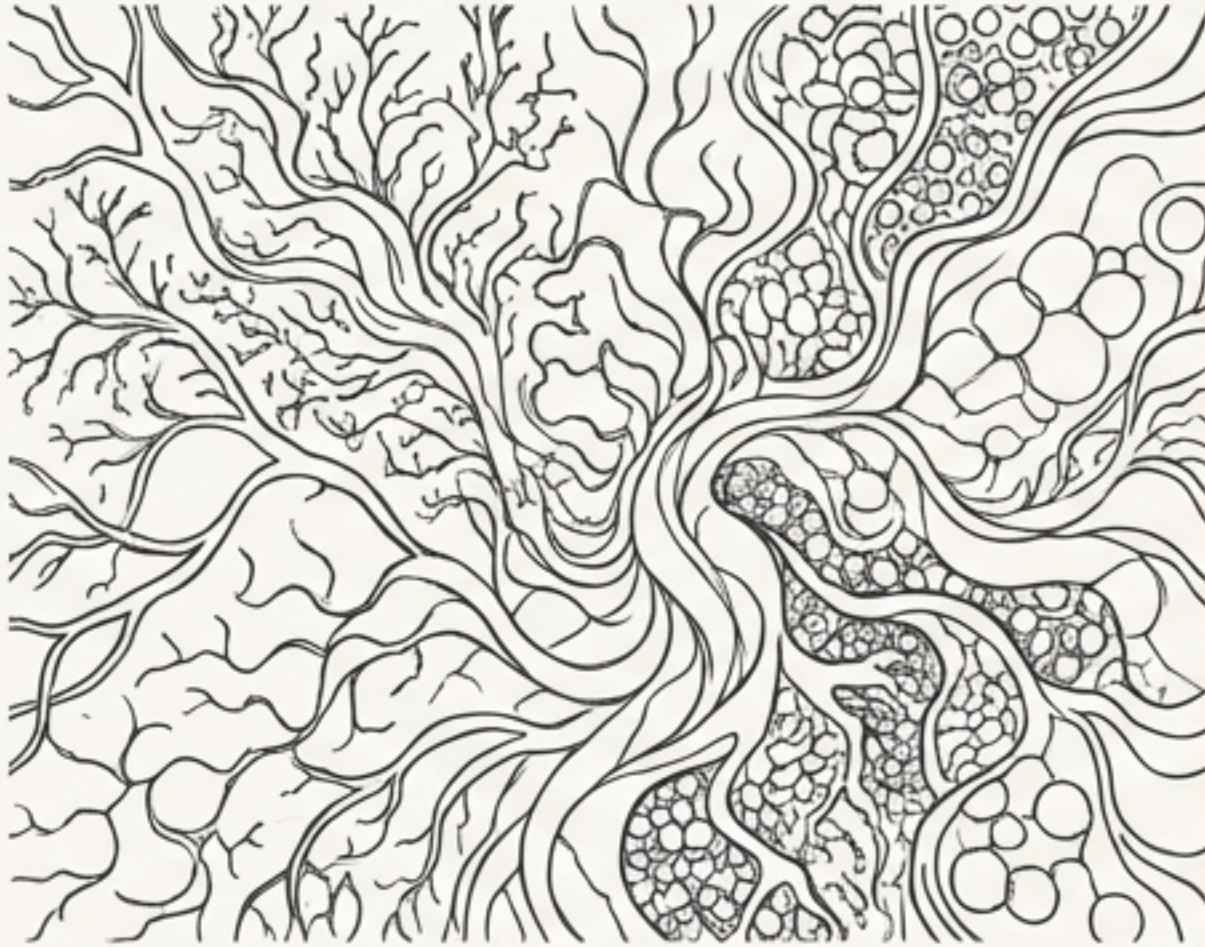


4. Phasing Out

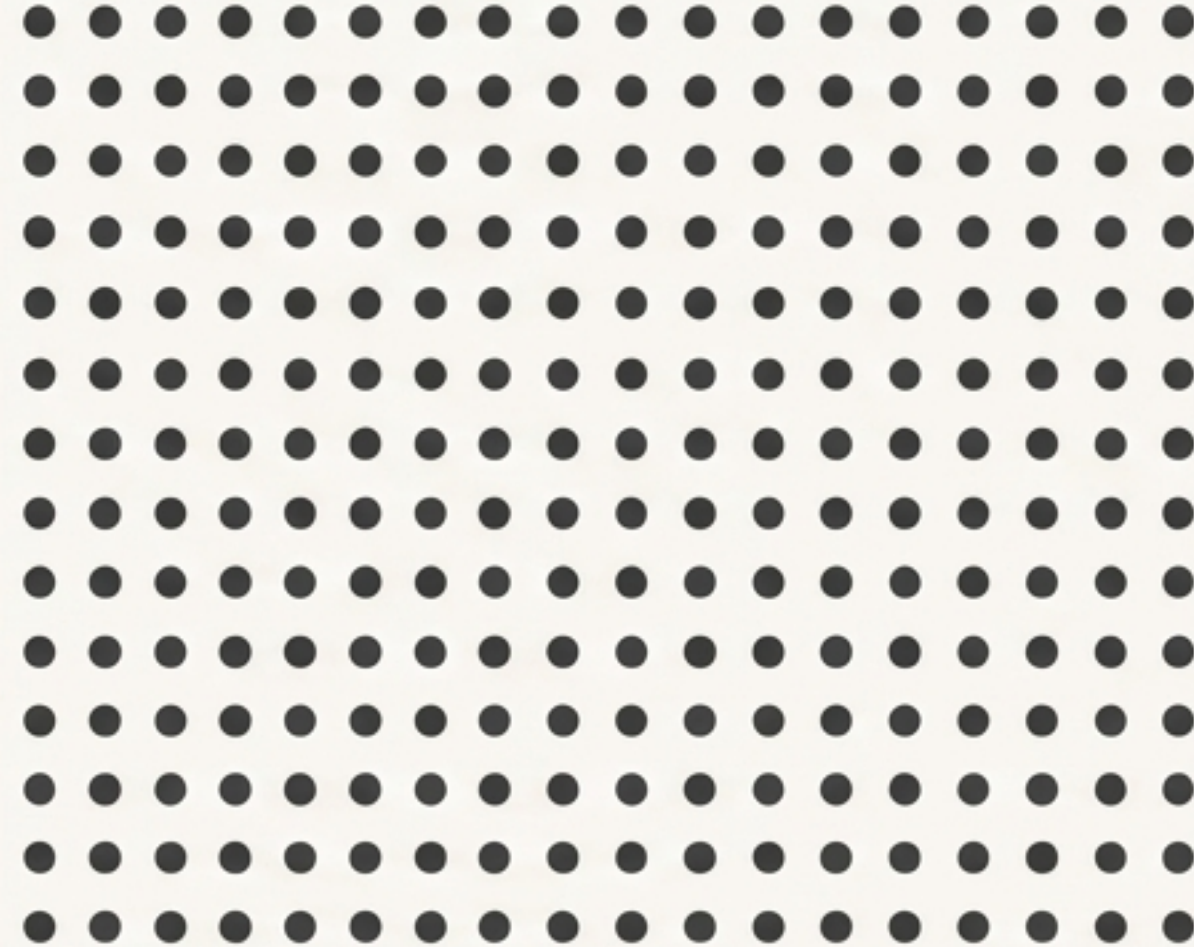
Eliminating free-living non-human sentients altogether, framed by the provocative quote: "Why improve Nature when destroying it is so much easier?"

The Technological Rupture: A Revolution in Complicity

The plea of "It must be so" is no longer technically, ecologically, or ethically correct.



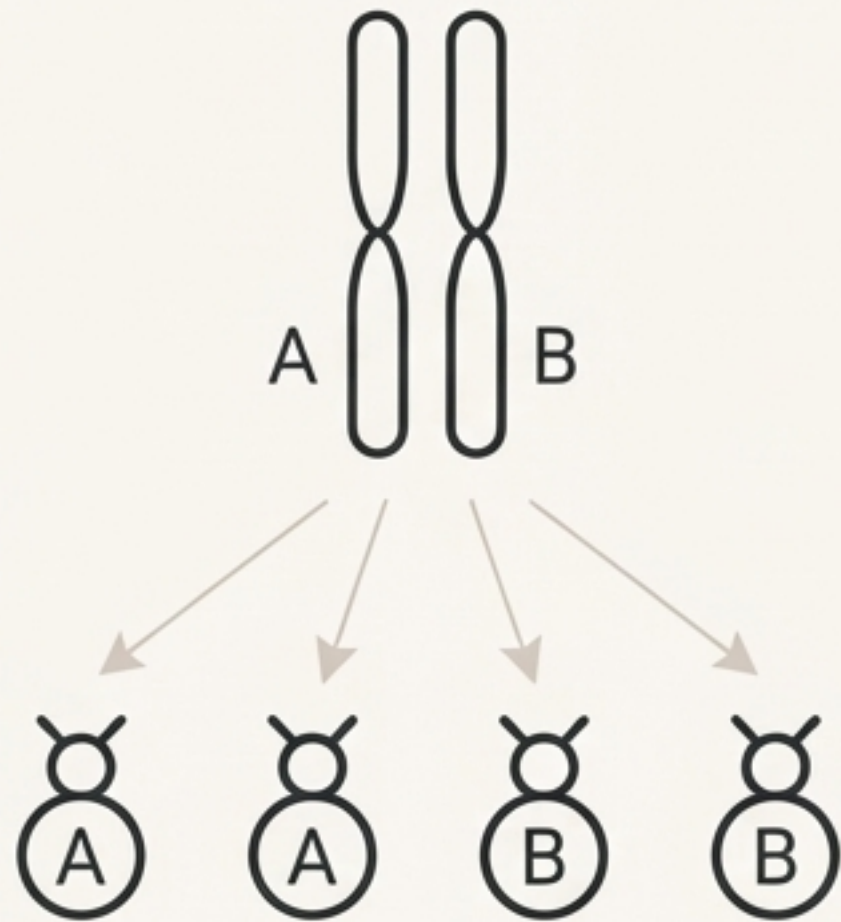
The post-CRISPR era transforms our complicity. What was once inevitable is now a choice.



- A major evolutionary transition in the development of life.
- Humanity will shortly be able to decide the optimal level of suffering.
- The ability to decommission natural selection.

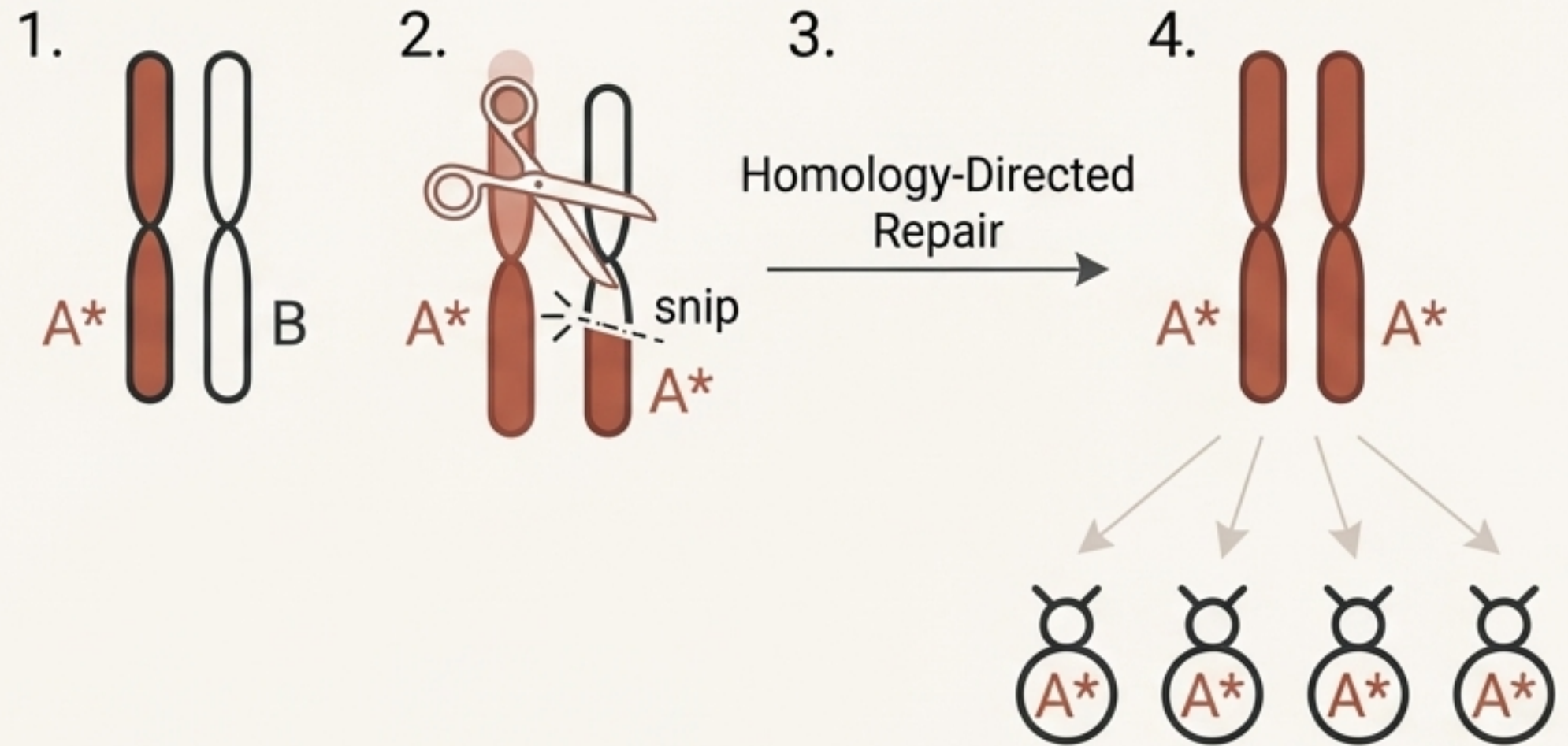
Engineering Inheritance: How Gene Drives Defy Mendel

Mendelian Inheritance



Offspring have a 50% chance of inheriting a specific allele.

Gene Drive Inheritance



Effectively all offspring inherit the engineered trait.

A cell's own DNA repair-mechanisms can be hijacked to spread human-selected traits throughout an entire species.

The Astonishing Economics of a Post-Darwinian Biosphere

“Gene drives can be used—cheaply, rapidly, and sustainably—to fix the typical level of suffering in entire free-living species.”

\$10,000

Cost per Species (approximate)

Several Hundred Million Dollars

Total cost for a happy non-human biosphere



\$100,000+

(To salvage a single micro-preemie)



\$200-300 Million

(A single blockbuster movie budget)



\$100-200 Million

(A single military aircraft)

A Concrete Case Study: The SCN9A Gene

Engineering a 'Low Pain' Biosphere

What it is

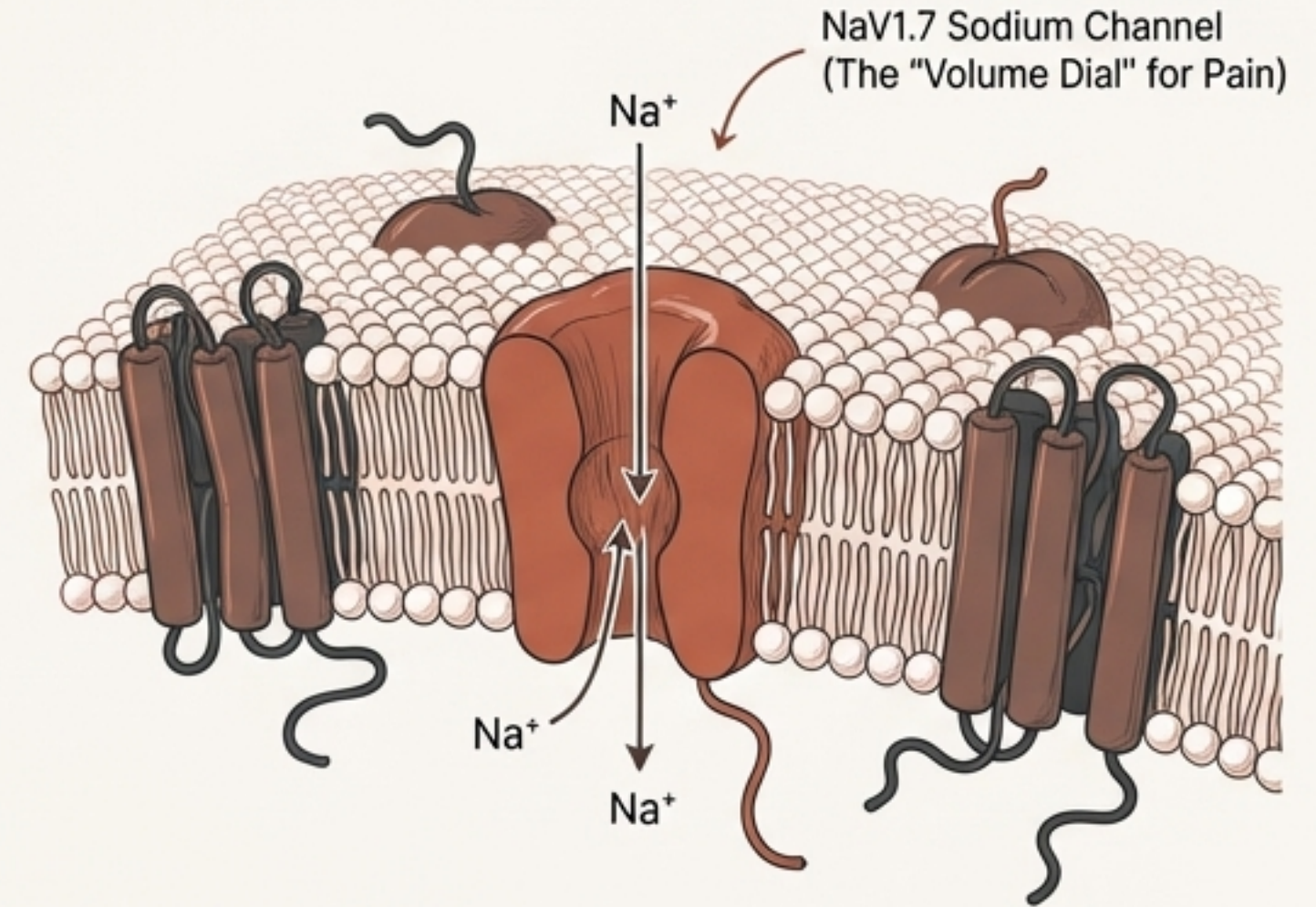
- Codes for the alpha subunit of the sodium channel NaV1.7.
- NaV1.7 channels are found in nociceptors (pain-transmitting nerve cells).
- Essentially, it acts as a "volume dial" for physical pain.

How it Works

- Dozens of different alleles exist in nature.
- Rare "nonsense" mutations can abolish pain entirely (congenital analgesia), which is maladaptive.
- Other alleles confer unusually high or unusually low pain sensitivity without compromising function.

The Goal

Propagate benign alleles that already exist in high-functioning individuals, turning pain from agony into a useful bodily signaling mechanism.



The Goal is Not to Eliminate Pain, but to Tune It

“No Pain” (Congenital Analgesia)

Dangerous and potentially lethal.
Prevents an organism from
reacting to harmful stimuli.



“Low Pain” (High Pain Tolerance)

A state that already exists in a
minority of high-functioning
humans. For these individuals,
pain is little worse than a useful
signaling mechanism.

This is not creating an “unnatural” state, but rather making the healthiest
and most benign existing genetic variants the species-wide default.

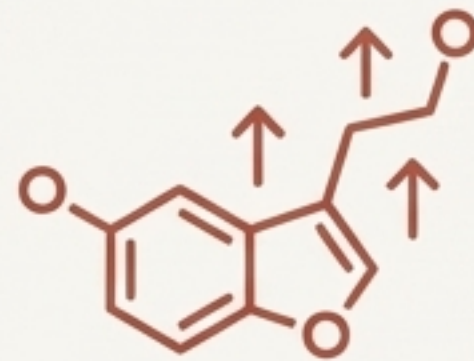
Beyond Pain: The Genetic Architecture of Well-Being

The control of raw pain is vital, but other parameters of default well-being can be genetically adjusted.



COMT

Modulates the experience of reward.



Serotonin Transporter Gene

Associated with national levels of happiness.



ADA2b deletion variant

Linked to pessimism.



FAAH gene variant

Contributes to happiness and anxiety levels.

The Big Picture: Fixing pain-sensitivity, depression-resistance, and default hedonic tone via gene drives could prevent immense suffering. The Cambrian Explosion was an explosion in suffering; now we can bring it under control.

Promise and Peril: Acknowledging the Abyss

Neither action nor inaction are ethically risk-free. A prudent rule of thumb: anything that can go wrong, will go wrong—and more besides.

Ecological Risks



Unforeseen consequences.

SCN9A alleles are linked to olfactory acuity. Altering pain sensitivity could have cross-species ramifications for smell-dependent behaviors.

Malicious Use



Bioweapons and genetic terrorism.

A bioterrorist could design mosquitoes with a gene drive for a deadly toxin, making every bite lethal.

Human Error & Unintended Idealism



Well-meaning but ill-judged interventions.

A biohacker tweaking the Texas Lone Star Tick (*Amblyomma americanum*) to induce a meat allergy in humans.

The Governance Challenge: Technology Outpaces Policy

Ecosystems and gene drives do not respect nation-state boundaries. A single biohacker could affect an entire global population of a species.



Answering the Inevitable Objections

The Objection

Human 'Hubris': It is arrogant to intervene in nature.

Species Essentialism: A reprogrammed predator is no longer 'truly' a lion.

Loss of Genetic Diversity: We would be reducing the gene pool.

Anthropomorphism: We are projecting human values onto animals.

The Rebuttal

Is it more humble or hubristic to walk past a drowning child? Why does our response change if the sentient being belongs to a different species?

Is an abnormally happy or pain-tolerant human not 'truly' human? The claim borders on the ridiculous.

Not all diversity is valuable. We agree the optimal number of alleles for cystic fibrosis is zero. The same logic applies to alleles for profound suffering.

The desire to avoid being eaten alive, starving, or being in agony is not an unfathomable mystery. The pleasure-pain axis is a shared biological reality.

A Revolution in Complicity: Inaction is a Choice

The Analogy

>“If one comes across a small child... drowning in a shallow pond, then choosing to walk on by rather than inconveniently get one's clothes wet is almost as morally repugnant as if one had pushed the child into the water oneself.”

The Implication

>“Walking on by if the drowning victim is of comparable sentience... but belongs to a different species... is no less culpable. The biotech revolution is a revolution in human complicity in the persistence of suffering.”

Core Message

Systematically helping free-living non-humans will shortly pass from technically impossible, to difficult, to easy, to trivial.

The Future of Sentience is a Design Choice

Beyond Earth

If we terraform other planets, we have a responsibility for the sentience we create. Deliberately creating a Darwinian ecosystem with its concomitant misery... is an ethically momentous step.

Grounding Principle

Before colonizing the galaxy, ethical prudence suggests fine-tuning the management of pain-free ecosystems here on Earth.

Beyond Current Capabilities

- **Species Uplift:** Laboratory mice with the human FOXP2 “language gene” are demonstrably more intelligent. This could be applied to entire species.
- **Ethical Terraforming:** We can create ecosystems based on compassionate biology, potentially ‘locking in’ a biology of information-sensitive gradients of intelligent bliss.



An Urgent Prerequisite: Ending Our Own Brutality

The Sobering Reality

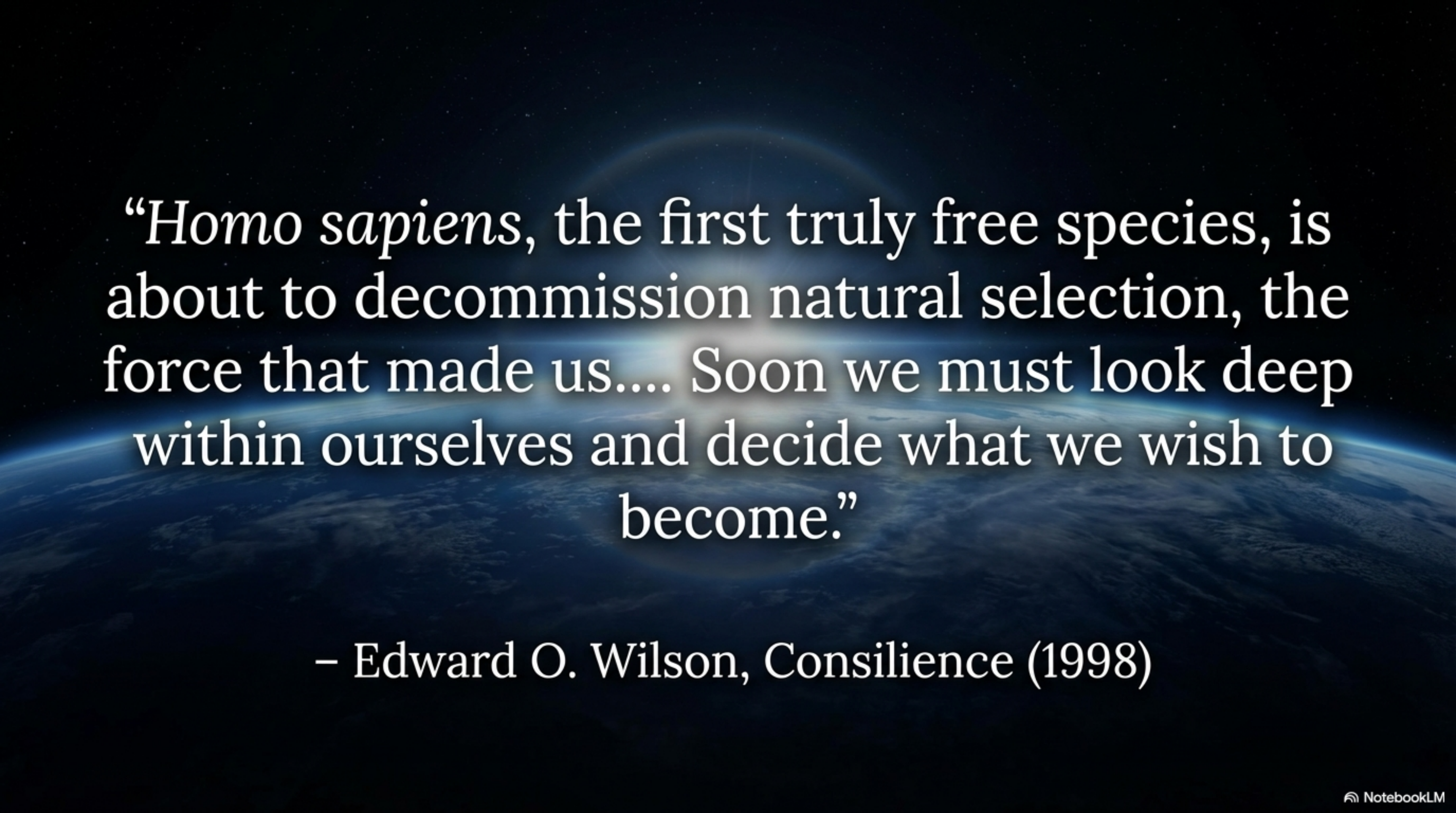
Before systematically helping other sentient beings, mankind's first obligation is surely to stop systematically harming them.

The Provocative Question

Can humans redeem ourselves by engineering a happy biosphere? Or will suffering endure as long as life itself?

“If we accept a mere tenth of what animal-rights activists are claiming, then modern industrial agriculture might well be the greatest crime in history.”

— Yuval Noah Harari



“Homo sapiens, the first truly free species, is about to decommission natural selection, the force that made us.... Soon we must look deep within ourselves and decide what we wish to become.”

– Edward O. Wilson, *Consilience* (1998)