

**Figure 1.** Venn Diagram comparing claims of Neo-Darwinism (“Neo-D”), Third (“3<sup>rd</sup>”) Way Evolution, and Intelligent Design (“ID”).

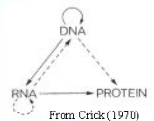
- Random mutation and natural selection\*\*\* are the primary and near-exclusive mechanisms of evolution.
- DNA is a self-replicator.
- All genetic variation is random.
- Weismann Barrier protects the egg and the sperm from being affected by changes to the body.
- Central Dogma prevents organisms from changing their DNA.

any transmission of information

DNA is the "endpoint" of evolution; variation arises through random genetic mutation; variation occurs through DNA; mutation is the sole cause of evolution" (Laland et al. 2014)

From Crick (1970)

- DNA self-replication



- Evolution **MUST** proceed by “numerous successive slight modifications” (Darwin).
- Random mutation and natural selection have unlimited creative capacity.
- Macroevolution is **gradual**, and occurs by adding up slight microevolutionary point mutations until something big arises.

# Neo-D

- No "purpose" or "function" or "agency in biology."
- Genes are primary causal agents.
- Genes are selfish.
- Fitness landscapes smooth.
- Genome chock full of junk DNA due to random mutations and selfish-replicators.
  - Organisms facing similar selection pressures explains convergence.
  - **Engineering:** See Fig 2.
- Purpose

- Purpose in biology (if it exists) implies real intelligent design.

- Many features of living organisms are best explained by an intelligent cause because they contain forms of information and complexity that in our experience only come from intelligence.

- **Engineering:** See Fig 2.
- Life's history is not strictly materialistic. It includes both discrete instances of interventionist design, and pre-programmed evolution (which involves naturally caused events).
  - Natural selection\*\*\* and random mutation occur and can effect some changes in species but are ultimately limited by what they can produce. Both Neo-D and 3rd Way require sufficiently plausible "slight, successive modifications" but biology frequently cannot provide this.
    - Common ancestry may or may not be true.
    - Very little DNA will turn out to be junk.

Life arose by evolution, which involves purely natural causes within the biosphere all the way down. No design by an external intelligent agent!

- **Darwinism.** Darwin was right—natural selection\*\*\* is a major force driving evolution, although other processes also drive evolution, like sexual selection.
- Natural selection is a purposeless, goal-less process. Thus, life evolved by Darwinian evolution, a purposeless and goal-less process.
- Common ancestry is true.
- Macroevolution has occurred and does occur.

- Life is complicated.
- Life has a history.
- Proponents self-censor criticisms of neo-Darwinism out of fear of looking like they support intelligent design.
- Random mutation and natural selection\*\*\* are real forces at work in biology. Natural selection causes changes in allele frequencies within population.
  - Microevolution (small-scale change within a species; fine-tuning of pre-existing function) occurs.

- Biological systems appear to be designed for a purpose.

ID

- More freedom to critique Neo-ID because nobody thinks they support ID!
- the 'gene-centric' view of Neo-ID "fails to capture the full set of processes that direct evolution. Missing pieces include physical development influences the generation of variation (developmental bias); how the environment directly shapes organisms' traits (plasticity); how organisms modify environments (niche construction); and how organisms transmit more than genes across generations (extra-genetic inheritance) For [Standard evolutionary theory, these phenomena are just outcomes of evolution. For the EES, they are also causes." (Laland et al. 2014)
- Other important forces in evolution include: "symbiotic biosphere interactions between distant taxa (including via horizontal DNA transfers, natural genetic engineering, stress responses" that activate intrinsic genome change, macroevolution by genome restructuring (distinct from accumulation of local microevolutionary changes in "Synthesis]" (Shapiro and Noble 2021)

# 3rd Way Evolution

- Evolution need NOT proceed by “numerous successive slight modifications” (Darwin)
- Developmental bias plus natural selection explains convergence.
- Macroevolution occurs punctually, often by major chromosomal rearrangements
- Fitness landscapes sometimes rugged, but macromutations can overcome! Only one organism needs to get the right traits to climb a steep fitness landscape.
  - Stochasticity is a vital factor which life harnesses to function, evolve, and thrive

**Engineering:**  
See Fig 2.

- Natural genetic engineering occurs, and epigenetic changes occur, but often for the purpose of tuning pre-existing features along pre-defined axes allowing for rapid and pre-programmed adaptational abilities.

- Uniquely predicts everything in the Orange Zone, whereas 3<sup>rd</sup> Way biologists recognizes the Orange Zone facts because they are great biologists who trust what their eyes see! ID goes further: It not only trusts what our eyes see, it predicts and explains what our eyes see.

- “Post-Darwinian” evolutionary models like evo devo or self-organization also fail to explain the origin of many complex features.

- Convergence likely the result of pre-programmed adaptive capacities, and/or “common design”.

Gene-centrism has yielded little biomedical fruit.

- Neo-D lacks a good theory of the generative.
- There is purpose ("teleology" or "telonomy"), function, and agency in biology.
- Genetic variation NOT all random.
- is "dizzily" complicated. Life is a machine or a computer, because it's more complex than human tech; but life sometimes contains certain machine- or computer-like features.

- The genome matters but isn't everything. We can't be reduced to our genes. Genome is "read-write," not "R."
- Much less "junk" DNA than was thought.
- Neo-Lamarckian inheritance occurs.

Much important biological information resides outside the genome (e.g., information in egg; embryonic electrical fields; epigenetic tags, etc.) It can often be inherited through extra-genetic inheritance.

- Natural genetic engineering shapes organisms under stress.
- Organisms show a top down, hierarchical "design" where parts exist to serve the whole. **Systems biology** works because **organisms function as integrated wholes!**
  - "Tree of life" is more like a messy network!
    - ID makes good critiques of Neo-D (Shapiro, 2024)

- Natural genetic engineering occurs, and epigenetic changes occur, but often for the purpose of tuning pre-existing features along pre-defined axes allowing for rapid and programmed adaptational abilities.

# A Comparison of Neo-Darwinian Evolution, Third Way Evolution, and Intelligent Design

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**Figure 2: Special Focus: Comparison of Engineering in Biology**

Neo-Darwinism	Third Way Evolution	Intelligent Design / Engineering
<b>A. Systems Biology, Systems Engineering, &amp; Hierarchical, Top-Down Design.</b>		
Everything evolves from the "bottom up" in a reductionistic manner. Denies that "top-down" design exists; Neo-D cannot comprehend the utility of systems biology or systems engineering.	Embraces hierarchical, top-down, design in living systems and the utility of systems biology. However, Third Way Evolution struggles to explain why top-down design is ubiquitous or why systems biology is so successful.	Embraces hierarchical, top-down, design in living systems and the utility of systems biology and systems engineering. Because intelligent design is a goal-oriented process, ID easily accounts for why these methods work so well.
<b>B. Prevalence of Function / Information Within Biology.</b>		
Generally assumes non-functionality as a null hypothesis. Failed to predict mass functionality for junk DNA; struggles to explain biological information, especially information outside the genome.	Embraces functionality throughout biology and the presence of functional information inside and outside of the genome. But in many cases struggles to explain why this information exists.	Embraces functionality throughout biology and the presence of functional information inside and outside of the genome. Because information comes from a mind, ID predicts / explains why this exists.
<b>C. Natural Genetic Engineering ("NGE").</b>		
Basically minimizes the importance of NGE. In fact, Neo-Darwinism believes NGE is largely unnecessary because standard mechanisms of random mutation and natural selection have unlimited creative capacity in all cases.	Deserves much credit for having discovered NGE and embraces the idea that mutations can be more targeted. Often thinks NGE has great explanatory power, from building new body plans to building molecular machines. But does the data show this?	Embraces NGE as a novel discovery which shows organisms are pre-programmed to rapidly respond and adapt to environmental changes. ID is open to following the evidence where it leads regarding the explanatory power of NGE, but finds no evidence yet that NGE can produce new body plans or a flagellum. However, ID predicts NGE allows organisms to modulate or fine-tune traits upon pre-defined axes and within pre-defined limits to rapidly respond to environmental cues and changes. ID also notes that NGE mechanisms likely originate through design.
	Does not try to explain the origin of NGE mechanisms.	
<b>D. Phenotypic Plasticity ("PP").</b>		
Minimizes the importance of PP because it overemphasizes the importance of organisms adapting to the environment through random mutation and natural selection.	Acknowledges that PP is important and that organisms have the internal ability to adapt to the environment in preprogrammed ways. Generally does not seek to explain origin of PP.	Accepts that organisms have the internal ability to adapt to the environment in preprogrammed ways. Explains PP through engineering principles that represent designed mechanisms of adaptation.

**Selected Bibliography.** There are numerous sources which support these points, but here are a few selected ones:

### Neo-Darwinism

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The term "natural selection" is used to recognize that within modern evolutionary theory, this is the standard term that is used to describe the mechanism by which some organisms survive and reproduce better than others. However, many have criticized the term "natural selection" because it anthropomorphizes nature, which is blind and does not actually "select" anything. This is not to deny that "natural selection" happens—just to point out that it might be better termed "differential survival," rather than implying that nature itself has the ability to "choose" or "select" what propagates and what doesn't.

**Introduction:** This rough comparison was first developed in preparation for a conversation between Denis Noble (Third Way) and Casey Luskin (ID), and moderated by Perry Marshall in November, 2024. It will likely be posted on YouTube in late 2025.

**Results:** Neo-Darwinism, Third Way Evolution, and ID have many similarities and differences. Neo-Darwinism and Third Way Evolution both essentially embrace materialistic models of evolution where natural selection\*\*\* is the ultimate arbiter of what gets produced. However, Third Way Evolution de-emphasizes the role of random mutation and also recognizes many novel mechanisms that can generate biological change. ID also recognizes many of these mechanisms, but views them as pre-programmed features that were designed to allow organisms to rapidly adapt to environmental changes. In particular, ID provides engineering-based methods for studying these mechanisms and their origin as mechanisms that were intentionally designed to enhance survival.

**Conclusion:** Neo-Darwinism is stuck on random mutation, natural selection, and reductionism and is essentially in denial that 21<sup>st</sup> century biology is moving beyond this paradigm. Third Way Evolution is "biologically realist," in that it recognizes the reality that non-randomness, teleology, purpose, function, intention, information, and top-down design permeate biology. However, because it is wedded to materialistic models of evolution, it is impatient to give adequate accounts for these observations. ID is also "biologically realist" but it alone adopts an engineering perspective that can explain why teleology, non-randomness, and top-down design are ubiquitous in living systems.