

Engineering stacks

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Abstract

In this paper, I describe engineering stacks.
The paper ends with "The End"

Introduction

Engineering stacks are **key** to both national and civilizational progress.

In this paper, I describe three (3) (III) engineering stacks in increasing order of engineering status: engineering skills, capital, labor and time to create the stack and get the stack running stably.

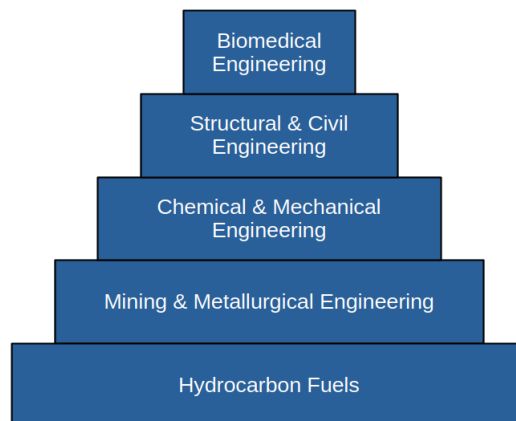
In each stack, the lowest step is the source of energy (**fuel** henceforth) for that stack. Since each of the three stacks uses a different fuel, a tripartite **redundancy** exists in the overall engineering system of the nation, making it difficult for any enemy to destroy the nation as a whole.

However, the three stacks aren't necessarily **independent** of one another and can **interact** with one another to produce **synergies** that are impossible otherwise.

For example, an output **chemical precursor** from chemical engineering can be an input to biomedical engineering, whose output **bio-molecules** can be an input to nano engineering to produce the final product **medicine**.

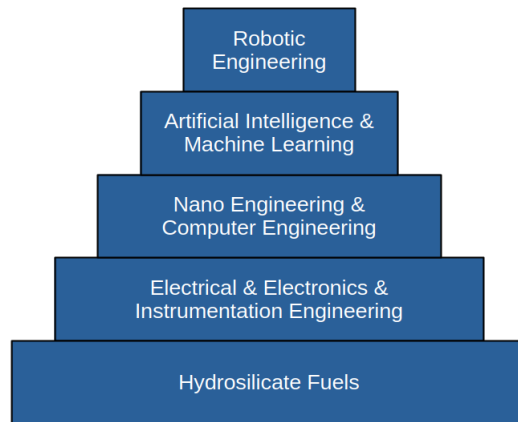
For another example, an output **metallic alloy** from metallurgical engineering can be an input to electrical engineering, whose output **transformer** can be an input to nuclear engineering to produce the final product **nuclear power plant**.

The primitive engineering stack



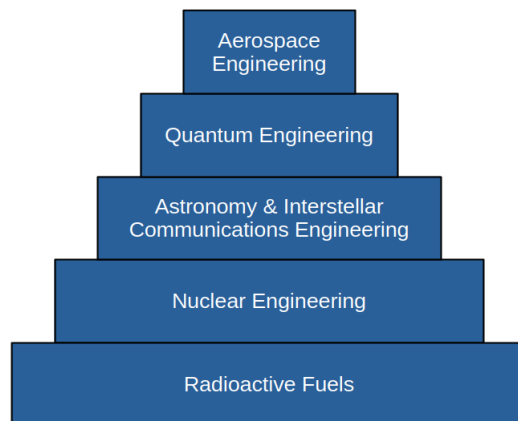
The primitive engineering stack for a nation is based on exploiting **hydrocarbon fuels**.
The primary products of the primitive engineering stack for a nation are **chemical and metallic precursors and weapons, cement and steel buildings and biomedical goods and services**.

The modern engineering stack



The modern engineering stack for a nation is based on exploiting **hydrosilicate fuels**. The primary products of the modern engineering stack for a nation are **elastics and plastics**, **semiconductor devices** and **computing goods and services**.

The futuristic engineering stack



The futuristic engineering stack for a nation is based on exploiting **radioactive fuels**. The products of the futuristic engineering stack for a nation are **national security**, **space operations** and **futuristic goods and services**.

The End