

## Preface

I had always liked this sort of thing. In school we took a political compass test which fascinated me. And when I, in the library, saw a book titled 'Multiple Intelligences' I knew I had to learn what it was about. The idea of different intelligences seemed revolutionary to me. I concluded very early on that I must (at least) be high in mathematical along with linguistic intelligence, and low in spatial. Since then, I have learned much; about IQ, percentiles and SATs, Jung's *Psychological Types* and more. Though I still know far too little.

What excited me when I was exploring Engineering degrees was the thought of how these would differ in relation to levels and types of intelligence. Especially spatial, since I couldn't recall any time when I had heard it being talked about, by teachers or otherwise; even though it seemed important. Even today, I have not yet ended up finding something that goes into more satisfying detail regarding Engineering aptitude for example. Therefore, I wrote this as a hobby-project.

This book has been written with a simple passion for psychometrics, a love for and practise of words. At such, I do not expect this book having any grand impact on or purpose for the world. It is simply for "fun" and I am open to constructive criticism. Maybe I will learn more of value in this realm in the future and find reason to write again.

I have multiple original sources to thank for inspiring and teaching me structuring of books. And thank you too, my reader.

Disclaimer: potential pseudoscience  
- Erik Salam

# Introduction

This small book will very efficiently take you to a clearer view of how Engineering (and other) degrees differ in relation to individual dispositions. The methods used in this book to present these facts are available to remember if one wants to seek more answers elsewhere; else, for example if one just wants to make a quick and good decision for “what to study” and not delve deeper into this kind of research, can treat the explanations as mere proof of the suggestive paths of choice.

In other words, this book (with all its unique glossary, and literature-combined review) may serve as the layman’s introduction to a type of “career psychology”, or, the (young) man’s (STEM) career guide.

## Chapter 1

# Individuation

*"The individual is obliged by the collective demands to purchase his individuation at the cost of an equivalent work for the benefit of society" – Carl Jung*

### **Mentors and Masters**

## Chapter 2

# Psychometrics

*"Can you predict potential success?"*

### **Psychometrics**

Psychometrics is (mathematics) statistics applied on psychology. It is the measurement of for example cognitive abilities.

### **Skill percentiles**

Because psychometrics can measure differences among people in the same and different categories, you can rank individuals there hierarchically too. The utility of this lies in being able to discover correlations across different hierarchies. One could for example compare engineering success to scores on a mathematics test, and when discovered a link, apply the test as an aptitude indicator.

Calculating percentiles in test-scores allows for very clear rankings. From the 50th percentile being average, to 99th being the top 1%, or in the opposite direction: 0th being absolute bottom.

## Chapter 3

# Mathematical ability

Current research still hypothesize the nature of components that make mathematical ability.

## Chapter 4

# Spatial ability

Current research still hypothesize the nature of components that make spatial ability.

## Chapter 5

# Linguistic ability

Current research still hypothesize the nature of components that make linguistic ability.

## Chapter 6

# Geometry

*“Is geometry a good predictor of (many types of) engineering aptitude(s)?”*

Hypothesis: geometry skill, an overlap of both high mathematical and spatial abilities manifest the aptitude for (many fields of) engineering.



## Chapter 7

# Engineering

### **Engineering aptitude**

You (generally) need (high) both mathematical and spatial ability.

#### **Mathematics**

(why mathematics is important)

#### **Spatiality**

(why spatiality is important)

#### **Geometry**

(why geometry is important)

### **Architectural Engineering**

#### **Architecture vs. Architectural Engineering**

Architecture is concerned with the aesthetic design of buildings.

One could describe the Architect as frontend developer, and the Architectural Engineer as backend developer. Architects drawing what should be seen, Architectural Engineers drawing what needs to be.

Like Architecture, Architectural Engineering is also focused on the buildings themselves; but moreover also the buildings' individual logic.

### **Civil Engineering**

*"Design roads, buildings, and more in complex and harmonious encompassings."*

Unlike Architectural Engineering, which is more concerned with building, Civil Engineering focuses on structure and environment on a larger scale; to make sure everything works together.

### **Mechanical Engineering**

Objects, components, lots of physics (force, etc)?

### **Electrical Engineering**

A lower (basic) tier-level example would be (regular) computer building?

## Chapter 8

# Programming

Why spatial ability matters in programming

### **Programming language**

Are there differences for programming languages that depend on cognitive profiles, meaning do individuals (significantly) vary in aptitude for different programming languages?

## Chapter 9

### IQ

*“Terrifying.”*

## Chapter 10

# Memory

*“Does memory play a (important) role in any kind of STEM aptitude?”*

## Chapter 11

# Social skills

*"How important are social skills and when?"*

"Communication skills"

The Empathy Circuit

## Chapter 12

### Profiles

#### **The Mechanic**

Spatial

#### **The Ashkenazi**

Mathematical + Linguistic

#### **The Engineer**

Mathematical + Spatial

## Chapter 13 (bonus)

# Minecraft

Spatial intelligence