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# RESEARCH AS A CAREER PATH

Vitaliy Goryashko

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# When you start your journey it looks simple



Plan is nothing, ...

## Times Square, NY, 6am



# Plan is nothing, planning is everything

## Times Square, NY, 6pm



# Planning is everything: outline of this talk

- Things to avoid
- Things to try to accomplish
- Soft skills to master

# Career as a dynamic system

Bachelor at Department X, University Y

Master at Department X, University Y

PhD at Department X, University Y

....

Consider this career path as a dynamic systems.

What can we say about it?

It can be thought of as an isolated dynamic system.

What happens to the entropy of such a system?

The entropy usually grows! Disorder grows...

**Avoid getting stuck with one thing!**

# Career must be as an **open** dynamic system

Bachelor at University X

**Master** at University Y

**PhD** at University Z

....

When Richard Feynman graduated at **MIT\***, the main advice of his supervisor was: **Go and explore the world!**

**Diversity and mobility is crucial.**

You may wonder: **do I really need to go? Can I just stay?**

The answer is **NO.**

*\*Already that time MIT was one of the best universities.*

# What makes a nation good learners?

## But first, how to compare the nations?

|           | <b>IPhO</b>           | <b>IMO</b>          | <b>PISA (2013)</b>     | <b>PISA (2003)</b>            |
|-----------|-----------------------|---------------------|------------------------|-------------------------------|
| <b>1</b>  | China (96.1)          | China (2.1)         | Shanghai, China (580)  | <b>Finland (548)</b>          |
| <b>2</b>  | Russia (85.5)         | USA (1.85)          | Hong Kong, China (555) | <b>Japan (548)</b>            |
| <b>3</b>  | Iran (81.5)           | Russia (1.55)       | Singapore (551)        | <b>Hong Kong, China (539)</b> |
| <b>4</b>  | USA (75.6)            | Hungary (1.426)     | Japan (547)            | <b>South Korea (538)</b>      |
| <b>5</b>  | Taiwan (75)           | Romania (1.35)      | Finland (545)          | <b>Liechtenstein (525)</b>    |
| <b>6</b>  | South Korea (73)      | South Korea (1.2)   | Estonia (541)          | <b>Australia (525)</b>        |
| <b>7</b>  | India (69.4)          | Bulgaria (0.98)     | South Korea (538)      | <b>Macau, China (525)</b>     |
| <b>8</b>  | Hungary (67.5)        | Germany (0.907)     | Vietnam (528)          | <b>Netherlands (528)</b>      |
| <b>9</b>  | Australia (58.5)      | Vietnam (0.907)     | Poland (526)           | <b>Czech Republic (523)</b>   |
| <b>10</b> | <b>Germany (57.5)</b> | <b>Iran (0.704)</b> | <b>Canada (525)</b>    | <b>New Zealand (521)</b>      |

# What makes a nation good learners? Cont'd

|    | State       | No. of Universities | Average rank | Population in millions | Weighted rank of universities per million of citizens |
|----|-------------|---------------------|--------------|------------------------|---|
| 1  | Switzerland | 7                   | 61.57        | 8                      | 53.87   |
| 2  | Netherlands | 12                  | 53.23        | 16.77                  | 38.1  |
| 3  | Hong Kong   | 4                   | 60.75        | 7                      | 34.7  |
| 4  | Sweden      | 5                   | 59.48        | 9.52                   | 31.24   |
| 5  | UK          | 31                  | 60.11        | 63.23                  | 29.47   |
| 6  | Denmark     | 3                   | 53.53        | 5.6                    | 28.67   |
| 7  | Australia   | 9                   | 61.86        | 22.68                  | 24.55   |
| 8  | Belgium     | 4                   | 55.38        | 11.14                  | 19.88   |
| 9  | Israel      | 3                   | 50.13        | 7.9                    | 19  |
| 10 | USA         | 77                  | 65.6         | 314                    | 16  |

Representative nations are the **Netherlands, Hong Kong and Australia.**

# Some findings

The striking common characteristic is the deep internationalization of higher education and the ratio of foreign student population to domestic one [12,] reached more than 20% in Australia, 10% in Hong Kong and 7% in the Netherlands. (In the US only 3.5%)

Internationalization and mobility makes nations successful.

Personal stories of successful colleagues suggest that **the same holds true for individuals.**

T.P. Leung “Development of Higher Education in China Mainland and Hong Kong SAR”,  
European University Association,  
[http://www.eua.be/eua/jsp/en/upload/Panel\\_Leung.1112699548801.pdf](http://www.eua.be/eua/jsp/en/upload/Panel_Leung.1112699548801.pdf)

# Ideal carrier path in Sweden

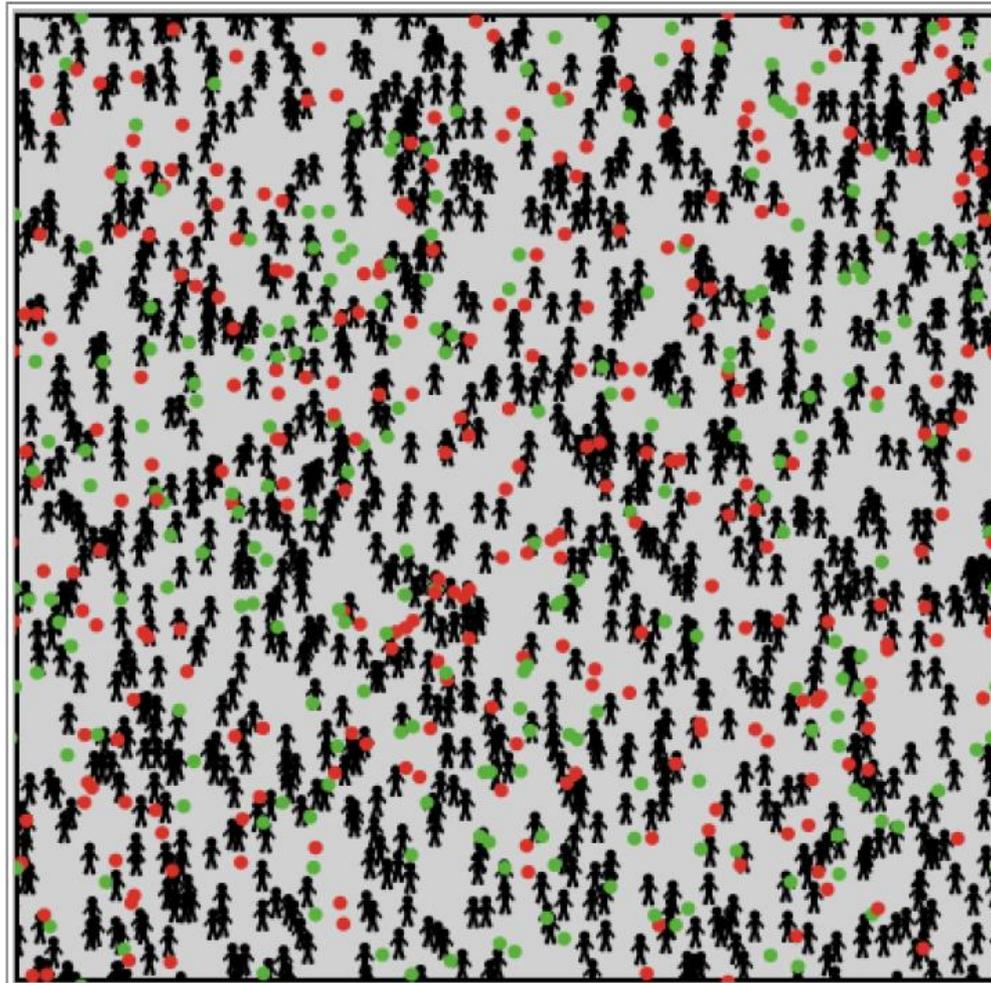
- Bachelor at University X1, Sweden
- Exchange Master at University Y1, USA
- PhD at University X2, Sweden
- International postdocs at University Y2, USA ...
- Tenure track at University X3, Sweden
- ERC starting grant
- Lectureship in Sweden or somewhere in Europe
- ERC consolidator grant
- Professorship in Sweden or somewhere in Europe

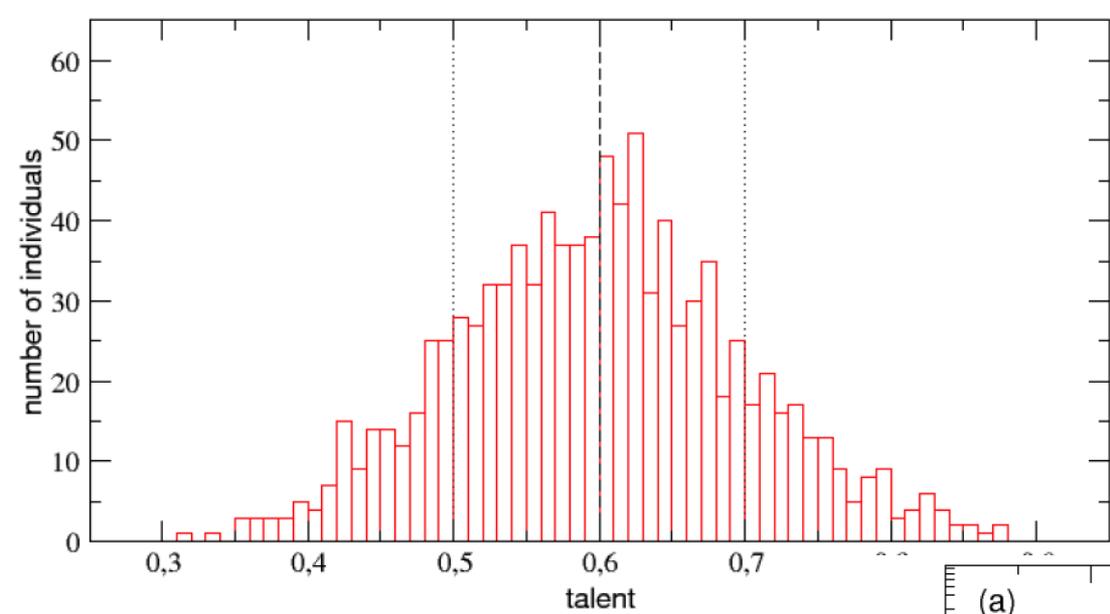
# Soft skills to Master

- Language proficiency (BBC learning English)
- Academic writing (youtube, 'How to write a great research paper')
- Presentation skills (TED talks)
- Time management (youtube , Randy Pausch 'Time managment')
- *Basics* of project management
- Leadership training
- Self-organization & self-motivation
- Foster your grittiness
- Reflect on the things

# Talent vs Luck: the role of randomness in success and failure

A. Pluchino\*, A. E. Biondo<sup>†</sup>, A. Rapisarda<sup>‡</sup>





Pareto principle 80/20

