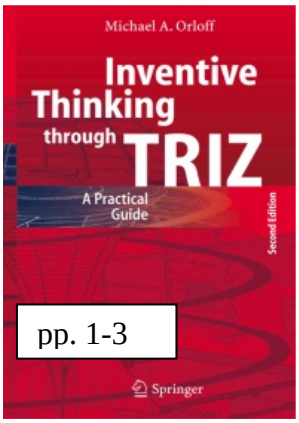
Introduction



pp. 1-3

NATURA NIHIL EST CALLIDIUS[1]

1 Invention of Civilization

This is a textbook about inventiveness in technical creative work. Above all else, it is about the highpoint of technical creative work - invention. Humanity has developed on the stepping-stones of inventions.

Today, discoveries and inventions move humanity forward faster and faster, as if we stood on a great escalator.

If we assume that today the productive age of an individual is up to 40 years and we then consider the number of generations that have lived through this span of time, we will then be able to correctly assess the developmental speed of civilization for the first time.

Of **1000** generations in the last 40,000 years:

NB
- more than **800** generations lived without artificial shelters in woods and caves;
- only **120** generations have known and used the wheel;
- about **55** generations have known and used the Archimedes‘ law;
- about **40** generations have used windmills and watermills;
- about **20** generations have known and used timepieces;
- about **10** generations have known printing;

NNB
- **5** generations have traveled with ships and trains;
- **4** generations have used electric lights;
- **3** generations have traveled with automobiles, have used telephones and vacuum cleaners;
- **2** generations have traveled with aircraft and used radios and refrigerators;

NNNB
- **only today‘s generation** has traveled in outer space, has used atomic energy, PCs and notebooks, and uses artificial satellites to transmit audio, video and other information around the globe.

90 % of the knowledge and all material values that have been arisen in the history of humanity were developed in the 20th century!

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[1] Nothing is more inventive than nature / Marcus Tullius Cicero (106-43 BC), Roman rhetorician, philosopher, statesman

2 Introduction

It is interesting to note that, as a biological object, the human brain has not changed in the last decades, not in many thousands of years (!). The organization and apparently the working principles of the brain are the same as they were, say, 50,000 years ago.

We can assume that the human brain is supplied with a huge „functional over-capacity" like many biological objects in nature. We can also recognize that nature uses this principle generously to maintain life on the planet, either through the distribution of seeds or through the maintenance of a bio-population of the necessary size. But, the purely biological over-capacity of the brain does not lead to **quality thinking.** This probably explains why the number of really valuable inventions does not exceed 1% of the total number of patents!

Quality thinking can change in many ways and depends on the quality of learning and the subjects learned. Modern technology and the subjects learned by individuals are not without essential faults. Along with the influence of the respective social milieu, this explains why humanity is still developing today according to „biological", stochastic laws. However, this is an unacceptable waste of potential today. It increases the probability that intellectual mediocrity will be reproduced and certainly does not support genius.

We can also see that the wealth of information, the standards, and the meaning of the problems to be solved has changed significantly. Is the human brain still capable of dealing with the continuously growing body of knowledge? Is humanity capable of dependably avoiding or successfully stopping possible catastrophes, some of which are hidden or have developed very slowly? Can humanity shape its future towards harmony and progress? Can humanity invent (or rediscover) the actual criteria for harmony and progress? Doesn't it seems that the only way that humanity can move from it current phase as ***homo sapiens technologicus*** to a phase as ***homo sapiens progressus*** (Latin: *rational, evolving, developing human*) is to create its own ideals for progress and harmony?

But, how do people find ideas for inventions? How do people find creative solutions for non-technical problems? The English philosopher Karl Popper[2] suggested that the correct question would be:

Where do good ideas come from?!

In the 20th century, someone was ready to tell the entire civilized world that it cannot think. This means that people waste their intellectual potential because of poorly organized thinking. Not only do people not learn to think, they also don't suspect that they think ineffectively!

Someone once said the following about his idea: Today, just like thousands of years ago, the method of *try and error* is the basis of thinking. This method is an unstructured guess for some kind of solution. Very few of these ideas are successful, and most of these are abandoned later. This person also said: *Wouldn't it be more logical to learn from success?!* It would be even better to condense the experience gathered from the best solutions into concrete rules and to develop a methodology with complete models or even as a practical theory.

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[2] Karl Raimund Popper (1902-1994) - English philosopher

This person's name was **Genrikh Saulovich Altshuller (1926-1998).** In the middle of the 20th century, he developed the „Teorija Reschenija Izobretatel'skich Zadač" that he then called TRIZ (Russian acronym). In English this is a „Theory of Inventive Problem Solving". This is how he outlined new possibilities to learn inventive creativity and its practical application.

TRIZ has established itself more and more since the end of the 20th century. However, a complete textbook on the essential principles of classical TRIZ that everyone can understand has never been written until now. The book you are now reading is just such a textbook.

I hope that TRIZ will help you find the path to new possibilities and success!