

# HOW NEW THINGS COME INTO THE WORLD

Thomas Brodbeck, Biologist, Media Producer, Executive Coach, Docent





Thomas Brodbeck 25.Sept. 2013







Mittwoch, 16. Oktober 13



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**We need new things in the world**

**We need new things in the world**

**BUT**

**We need new things in the world**

**BUT**

**How do new things come into the world?**

**We need new things in the world**

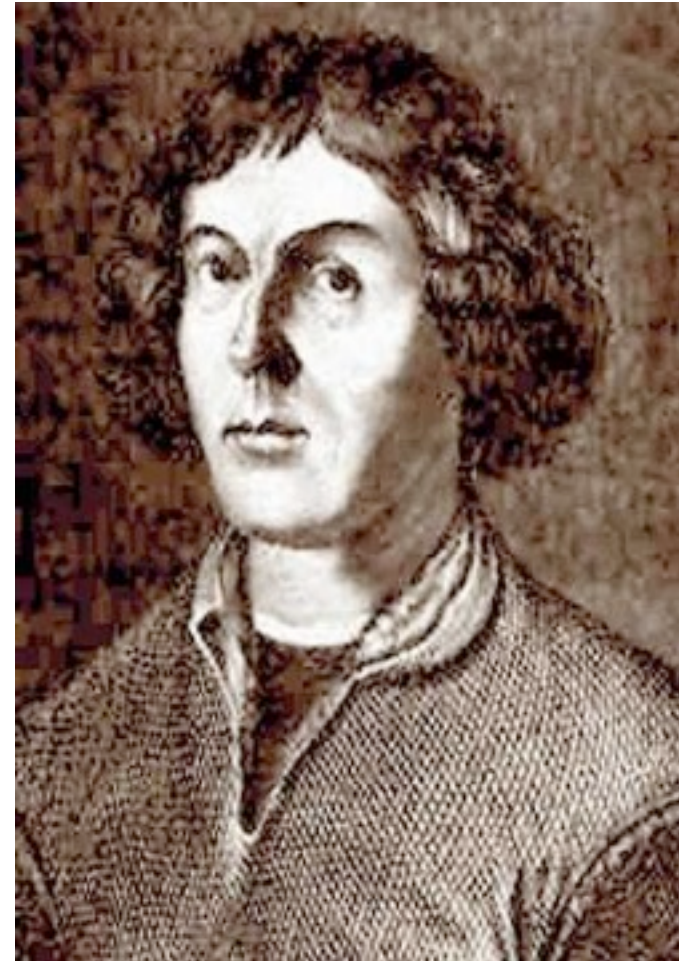
**BUT**

**How do new things come into the world?**

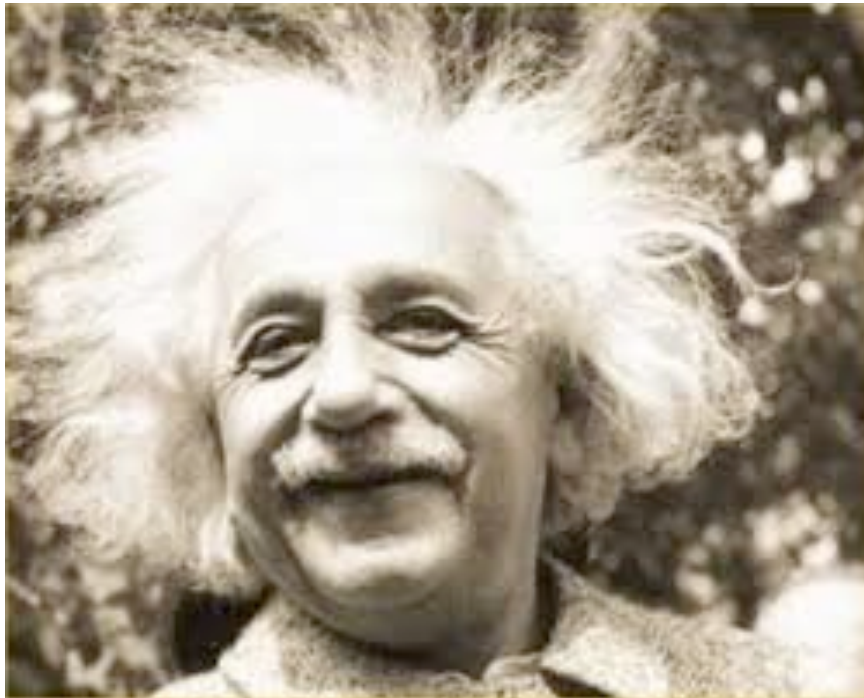
**Distrust Authorities!**

Nikolas Kopernikus  
(\* 19. Februar 1473 in Thorn,  
† 24. Mai 1543 in Frauenburg)

Martin Luther: “The fool wants to turn the whole art of astronomy upside-down! However, as Holy Scripture tells us, so did Joshua bid the sun to stand still and not the earth.”



# Albert Einstein



“Quantum mechanics is certainly imposing. But an inner voice tells me that it is not yet the real thing. The theory says a lot, but does not really bring us any closer to the secret of the ‘old one’. I, at any rate, am convinced that He does not throw dice.”



The priest Georges Lemaître published his big bang theory in 1927. His colleagues smiled at his work for years. Albert Einstein went as far as to call the priest's theory 'abominable', and tried to invalidate it with all means.



# HUNDERT AUTOREN GEGEN EINSTEIN

Herausgegeben

von

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BERGER, Dr. REUTERDAHL, Dr. VOGTHERR u. v. a.

Max Planck



Philipp von Jolly



Text

It was in 1874 when high-school graduate Max Planck asked Philipp von Jolly from Munich whether he could recommend to study physics instead of mathematics or music. Jolly commented on Planck's interest in physics with the remark that 'in this field, almost everything is already discovered, and all that remains is to fill a few unimportant holes' - an opinion held by many physicists at the time.

## Prof. Wilhelm Barthlot



All four attempts of presenting the phenomenon of self-cleaning surfaces, the so-called lotus effect, in a dedicated publication were dismissed by the consultants of renowned magazines, giving the same reason each time: It contradicted the textbooks and the extensive array of related literature. One of the consultants replied that the lotus effect only existed in the author's fantasy world. But doctrines are not rules - they are opinions.



IBM CEO Thomas Watson postulated:

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IBM CEO Thomas Watson postulated: “I think there is a world market for maybe five computers”

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And in 1993, who told his employees - who numbered quite a few - that ‘the Internet is just a hype’?

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# What else brings new things into the world?



**What else brings new things into the world?**

**GENIUS AND MADNESS!**

## Rudolf Diesel



“There is no saying more false than the one about the genius who brings himself to do something. 99 out of 100 masterminds perish undiscovered, and number 100 only barely manages to accomplish something amidst untold difficulties.” (\*18.3.1858; +29.9.1913)

Diagnosis: Depression.



## Baron Karl-Friedrich von Drais



Major Tulla: “We can thus not attach any significant purpose to von Drais’ man engine whatsoever, because everybody who has feet can use these for a change of location much better in the way they are used naturally, and we believe that such a machine could only be of any use to the human being if fitted for disabled people or those without feet, but in this case the operation would need to be set in motion with the hands to allow the machine to give to such people the power of movement they lack... It is for these reasons that I must doubt the overall practical use of the running machine.”

The inventor of the dandy horse, the archetype of the bicycle, uses alcohol to drown his frustration about the lack of understanding and the foolishness his machine is met with. He suffers from persecutorial mania in the end. Drais is incapacitated in 1851 and dies within the year.

Diagnosis: Alcoholism and paranoia.

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John Forbes Nash, Jr.

Nobel Prize in Economics for his works in game theory.

Diagnosis: Schizophrenia



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# auticon

Qualität auf den **Punkt**



Typical strength of people with the Asperger-Syndrome are e.g.:

- Pattern-recognition
- accuracy
- ability to concentrate
- memorization
- photographic memory
- power of observation
- tree-dimensional orientation
- recognition of details
- new and original solutions
- logical thinking
- persistence and endurance
- loyalty and love of the truth

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## Psychological Explanation

According to Wolfgang Maier, psychiatrist with the University of Bonn, some disorders include the creative ability to think associatively and unconventionally.

Inversely, people with creative talents are said to be susceptible to derail emotionally. The rate of authors and artists who suffer affective disorders such as depression is thus above average.

Genius and madness are connected more closely than initially thought: Researchers have discovered a gene which seems to be responsible for both creativity and insanity. The positive side effect is that this hereditary factor is sexy.




What else do bring new things in the world?

WOMEN!



# Berta Benz



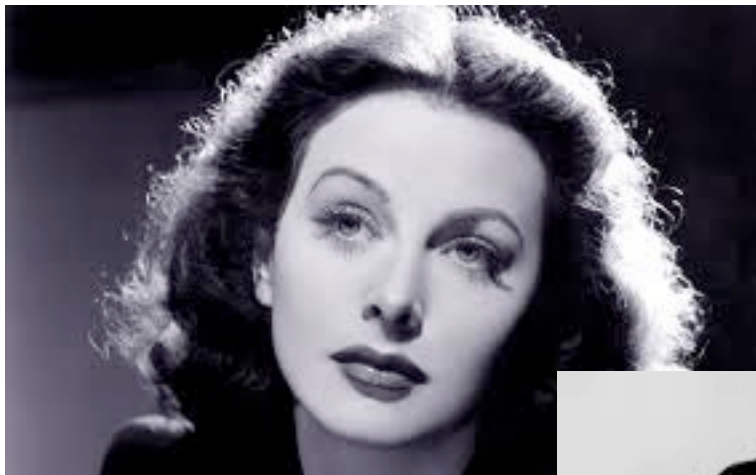


**12th August 1888**

## Carl Benz:

‘How can one sit on such an unreliable, pathetic and loud machine box? There are horses all over the world with the most elegant carriages and hackney coaches on top’, others remarked. The ‘experts’ said it was ‘a pity about the man; he is going to ruin himself and his business with this crazy idea’. And an innocent man from Berlin gave the well-meant advice ‘if I had a smelly box like that, I would stay at home ...’.

# Hedy Lamarr



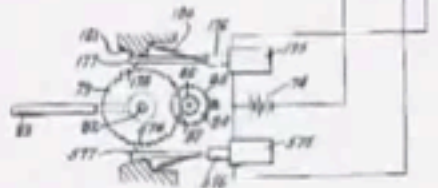
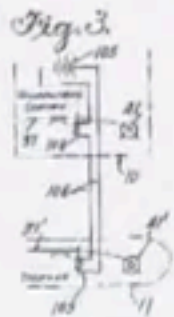
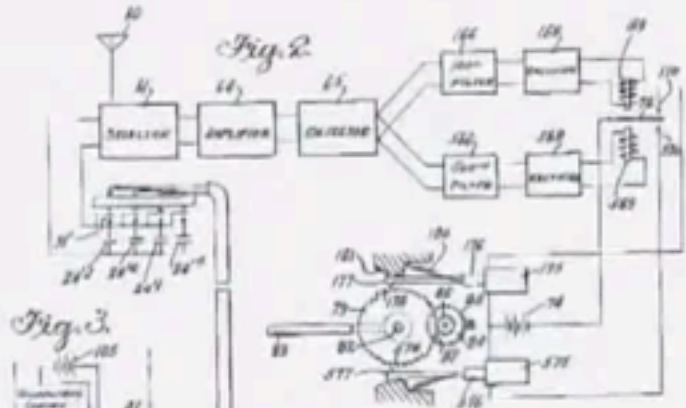
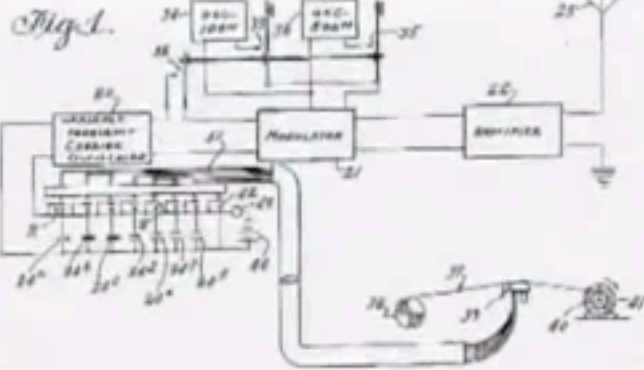
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Aug. 11, 1942.

H. K. MARKEY ET AL  
SECRET COMMUNICATION SYSTEM  
Filed June 10, 1941

2,292,387

2 Sheets-Sheet 1



Designed by  
 Rudy Kiesel Marking  
 George Antheil  
 Lyon & Lyon

Aug. 11, 1942.

H. K. MARKEY ET AL  
SECRET COMMUNICATION SYSTEM  
Filed June 10, 1941

2,292,387

1 Sheet-Sheet 2

Fig. 7

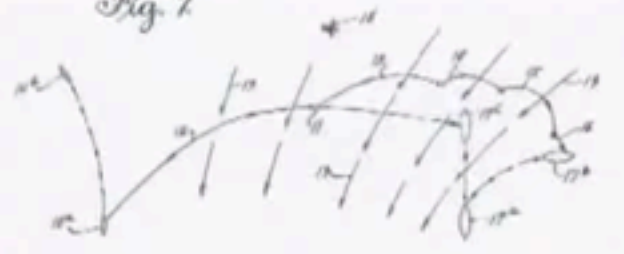
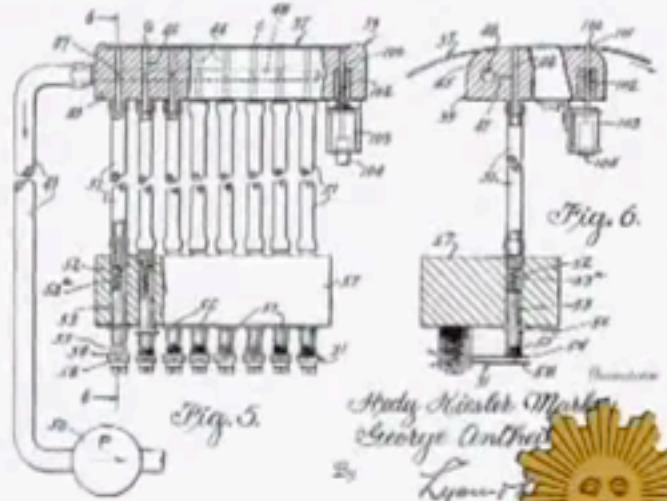
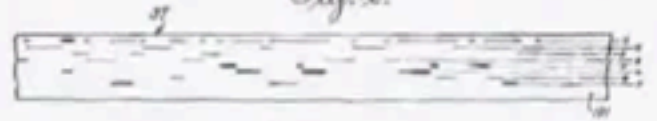


Fig. 4



Designed by  
 Rudy Kiesel Marking  
 George Antheil  
 Lyon & Lyon



What can we use for inspiration?

NATURE!



## Bionics/Biomimetics



Lotus: Self-cleaning

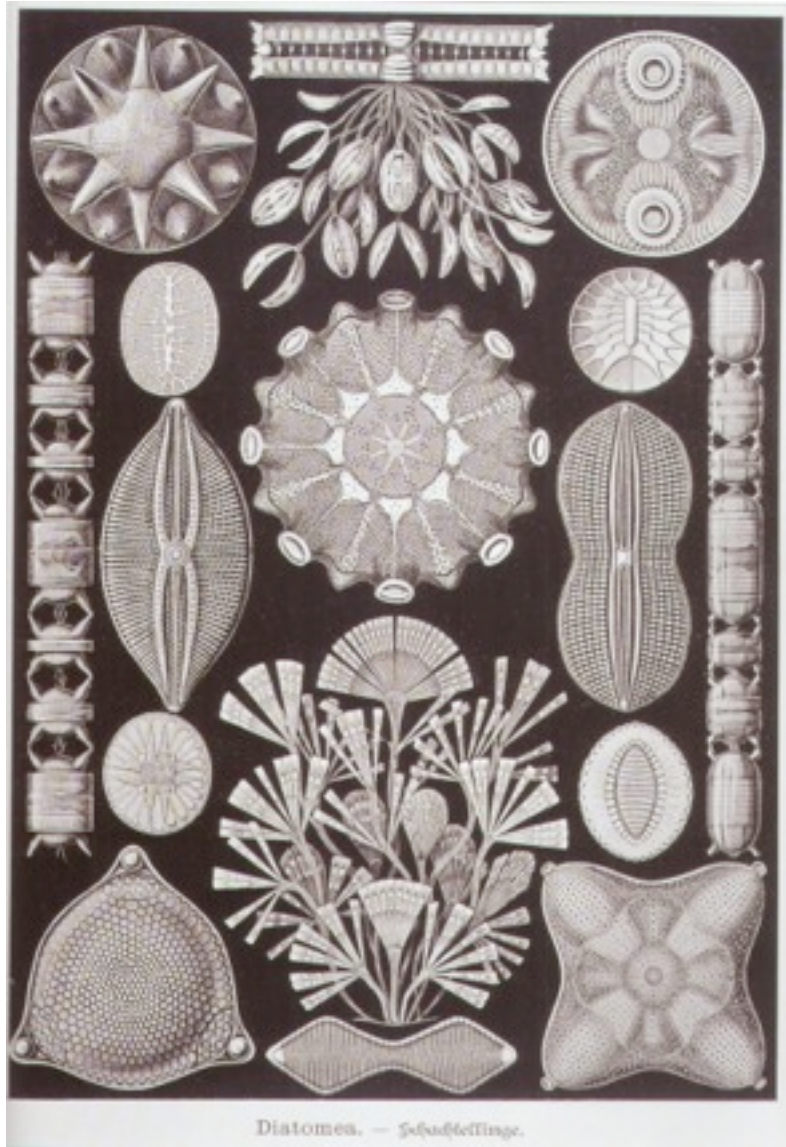
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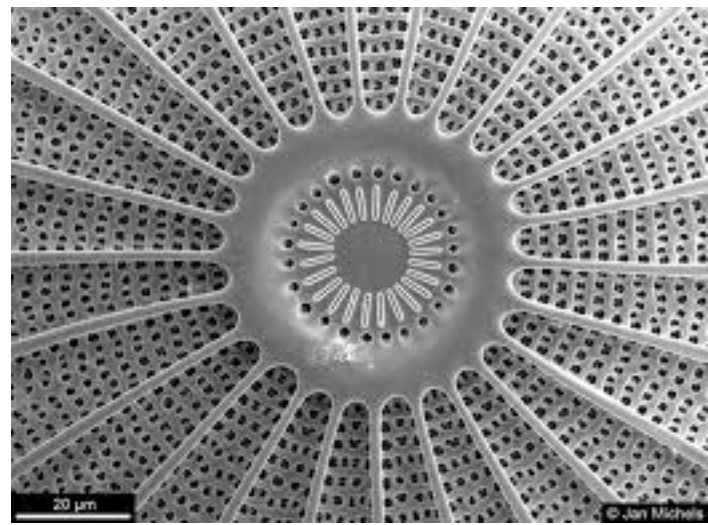
·Drag-reducing surfaces designed on the model of sharks' dermal denticles



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Lightweight rims designed like diatoms.



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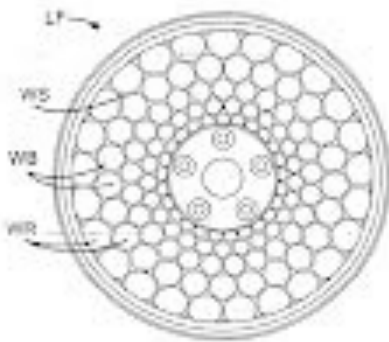


Fig.13

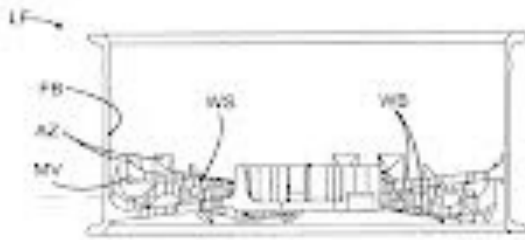


Fig.14

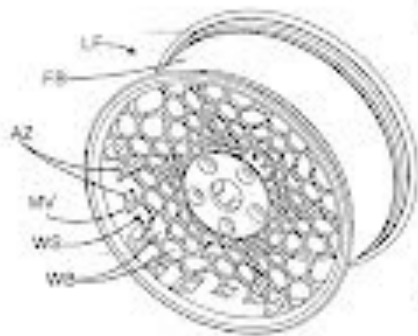
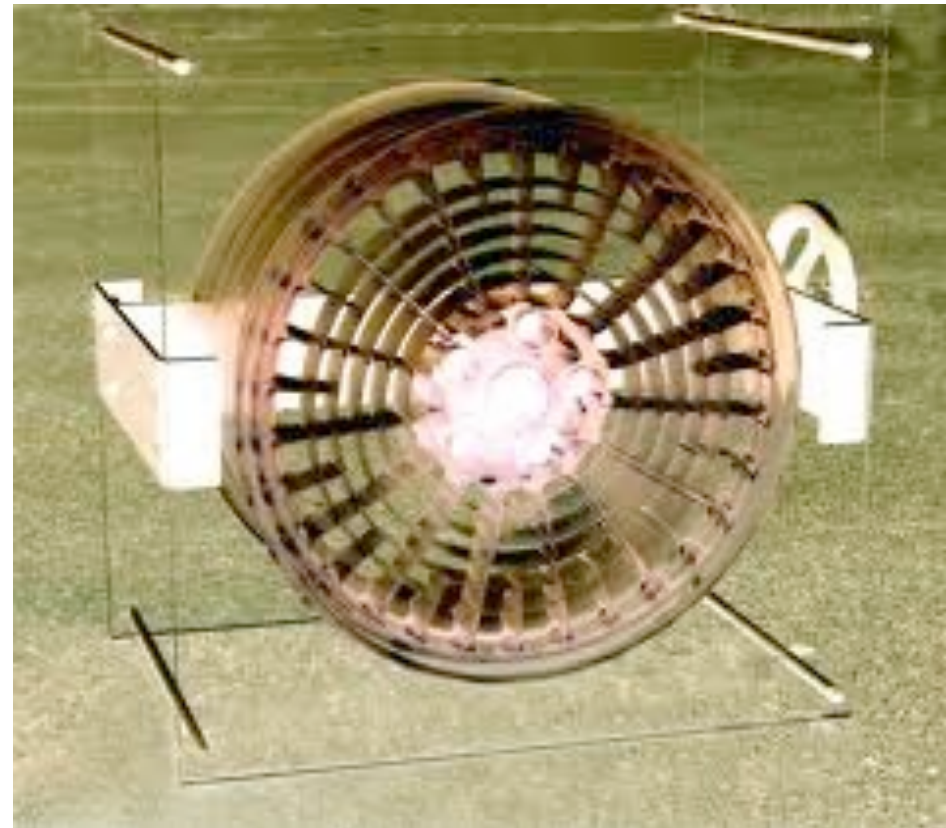


Fig.15



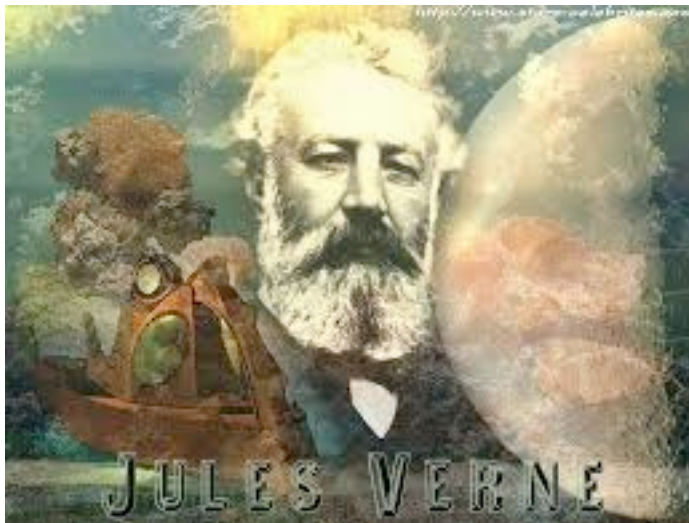


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What else?

Literatur!

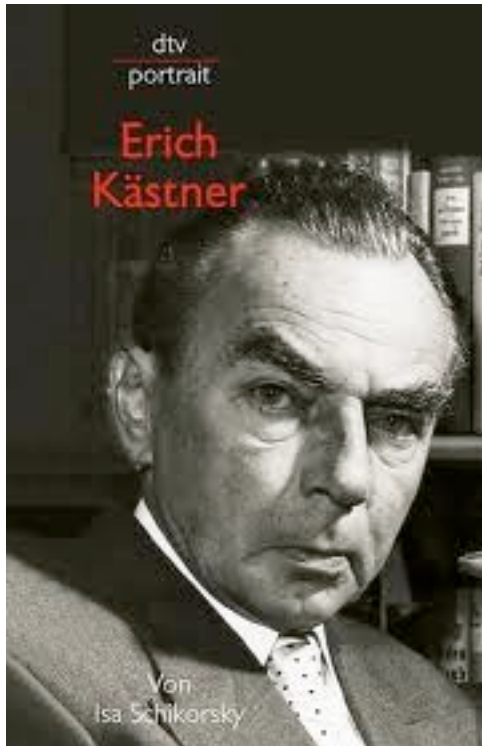
Jules Verne



It is not a coincidence that the world's first nuclear-powered submarine, the American USS Nautilus, was named after Captain Nemo's futuristic submarine from the novel *'Twenty Thousand Leagues Under The Sea'*.

When Werner von Braun got his hands on Hermann Oberth's book *'The Rocket in Interplanetary Space'*, the utopias he absorbed from Kurd Lasswitz and Jules Verne's *'From the Earth to the Moon'* became a bit more real. He made an effort to improve his up to then modest achievements in mathematics in order to understand the book about the specialist subject.

## Erich Kästner

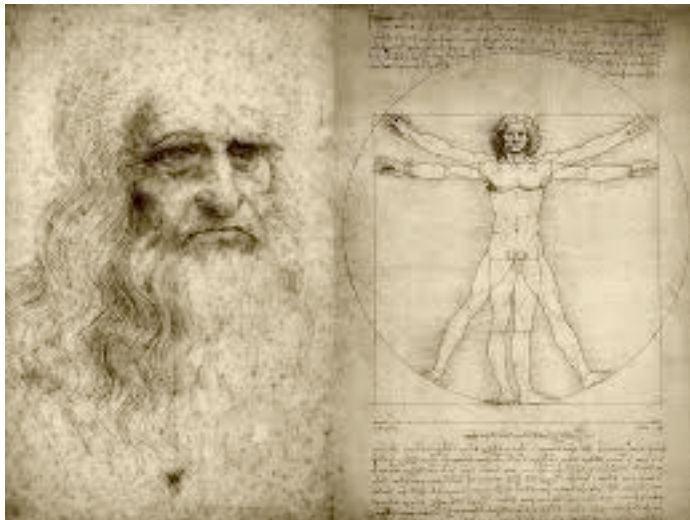


“I want to go to the laboratory first. Goodbye, darling!”, he said, then put his pocket telephone away, stepped back onto the moving belt, read in a book and continued his journey.

What else?

ART!

# Leonardo da Vinci and Isaac Newton



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Both da Vinci and Newton dissected and analyzed nature in order to draw conclusions - to calculate and understand the world and to construct new things.

Newton wrote his epochal work 'Opticks', and da Vinci concerned himself with the structure of the eye. Da Vinci discovered that the retina displays images upside down. These findings were the basis for his construction of the first camera obscura.

Leonardo da Vinci: "Art is the Queen of all sciences communicating knowledge to all the generations of the world."

To him, "mechanics is the paradise of the mathematical sciences, because by means of it one comes to the fruits of mathematics."

The science of Leonardo da Vinci is a visualized one. Painting and drawing to him were graphic tools which allowed for such materialization, together with the pragmatic and concrete representation of abstract theory. All of this leads to a strange blend of layers of reality and abstraction, thought and vision, art and science, of which he was seeking a synthesis. Knowledge that did not pass all sense cannot create a truth other than a harmful one, to rephrase one of his quotes.



# What is Color?

Eugène Chevreul



Besides Newton's *Opticks* and Goethe's *Theory of Colours*, Chevreul's *De la loi du contraste simultané des couleurs* is regarded as one of the most important works in color theory.

His main works greatly influenced the developments in the art industry and modern painting.

Vincent van Gogh developed a new color theory; he felt constantly in-between two thoughts, the first about material worries, a constant seesaw just to make ends meet, and the second thought devoted to the study of colors. He always felt as if he had to discover something. 49

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“For the rest of my life I want to reflect on what light is.” Albert Einstein

“The real subject of every painting is light”. Claude Monet



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# Question your Own Insights!



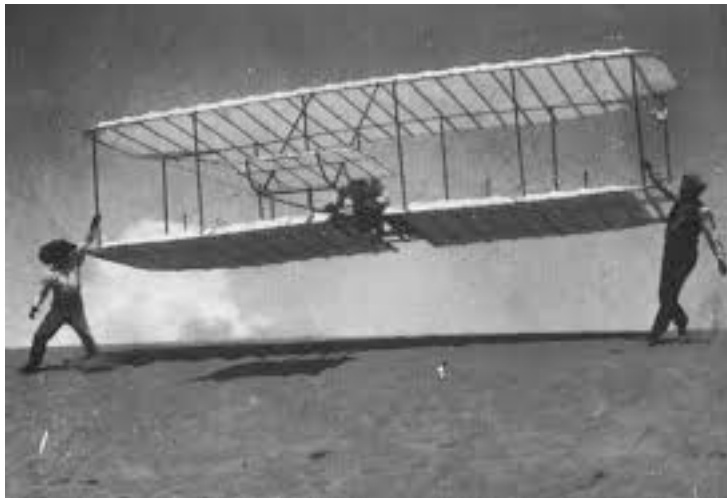
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## Question your Own Insights!



### *Transatlantic Flight - Charles Lindbergh?*

Lindbergh was not the first to complete a transatlantic flight. In fact, he was the 67th person to do so; John Alcock and Arthur Whitten Brown were the first to fly an aircraft non-stop across the Atlantic as early as 1919. A few days later, the English air ship R34 made its way non-stop from England to Mineola/New York and, after landing, back again non-stop.



## *Engine Powered Flight - The Wright Brothers?*

Jacob Brodbeck (born on October 13, 1821 in Plattenhardt, Germany, died on January 18, 1910 in Luckenbach, Texas) was a German-American aviation pioneer and the draftsman of the aircraft which allegedly was the first in aviation history to successfully fly in 1865. In the US, Brodbeck is known as a Father of US Aviation. This was long before the Wright brothers took off on their maiden flight in the Wright Flyer Kitty Hawk in 1903.

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## Gustave Trouvé

# Automobile -Carl Benz?

## Étienne Lenoir



The Frenchman Étienne Lenoir patented an operational gas engine in 1860. Three years later, he drove a hippomobile, a street vehicle powered by a gas engine, from Paris to Joinville-le-Point.

In 1881, Gustave Trouvé presented the first fully operational electric car suitable for daily use on the electricity trade fair in Paris - five years before Benz's patent was filed. Numerous electric cabs were found on the streets of New York in 1899, before gas became cheaper and the combustion engine started its triumphal procession.



1. — TRICYCLE DE M. TROUVÉ.

## Conclusion

Prof. Dr.-Ing. Grabe, Head of the Geotechnical Engineering and Construction Management Institute of the Hamburg University of Technology:

“It is the process of creation engineers are actually fascinated about. A deeper understanding of mechanics and material behavior alone is not an adequate prerequisite, yet a useful one. Intuition and imagination make the difference. Only when these two are added, creativity begins.”



# Pliny the Elder



# Tiberius







# THANK YOU FOR YOUR ATTENTION

## ANY QUESTIONS?



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# INDICATION OF SOURCE

[www.youtube.com](http://www.youtube.com)

And at all times, this sentence by Paul Feyerabend seems valid:

“Given any rule, however 'fundamental' or 'necessary' for science, there are always circumstances when it is advisable not only to ignore the rule, but to adopt its opposite.”



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