1) Who was Hero of Alexandria?

Hero of Alexandria

First of all, for the ones who are not intimate with Hero or at least its life :-), let's quickly present him. Hero is also known as Heron of Alexandria. He lived in the first century of the occidental era in the famous City of Antiquity, Alexandria, He was a Greek (or at least Hellenistic) engineer and is considered as one of the greatest experimenter of this era.
Even if he is supposed to have been, in part, greatly influenced by the work of Ctesibius, , he was the father of several remarkable inventions like the first vending machine, a wind-wheel operated organ and many more. Most of them were lost and we know so few of his incredible work.

A 17th-century imagined German depiction of Hero of Alexandria

2 The marvelous invention of steam powered machine 1 700 years before its re-creation!

Hero's Aeolipile

The steam-powered device called aeolipile, sometimes called a "Hero engine"

AEOLIPILE on Wikipedia

But probably, the most astonishing Hero's invention was the aeolipile, a steam-powered engine in the first century of our Times. Hero was so renowned for this creation that the aeolipile was sometimes directly called a "Hero engine"! It was a very basic steam engine and probably based on the previous works of Ctesibius on this topic. But he certainly improved and perfected it. The original invention was probably only able to produce some hot wind (read the description of Vitrivius 'as the water begins to boil, a violent wind issues forth'). With the work done by Hero (see illustration of his book 'Pneumatica'), the potential of the engine has come one step further.



1 700 years earlier

This means than before the invention of Nicolas-Joseph CUGNOT "Fardier à vapeur", which is now recognized as the **first modern** steam engine and ipso facto as the first Automobile [and therefore to the first automobile accident], the Human Civilisation had the potential to create all the powerful steam powered engines and machines that started to exist in the 18th Century and blossomed in the 19th Century.
How many creations and marvels Human Civilisation could have done 1700 years earlier?

What would have been the shape of our Civilisation and Human Life if we had steam-powered engines so soon in our development?



By Photo et photographisme © Roby. Avec l'aimable permission du Musée des Arts et Métiers, Paris., CC BY-SA 3.0,

So what went wrong?

Why the invention of Hero stayed in Alexandria and never spread away in the Mediterranean's area of its time? And why nobody, even just in Alexandria, has improved his invention and make it better, bigger, more powerful? Why no one thought about linking the aeolipile with gears or even with the Archimedes' screw? Hero did what he had to do to share his work. He described its invention in his book "Pneumatica". All the scholars of its era could have read his book and duplicate his machine. But unfortunately, such network did not really exist. At that Times, the transmission of books, or rather parchment or papyrus; as the concept of printed book did not exist before Gutenberg; was not quite easy and efficient.
So in absence of an efficient shared network, the diffusion of books has suffered from all the defects inherent in its method of fabrication. Their creation was slow (hand made), with the possibility of a mistake (hand made), fragile and flammable.

And the information about the existence of a book was very difficult to obtain. In a way, you literally had to go (on foot, horse or boat) to a Library of another town, or worst, another country, in order to know what was contained in its shelves. The idea of a shared and freely distributed catalog did NOT exist. And once again, duplicating an existing catalog, still by hand, was time consuming.
Thus a strong and pertinent diffusion of Knowledge was not possible.
As far as currently the writer of this Post knows, the point, this problem of the difficulties of sharing Knowledge was not reported at the time. It was not an obsession of the scholars of the time. It was not discussed or argued. Everything went like if this crucial problem was not existing at all. Not only it was not seen as a problem and it was **not seen at all**. It did not appear (as far as we know) in the radar of the literate people.



Ancient papyrus rolled isolated on white background By Alexlukin

Hero has done his job. Hero was a hero for its era of time. And he could have been such a Hero for Human Civilisation but unfortunately he was not. It was not his fault. He was placed in a context, historical and technological, where the transmission of Knowledge was not possible. Things which were done are now done. Let’s have no regret and simply draw the conclusion of this missed opportunity for our current Times.

This missed opportunity was due to the lack of Network of distribution of Knowledge. That was the problem of Hero and his colleagues.

> But what is now our collective Knowledge problem?
> We have a magnificent powerful shared network of distribution of Knowledge, the Internet.
> But what is the huge problem what we even don’t see or realize that it exists in our modern Era?

We are not facing the same problem of Hero. We have this powerful tool of distribution and sharing of Knowledge that the Internet is.
But we have to go one step further.
At the time of Hero, there was a common language for describing the Know-How and Knowledge. It was not the Latin, the language of the rulers, the Roman Empire… but the ancient Greek. It was the support, the medium of knowledge sharing. In those days, it was sufficient. In a way it was a means of standardization of the Knowledge. And in reality it was the **ONLY** mean possible.

Knowledge standardization

So, from the time of Hero, they had no Network but they had a standardization of the Knowledge.
Nowadays, we have a Network but no standardization. Sciences & Knowledge are described, explained, in different languages. But it is no more a Common Language. Now we do need a Common Language for Knowledge. But a new kind of language.

Like, in a way, Mathematics.
Mathematics is a Language. But a Language with operative capabilities. You can manipulate formulas, equations. By using the code and potential of this Language, we can simplify, reduce, the equations. We can create new Knowledge from “old” one. It is limited to the Fields of Mathematics-Physics. But these fields have already brought us the clues and tracks for so many practical inventions of our Time.
Let’s imagine the possibility of a Common Knowledge Language on all the other fields of the Human Sciences!
What about new discovery in Chemistry, Medicine, Economy, Architecture, Computer, Agriculture and so on and so on…


By Basile Morin – Own work, CC BY-SA 4.0,

So we really need a new standardization for Knowledge. We need to go beyond and further than just words (in different languages!) for describing, sharing and creating Knowledge.
We need the power and capacities of all our new tools, Computers, Screens, Code, Database, Clouds and of our imagination and Will.

We are probably like the Scholars of the Time of Hero.
We don’t study a problem what we even don’t know what it exists.
We don’t see the problems, we don’t see the opportunities.

> By not having a normalization, a standard, a Language of KNOWLEDGE, how many Centuries of Development our Civilisation is Loosing right now ?

But having already become aware of the very existence of the problem, we are getting on the way to solving it.
Let’s work together on it. The step One is to recognize that there is a problem. And most of the time, the first step is the harder, with the last one.
By creating a new Common Language of Knowledge, we will have all the capacities and possibilities to create a new phase of Common Wealth, shared to all the

inhabitants of Earth.

Because please, do remember that technological evolution in a Civilisation always bring, even if it is not for each person, Life's condition improvements. With a more evolved Civilisation, everything will not be perfect on Earth. **But everything will be better**.

PS1 : Some people would argue that an earlier knowing of such a power would have drawn military disasters with the development of massive lethal weapons.
But that's the fate of Civilisation more power, more risk but more and better rewards.

PS2: Article originally written in English

PS3. A contemporary illustration

"Edison and direct current" (added the 25 March, 2020)

DIRECT CURRENT on Wikipedia

To better illustrate the problem of missed opportunities for a Civilisation, we can use the invention of the direct current. It was not discovered by Edison but by the Italian Physicist Alessandro Volta in 1800. But Edison made this choice of this technology for producing electricity. Nikola TESLAdid the opposite choice with the alternative current. The point here is not to describe the competition and fight which happened between these two geniuses. It's already done in numerous posts and books.
So the idea is to recognize that the alternative current has won the technological and financial fight. Electricity is mainly produced and consumed in the form of alternative current. Because the direct current had a terrible weakness. At the contrary of the alternative current, it can't be distributed on long, even middle distance. Its voltage can't be increased or decreased by a transformer.
But what if this weakness hides in our eyes an unsuspected and in any case unknown strength? An unknown strength which would allow each of us, in our home to create by our own (affordable) equipment its electricity? In such event, the

limitation of short distance carried voltage capacity would NOT be a problem at all! Thus, maybe, by not having the need to use a transformer, we could discover new ways to produce electricity at very low cost, autonomously and only for our domestic needs, including the recharging of electric cars.

An example (discovered after the writing of the article) of a new approach on DC electricity is made by this company. But as you will read, it's still using AC in a way. But it proves that new approaches can be done on the concept of Direct Current.

So don't let our Civilisation looses another 1 700 years!
On your marks, get ready, get your brilliant ideas for all of us!

Edison in 1922 at the age of 75. Wikipedia
