When the King of Tunisia visited Paris in 1849 and gazed down the streets of that city for the first time in his life, he repeated three words: Abab, Abab, Abab. The translator in his company translated them as follows: It's magnificent, it's fantastic, it's wonderful. Here is a single word in Tunisian Arabic means three words in French such is the comment of the translator at that time. Now we are in 2023 and we repeat these words a second time but not for the buildings of Paris, it is for the building of the whole Universe.

The beautiful story of the Universe we live in satisfies our little mind that keeps asking questions like where are we, what do we do, where we will come from and how to live better. It's a human quest for the truth in all times. It is even part of the essence of being human. We ask these questions to see the future better, to not let ourselves be abandoned by nature and we will get there. Now we are in 2023 we know at least that the age of the Earth is 5 billion years according to the analyses of the % of lead in an asteroid of the solar system made by Peterson around 1950, that life existed on Earth almost 4 billion years ago in unicellular form first then 600 million years ago in the form of vertebrates and molluscs and that this change took place little by little a billion years ago when the Earth becomes a gigantic snowball and that thanks to the volcanoes, the Earth began to heat up little by little and that the life of vertebrates developed near these volcanoes and that the brightness of the sun is less than 1/ 3 compared to the present day, that 300 million years ago the kingdom of the dinosaurs and 150 million years ago a gigantic asteroid shock ended with this kingdom and whose ashes exist to this day around the world, that man existed on Earth 75 million years ago, that his life started in Africa...etc. A lot of things we know now and this thanks to our desire to make the brain work just for knowledge, the positioning of the human being and for the future. The theory of movement and its consequences in the form of techniques and means of exploration play a central role in this quest. You should know that there are two paths to arrive at the mathematical model of the Universe: a first path in which we experiment then we theorize and a second path we theorize then we experience what we have planned. The theory of motion does not escape this assertion: what has been considered as experimental data such as the constancy of the celerity of light can be predicted by another theoretical path and Michelson's experiment only confirms the theory.

The most that has changed our relationship with nature is our perception of movement. Between perception and experimentation, we have more control over nature. At the time of Aristotle (year -500) nature is made up of four elements, namely Earth, Water, Air and Fire. The movement of an object is explained by its lightness or heaviness depending on whether it approaches fire or earth. Thus the heaviest objects move downwards therefore towards the earth and the lightest objects move upwards therefore towards the fire. Everything is well explained except for one small detail: the moon revolves around the earth without going up or down: the only explanation that the Greeks found is that there are Spirits who keep the moon in this movement and here we enter what is subjective to explain something natural. The Greeks did not have the idea that the moon is in perpetual free fall on the earth, something that can only happen by measurement and experimentation. Around the year 1520 it was Johannes Kepler who discovered by his measurements that all the planets revolve around the sun in an elliptical movement characterized by what is called the constant of areas: "The areas swept by a star which revolves around the sun for equal time intervals are equal". Around 1600 comes Galileo

who discovers the concept of spatial relativity by measuring the speed of a projectile launched horizontally from a boat heading from Venice to Aleppo and also discovers the law of free fall by relating the distance travelled by a stone jetty from the top of the Tower of Pisa and the elapsed time (the law of free fall which states that the distance travelled is proportional to the square of the elapsed time). Around 1650 comes Isaac Newton who in fact discovered the law of inertia (a body which is not subject to any external force is either at rest or in uniform rectilinear motion) and the law of gravitation which states that the force between two stars is inversely proportional to the square of the distance between them. These two laws perfectly explain Galileo's law of free fall and Kepler's law of areas. Around 1881 Michelson measures the speed of light in the direction of the West and the East and his surprise the speed is the same when in fact according to classical mechanics we must subtract the speed of the Earth: from where the notion of Relativity of space-time characterized by Lorentz transformations. Around 1900 comes Max Planck who by measuring the radiant energy of a hole in an enclosure heated to a given temperature (black body) discovers that this energy is quantified and is a multiple of an elementary quantity proportional to the frequency radiation: this classic extraordinary discovery has well explained that the total energy radiated is proportional to the fourth power of the temperature of the black body discovered previously. Around 1905 Albert Einstein further confirmed the idea of energy quanta with his explanation of the photoelectric effect. With Einstein the mass is no longer 'inert' but it contains in itself an enormous quantity of energy. Around 1927 comes Louis De Broglie who for the first time proposes that a particle can have wave behaviour and vice versa. Louis De Broglie's conception is that a particle is nothing other than a packet of waves which are reinforced in a space-time zone and are destroyed outside this zone. The group speed of this packet is none other than the speed of the particle. One of the consequences of this design is that the uncertainties on the position and the speed of the particle are greater than a certain non-zero constant, the same for the energy and the duration of measurement of this energy: this is what we called Heisenberg's uncertainty principle. Thus a particle can have a wave behaviour and a wave can have a corpuscular behaviour: it is the wave-particle duality.

In all this development mathematics has been crucial. Newton had to invent differential calculus to establish his theory of gravitation. Max Planck had to use the statistical physics of Boltzmann to establish his law of black body radiation with Germanic academic rigor. Planck only grasped the significance of his constant when he deduced it from the action integral for a harmonic oscillator from a theoretical model established by himself around 1911 in his book " Theory of Heat Radiation".

The Planck oscillator model involves a quantized integer multiple energy of an elementary quantity already established by Planck around 1900 in his famous article published in Annehelen der Physik. With the advent of Schrödinger's wave mechanics later the energy of the harmonic oscillator is a half-integer multiple of the same Planck elementary quantity which provides a non-zero total energy of the oscillator in its ground state. Such a prediction contradicts the model of the Planck oscillator which has zero energy in its ground state. It is perhaps there that it is necessary to appeal again to mathematics to overcome this difficulty. With Bohr's correspondence principle for large enough quantum levels, classical mechanics

emerges. For these same large enough levels the ½ in the energy of a quantum oscillator can also be neglected to bring out the quantum theory of Planck. For small quantum levels the ½ in the quantum oscillator can be introduced into the Planck oscillator to arrive at the definition of vacuum energy this time according to the slightly modified Planck design. Mental gymnastics is sometimes necessary to advance science. If we stay in the current methodology led by university professors who are horrified about their academic reputations, we are no longer advancing and we will be taken by a kind of intellectual prison which cuts off all different thought or which does not fit into pre-established skeletons and deemed flawless.

Intuition and mathematical forcing are sometimes necessary to move forward if not we remain overwhelmed by old ideas conveyed from decade to decade by a scientific community which has the power and the money to decide what is the truth. Let us take the example of the density of the energy of the vacuum which predicts a value of ten power one hundred and twenty times that measured in the cosmos and formulated by General Relativity: we take up this oddity many times in several articles to try to bring the values closer but always without success and without seeing any other way because practically it is forbidden by the said scientific community.

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