



Why do we care about astrophysics?

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<http://www.ck-wong.ca/Science/why%20do%20we%20care%20astrophysics%2020060215.pdf>

Introduction

Astrophysics is the study of the heavenly bodies: planet in our solar system and star in the distance. These things are generally could not be touched by many of us. In the second half of last century, we managed to have man visited the moon. A few robots landed on the big red planet Mars. The famous Voyager I and II flew to the edge of the solar system. Galileo took the picture of the furthest planet other than the X-planet. Why do we want to spend billions of dollars on these projects?

Curious George and the Man with a Yellow Hat

There is a saying that curiosity could kill you. History has proved that curiosity is the driving force of civilization. If we lost curiosity, invention will not happen. When we were still covered with thick hair, curiosity brought us to fire and that was the first step to differentiate us from other wild animal by the ability to use a tool that we could not make. By research our knowledge expands and also has the effect to improve the brain that passes the cognitive power to next generation.

The brain power will stretch a bit by research on expanding the knowledge hunt at near perimeter. The more abstract and the more deduction the better the brain is trained. Heavenly body appears before we walked on this planet. The twinkling of star has fascinated numerous poet and ordinary people. The ambition to explain their existing and why are they are there is abstract enough because proving the conjecture (which becomes law later) is difficult. Observing the fact that we thought we were the centre of the universe with all heavenly bodies move around us to we are moving around the centre of a galaxy is a significant progress over the last 2000 thousand years.

Calendar

Ancient Egyptian, Chinese, Indian and Mayan built observatories that observed and measure the stars movement. Although Stone Hedge has the function of a star gazing and measurement tool, the actual function remains a mystery. The study of the heavenly body led to the development of highly accurate calendar systems.

The Chinese calendar system which survives for more than 3 thousand years has been improved significantly. The calendar system does not only base on the moon which gives the Chinese calendar's name Lunar Calendar. It also incorporated the 24 positions of sun which is used as the alarm clock for the agriculture. The farmer will sow and harvest based on these 24 events. Furthermore, the calendar also incorporated the calculation of the bodies of visual observable solar planets such as Mercury, Mars, Saturn, Jupiter and the famous Venus. The calculation of lunar and solar eclipse to the accuracy of second is

alarming. Too bad there are only a few, to the best of my knowledge, can do this nowadays. One day, the Chinese almanac will stop because the knowledge will be lost.

Gravitational Force

To understand how the order of universe could be established we have to understand how gravity works. The first guy who cracked the code was the guy who caught by the turnip maniac in the Seventeenth Century: Sir Isaac Newton. We all hear the story how he discovered the theory with the help of apple. We all believe the force acts like magnet that attract bodies. We also hear the fascinated story how the gravitational force could have its effect on the light, i.e., photon, as predicted by the Relativity Theory. These two stories have amazing effect to our daily life.

Sir Arthur C. Clarke invented the geo-synchronized satellite which advanced the telecommunication industry and GPS system for aviation. The effect of these to system is well known and I do not have to elaborate.

Now how does the Relativity Theory that predicted photon has mass affect us? The theory unveil the nature of light which is the basic theory for the conversion of light from one form of energy to another which is the basis of solar cell. On top of this, photon which could be at very high wavelength such as X-ray, is the result of nuclear or sub-nuclear reaction debris. The study of fundamental particle leads us to the key of atomic fusion or fission energy.

Fundamental research is the safety net of future

Fundamental research has been viewed by many as ivory tower activity that total detached from real life. It is a short sight. Some of the research could be dead alley research. At the same time, the experience of these dead alley report prevents us to do it second time. Many fundamental researches successfully pass the chasm to become technology. For example, coding theory for spread spectrum is used in the guiding system of torpedo in the Second World War co-invented by Heidi Larmer. Yes, the wife of the wealthy movie producer and sexy movie star.

Next time, when your children want to do fundamental research, please do not discourage them. They are the anonymous heroes who build our future.