

## Primary Summary and Exploration on Innovation and Curiosity

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**Abstract.** As innovation is the soul of a nation for improving and the endless power for a country to flourish and grow, important invention and discovery of each time is for innovation and each innovation is closely related to “curiosity”. In the paper, it came to a conclusion for innovation and curiosity according to relevant data. What is innovation? What is curiosity? What is the relationship between curiosity and innovation? It made primary summary and exploration on successful experience and curiosity of Nobel Prize winners in Physiology or Medicine from the perspective of Antracele pharmaceutical compositions invented by writer and curiosity. It meant that curiosity and innovation are inseparable and we can find out from innovation of Nobel Prize Winners and from daily work of one person that their curiosity and innovation are endless in the same path.

### Introduction

Just like road of innovation said: “every important invention and discovery are from innovation, but what does innovation bring for us? It is road of innovation, overturn and development, and is abundant and excellent result and is national prosperity and human process. Who is its creator? They are curious and are exploring curiosity; they bear loneliness but enjoy it; they yearn for wealth and create it; they inherit civilization and improve civilization; they like stars and make night sky bright; they use excellent creativity to get an endless road of innovation”.

Over the last year, “innovation” has become the keyword for Chinese development? What is innovation on earth? What is curiosity? What is the relationship between innovation and curiosity? The writer made summary and primary exploration on innovation and curiosity according to relevant data:

### What is innovation?

“Innovation is the soul of national progress and inexhaustible power of prosperity and development of a country”. “Innovation” has become the keyword for the development of China and “entrepreneurship and innovation of the public” become one unprecedented national action. Birth of science brings new unprecedented power.

It is a way of thought, an application method, an idea and a symbol and is a kind of tool that can constantly accumulate and automatically correct. Based on innovation triggered by science, it widely and deeply changes various aspects of human life and sets up numerous milestones for human process.

When science comes upon the stage and creativity of people begins to become core element for driving economic boom and national prosperity. In terms of innovation and innovative spirit, creativity is life footstone for them to grow and be strong.

Innovation is a common word in Chinese and western culture. In terms of innovation in Chinese context, it usually refers to “innovation and finding something new”. In this sense, process of human society can't do without innovation. In English, innovation stems from Latin *innovatus* which means update, create new things or change.

For innovation, theory of innovation greatly develops after economist of Austrian descendant in America-J. A. Schumpeter proposed the concept of innovation. What is innovation? Schumpeter thought that it “is transfer of production function” or “is recombination of production factor and condition” and “introduces production system to make its technical system transform” and is a process of obtaining “entrepreneur's profit” or “potential excess profit”.

In 1939, he clearly proposed in *Business Cycle*, “Innovation is actually new production function introduced in economic system and therefore, original cost curve constantly updates. Economic transform, like cost increase, destroy of economic balance, crucial competition and economic period should mainly attribute to innovation” [1].

Chen Yuhe [2] of China University of Mining and Technology thought that innovation is an excellent result with long-term and huge promotion and acceleration for social progress of human being in productive labor practice of human society. Innovation is a systematical optimization procedure of development and structure essentially.

Chen Zhili, the state councilor, stated in a report named *Independent Innovation and Sustainable Development* at the opening ceremony of academic annual meeting of China Association for Science and Technology of 2005 that the so-called independent innovation mainly includes connotations of three aspects: first is original innovation, namely to obtain more scientific discoveries and technological inventions by great efforts; second is integrated innovation, in other words, with organic integration of relevant technologies, to form products and industry with market competitiveness; third is to actively accelerate absorption and re-innovation based on introducing foreign advanced technologies. This is the most recognized statement for the independent innovation in China. According to Qin Zhengwei, independent innovation is a system engineering, which requires multiple factors for mutual effect to form profound innovation foundation and join forces wherein idea, system and talent are three basic factors to form independent innovation system.

Innovation is the life of scientific research, a hard exploration process, a process of criticizing, query and proving, a process to insist independent understanding, also a process to accept something new and maintain new ideas. In recent years, innovation and innovative inspiration are embodied in every aspect [3-6], bringing new development, which is also the permanent theme for the development of various countries worldwide in future.

### **What is curiosity**

Samuel, great master in British literary world of the eighteenth century, said that curiosity is one of most lasting and reliable features of wisdom full of vitality. It is also the impetus for scientific research [7]. Curiosity is a psychological activity caused by living needs during the animal evolution process. It is the propensity of individual towards something novel and unknown, an important internal motivation of individual [8]. Based on research on some Noble Prize winners, some common features are discovered: first, they are equipped with strong curiosity since childhood, and they tend to “get to the root of the matter”. Although they do not do well in term of learning, some even “dull”, they seldom “force” themselves to do something during their growth. Most their achievements are based on interest. Second, they possess deeper and further thinking towards research problem as well as the spirit of “tracing to its source”. They always think about “why is that” and “how is that”; third, ingenious experimental design, including selection of experimental material, logical relation of experimental logic. Fourth, they pay special attention to the extraction of scientific model. They fully understand the role and function of model in scientific research. Therefore, establishing model that can be “verified” by constant and repeated practices is the ultimate objective of scientific research. Fifth, they have no blind worship for any “authoritative” theory or conclusion. The constant

development of scientific process, instrument, experiment makes people “see” the hugeness of the world (universe) as well as the tininess of the world (microscopic particle).

### **Relation between curiosity and innovation**

Curiosity is the foundation of the innovation as well as the impetus. Albert Einstein said that “I have no special talent. I am so passionately curious.” Daniel Chee Tsui, one of Noble laureates in physics of 1998, said “as it were, I have no attracting scientific story in my childhood. And there is also no inspiration. It is curiosity that makes me and leads me into the new domain. In the vast space of science, I continuously find new phenomena and new discovery by physical experiment.”

Paul Nurse, one of the Nobel Prize winners in Physiology or Medicine in 2001, said that “I think it was this curiosity about the natural world which awoke my early interest in science.” The understanding of Hoffman, Nobelist, towards curiosity and its value is that “curiosity” is the origin of innovation [9].

There are three types of people in the scientific field, one regards science as career for living, one takes science as the game of intelligence while the rest regards science as their “religion”, who work cautious and conscientiously day and night to find the rule behind the scientific phenomena, to discover the harmony of nature and to find the infinite pleasure from that. According to the successful experience of Noble prize winner in medicine, almost they all belong to the scientists of third type [10]. So to speak, hence curiosity, thirst for knowledge and interest are the impetus for the scientific innovation by Noble prize winner in medicine at psychological level, they play an activation role in their scientific activities, promote their undergoing scientific activities, and accelerate their creativity.

By research, it is found that current treatment for antracole both in China and abroad adopts surgical treatment, but how to change it? With this kind of curiosity and thinking, the author invents pharmaceutical compositions to treat antracole from multiple perspectives including pharmaceutical chemistry, pathology and humanities, the application result is characterized by following advantages: the curative effect can achieve consistent effect as surgical treatment, which prevents patients from the suffering caused by surgical treatment. It is also convenient and sufficient with low cost, which also improves working efficiency and patients’ life quality. In addition, it has no impact on normal mucous membrane of the maxillary [11]. This kind of treatment is first at home and abroad. Therefore, it obtains patent for invention of the People’s Republic of China [12].

History indicates that impetus factor is one of indispensable conditions for scientific innovation, namely the power to drive people to engage in scientific innovation. This kind of power can be political, economical, psychological and mental. No matter which one it is, its original impetus is non-materialistic factor including people’s curiosity towards natural phenomena, thirst for knowledge, interest and responsibility. Though there are different features for Nobel Prize winners in medicine or physiology, their original feature as well as the common characteristic is curiosity.

In conclusion, curiosity is inseparable to innovation. It can be seen from the innovation by Nobel Prize winners as well as that by common people in daily life, both curiosity and innovation are on the same way and of no bounds.

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