

FEATURE

What *Does* It Take to Become a Nobel Laureate?

It should be obvious to all that it is the entire “intellectual system.”

Introductory comments for the public lecture of Douglas D. Osheroff, Nobel laureate, 1996

By Da Hsuan Feng

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Dr. Osheroff, colleagues and fellow students:

This is indeed a great honor and pleasure for me to make a few introductory comments

on behalf of President Michael Lai to introduce a great intellect, Professor Osheroff.

Ever since I came to Asia Pacific three and a half years ago, whatever country I visited, from Korea to Singapore (with the exception of Japan,) I hear people asking the perennial question: “when will my country have a Nobel laureate?”

As Professor Osheroff is the first Nobel laureate I am introducing since coming to NCKU, I thought I would read carefully the biography he wrote for the Nobel website after he won the Nobel prize, in order to find out “*what does it take to become a Nobel laureate.*”

First, his father was Jewish and his mother was not. That of course does not make him Jewish. (*Jewish people are very clever. You can be Jewish only if your mother is Jewish.*) His parents are nice, but probably no nicer than many average good parents in the United States.

Second, he said as a young boy, he was curious about how things work. So he experimented with many different things, including gun-powder. That too is interesting, but I can imagine many American youngsters have similar propensity.

Third, for his high school career, he said the following:

“....While I liked physics much more than chemistry, the chemistry teacher, William Hock, had spent quite a bit of time telling us what physical research was all about (as opposed to my experimentation), and that effort made a deep impression on my young mind.I was intellectually rather lazy, and in high school I would always take one free class period so that I could get my homework out of the way, freeing the evenings for my many projects.”

So that tells me that he did not spend an inordinate amount of time in high school reading difficult

advanced physics or differential equations texts. However, he did have a teacher who made it clear that “ideas count.” I did not get the impression that his high school career was filled with book work, or attending additional classes in the evenings so that he could learn skills to solve more difficult



Douglas D. Osheroff, Nobel laureate of 1996 for his discovery of superfluidity in helium-3.

problems. This is clearly different from the definition of “good students” in Taiwan.

Fourth, he was good enough to study physics as an undergraduate at Caltech.

More important, in Caltech, he was “baptized” by physics’ maestro of maestros, Richard Feynman by attending Feynman’s introductory physics course. That course, as we know, was the genesis of the now world renowned three volumes of “Feynman Lectures.” It must have been an incredible experience. After all, what physics textbook would tell the reader that (I paraphrase) “I cannot tell you deeper meaning of quantum mechanics. I can only give you more examples how it works!”

Fifth, he went to Cornell not because of its reputation as a great university, but because it is “far from Pasadena’s smog!” Since serendipity in life is more important than planning, he met his mentor David Lee, his co-Nobel recipient and of course his future wife, Dr. Phyllis Liu. Since Phyllis came from Taiwan, Dr. Osheroff is actually a “Taiwan son-in-law”.

David Lee is known to be a great teacher and surrounds himself with many truly exceptional students. I should mention that besides Dr. Lee, in Cornell there was also the great late Hans Bethe. Although Dr. Osheroff did not mention about Dr. Bethe in his biography, I cannot imagine he would not be inspired by such an individual, even just by osmosis!

Sixth, after Cornell, Dr. Osheroff went to Bell labs. Not surprisingly, there he met other greats such as Phil Anderson and Bill Brinkman (who wrote the famous Brinkman report later on

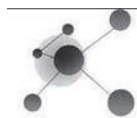
which have a profound impact on scientific developments in the United States.) Submerged in the incredible intellectual landscape, he made additional quantum leap in his career.

Seventh, after 15 years in Bell Labs, Dr. Osheroff became a professor at Stanford University, where not only did he continue his illustrious scientific career, he also became an incredible teacher, despite what a comical Stanford student said that “Osheroff is a typical example of some lunkhead from industry who Stanford University hires for his expertise in some random field.” Dr. Osheroff is obviously a man of great humor and humility!

So, did I learn “what is the secret of becoming a Nobel laureate?” by reading Dr. Osheroff’s biography? Unfortunately, NOT REALLY! Nothing Dr. Osheroff did at any point, according to him, was totally out of the “ordinary” so to speak. I did not detect throughout his illustrious career that there was a EUREKA moment or a series of EUREKA moments that would have turned him into a Nobel laureate.

So how did Dr. Osheroff win the Nobel prize? Well, I think this may be a wrong question.

Indeed, it is not Dr. Osheroff *per se* that matters. Ultimately, it is the profound, ubiquitous, open and truth seeking intellectual system of United States at all levels, from k-100, in “processing” many many outstanding individuals, such as Dr. Osheroff, in their developments that matters. It should be obvious to all that it is the entire “intellectual system” which Dr. Osheroff went through, starting from his family education in his fledgling days to high school to Cal Tech to Cornell to Bell Labs to



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I need to point out that while details may be different, the system which Dr. Osheroff was “processed” and still is processing through is really quite typical for many people like him in the United States. The system allows Osheroff-likes to have the necessary freedom and support to have the courage to seek answers to difficult and profound questions, to realize that “ideas count.” The system also allows Osheroff-likes to leverage creativity to unlock the mystery of our universe.

Once you have a large cadre of such people produced over many, many decades, then it is natural that some of them will receive the highest scientific accolades humanity can bestow.

So, the question for Asia Pacific is NOT “*when can **my** country produce Nobel laureates?*”

The question really should be “*how can we construct educational systems at all levels in order to produce many many individuals who could probe universe’s deep mysteries?*”

Ladies and gentlemen, once we could do that, and I am absolutely confident that we in Asia Pacific will do so in this century, then winning Nobel prizes for Asia Pacific shall never be a question again.

I now introduce to you Dr. Osheroff...

Editor’s Note: Dr. Da Hsuan Feng is the Vice President of the National Tsing Hua University (NTHU) in Taiwan as of March 15, 2011.