

Stockholm International Youth Science Seminar – Journal and Reflections

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4th December

As I left the airport building and walked down the connecting passageway to the Airbus, I felt a surge in adrenaline. That moment marked the beginning of my one-week adventure; a journey I knew I would never forget, even before experiencing it.

It was the first time I was travelling overseas alone. In the past, there would always be either my family or friends by my side, discussing about how exciting the trip would be. Perhaps that explains why I felt my excitement so distinctly back then, as there was no one around to share my excitement with.

When I found my seat on the airplane, I immediately realized that my adventure had begun. My seat was right in the center of the plane, and I was sitting right in the middle of two Australian mothers with infants. "They are adorable, but not so when they wake up crying in the middle of the night!" one of the mothers warned me. Fortunately, the infants never did show their ugly side during the journey, except during landing when one of them defecated.

Due to the existence of time zones, I arrived in the early morning at Paris. My French language education was useful there, as I found my way from one terminal to the other. After a long three and a half hours wait, I finally boarded the plane for Stockholm and reached there in noon shortly after.

I soon met up with the SIYSS coordinators waiting at the airport. A few minutes after, I met my first few SIYSS peers, Kelly from Canada, Deniz from Switzerland and Lize from South Africa. We shared a taxi to the hostel we would stay in, Af Chapman. The first thing that struck me was the sheer cold outdoors. However, in the group of four, I realised that I was the only one who was finding it cold.

In the evening, after most of the participants arrived, we had some icebreaker games. The actual 'ice-breaking' actually started while we were waiting for the games to start though, as the coordinators took quite a long time. Nevertheless, the icebreaker games were extremely effective. After just an hour of games, everyone knew each other's names, country, and scientific interest. Shortly after, we started on our welcome dinner. Unfortunately for me, the famous Swedish meatballs were served, something which I could not eat as they were beef. However, the salad that I ate was also appetising.

I shared a room with Christoffer from Denmark and Dawson from Australia. Christoffer was a biochemist, and he did an impressive project on ethanol synthesis. Dawson was keen in engineering, and he worked on the feasibility of nuclear powered airplanes, an interesting project.

5th December

"Now rub the head of this little iron boy here, and you will be coming back to Stockholm in the future. Perhaps, as Nobel Laureates..." We laughed as the tour guide explained to us the symbolism of the little iron statue. As each of us took turns to rub the little iron head, I wonder if I will go back to Stockholm someday...

The second day of the trip was mainly taken up by the guided city tour of Stockholm. The city was beautiful with its traditional yellow buildings. Our guide told us that the city would be the most beautiful when covered with snow. Although I did not witness it during the trip, a little imagination convinced me that she was right. After the guided tour, we went to the Nobel museum. I learnt more about the history of the Nobel Prize, as well as the detailed biography of Alfred Nobel. After listening to our museum guide, I viewed Alfred Nobel with great respect. He was truly ahead of his time, and he probably took the first major step to establishing the international nature of science. It was also during the museum visit that I learnt that one of the physics Nobel Laureate, Yoichiro Nambu, would not be attending the ceremony as his wife was ill. I was quite disappointed by his absence, as I was looking forward to seeing him.

While renting my tail, I had the fortune of meeting the physics Nobel Laureate Makoto Kobayashi. He was also renting his tail, in the same shop. We did not have the chance to talk to him though, but we were alright with it as we would see him a few days later. It was interesting to know that I rented my tail at the same shop that Nobel Laureates patronized.

The evening was very lighthearted, as we had our Swedish Evening. It was conducted in the fashion of station games, where each station will have activities related to one of the four seasons. We made 'crayfish hats', 'flower hats', painted Easter eggs and baked gingerbread cookies. After our activities, we went to the dinner table and ate seasonal dishes. The most memorable dish was the crayfish, as we were taught how to eat crayfish the Swedish way, while wearing our ridiculously-designed 'crayfish hats'.

6th December

"Can I borrow Lize's world map? I didn't prepare a powerpoint of a map because I knew someone would have it," I smiled as laughter sounded. I pointed out Singapore's location, and started describing our culture, sites of attraction and lifestyle. Finally, I ended off with my favorite Singapore song, Singapore Town. "You could, take a little trip around Singapore Town..."

In the morning, I went to the famed Karolinska Institute (KI), the place where the decisions on the Nobel Laureates in Medicine and Physiology were made. We were privileged to have Prof Jan Andersson speak to us about 2008 Nobel Prize in Medicine and Physiology, the overview of the works on Human Papilloma Viruses and Human Immunodeficiency Virus. We also had lectures from two of researchers in KI working on these areas. It was enlightening, and they were all good speakers. I had the opportunity to sit next to Prof. Jan Andersson during lunch, and he was telling me that I was lucky to be in Singapore, where the government is emphasizing research and injecting large sums of money into the area, especially in the biosciences.

After lunch I attended a lecture on the detailed process of selecting Nobel Laureates in Medicine and Physiology, and I realized that it is no easy task. Right after lunch, I attended the press conference for the Nobel Laureates and I got to see Prof Harald zur Hausen, Francoise Barre-Sinoussi and Luc Montagnier. I did not manage to ask them questions personally, but I found many of their responses to questions interesting.

In the evening, we had the International Evening. Participants from each country had to present about their own country and culture. I learnt a lot about different cultures that evening, as there

were students from 16 different countries present. The Swedish coordinators also sang Swedish songs, and there was a 'Santa Claus' who gave each one of us a Christmas gift. It was hilarious.

There was also a wide spread of food. We had something like a buffet-style dinner. Even though I prefer Singaporean food, I would say that it was a good experience. The wide range of sweets and chocolates added a nice finish to the dinner, and I concluded that the Swedish love sweets.

7th December

"Should we leave the planet alone? Do we care too much? How do we work with environmental issues? Are we doing it the right way?" Questions were fired and responses were thrown back. With sixteen different countries present, it was no surprise that there was a diverse range of viewpoints. As we discussed about various issues, I was reminded once again, that ethics is an essential part of scientific research.

We started off the morning with an ethics seminar. Questions ranged from environmental issues to risks of development and Western and 'Third world' countries. It was very interesting to see things in different points of view, and there were some surprising points raised. For example, I found out from some SIYSS peers that there are people in the Western world who have limited understanding of Asia, and some even believed Taiwan was a 'rural' country. It was definitely an eye-opener, and all of us benefitted tremendously from the experience.

After lunch, we had a friendly competition on building the best magnetic 'hovercraft'. SIYSS participants were each attached to a group of Swedish high school students. I was attached to 2 other high school students and a university student, and even though we did not win, we had a great time debating on what was the best design. I realized then, that even with language barriers, we were able to work together as a team as long as we were all passionate about the topic.

Finally, in the evening, we attended our first Nobel lecture, the lecture on literature. The Nobel Laureate was Jean-Marie Gustave Le Clezio, and fortunately for me (and unfortunately for the others), he spoke in French which I could roughly understand, omitting the need for me to read the English translation of the speech while he talked in French. He had very good ideas, and I am tempted to buy a book of his sometime soon.

8th December

The audience burst into laughter as Prof Osamu Shimomura flashed pictures of himself attempting to catch jellyfish and a picture of an innovation designed to cut off jellyfish tentacles at a very fast rate. Through the Nobel lectures I was reminded about the importance of perseverance in scientific research. Prof. Shimomura had to catch thousands of jellyfish, just to isolate enough chemical to conduct one experiment. It was really amazing.

The entire day was spent on attending the Nobel lectures in Physics, Chemistry and Economics, which was an excellent thing. The Nobel lectures in physics were rather high level, and I cannot say that I understood everything clearly. Nonetheless, it was enlightening for me as I learnt about their thought process and how they eventually came to make their big discoveries. Prof. Toshihide Maskawa gave his entire lecture in Japanese as he does not speak English, but I found it to be the most engaging of the physics lectures, partly due to his amiable personality and his inclusion of a

short biography. After learning about his tough education experiences during his childhood and teenage years, I was more aware of how privileged I was to be receiving a good education in Singapore.

The chemistry lectures were all much easier to follow compared to the physics lectures. All three Nobel Laureates were entertaining speakers. They shared their stories of how each of them contributed to the development of the GFP protein tag and its current prevalent use in research. Nobel Laureate in Economics talked about international trade and economic geography, something quite different from the other lectures, but equally stimulating intellectually.

After the Nobel lectures, we went for a formal dinner with members of the Swedish Federation of Young Scientists. It was an end-of-year celebration for the Swedish organization, and it was supposed to be a rehearsal dinner for us, the SIYSS participants. We had to learn how to behave during formal dinners. As time passed, however, I realized that it was not so much of a lesson, but just a dinner to mingle with Swedish youths and enjoy good food. It was interesting to learn about their education system in Sweden, as they have very specialized schools and streams. At the end of the dinner, each of the SIYSS participants was given a rose. It was a nice end to the evening, except that someone took my coat in mistake, and I did not manage to get it back until the very last day of the trip.

9th December

“Now imagine that there are many happy electrons living in each metal...” I was on stage, in a theatre, presenting my project to a hall full of Swedish high school students, my fellow SIYSS participants, as well as a Nobel Laureate who had just arrived when I was about to start my presentation. Even though I felt nervous, I was glad and satisfied at being given the opportunity to share my research and passion for science with so many others.

The 9th of December was one of the highlights of the trip. Early in the morning, my fellow SIYSS peers and I went to SF Skandia, a theatre that was no longer in use. We were amused when we were told that we would present our project in a theatre, but shocked when we were actually there. It was a big theatre, with beautiful decorations all around. Immediately, all of us were busy, as we started to check our powerpoints and rehearse our presentation.

The seminar started off with Prof. Horvitz, Nobel Laureate in Medicine 2002, giving a lecture on how to be a great scientist, as well as a little bit of his scientific work on apoptosis. He was immediately followed by the SIYSS participants. I was very impressed with all of the projects the other participants conducted. There were a wide range of topics that were covered, from oncology to engineering, from imaging science to animal behavior. After my presentation, Prof Chalfie, Nobel Laureate in Chemistry 2008, also gave a short talk on traits of a great scientist, along with entertaining anecdotes.

Right after our seminar, we headed to the Nordic Museum for the Nobel Committee’s reception, where we had our chance to interact with the Nobel Laureates as well as representatives from prominent Swedish academic institutes. It was a great privilege to be invited to the reception, a greater privilege than being invited to the Nobel Banquet and Award ceremony, as only a very small group of people, and no press, was present. Therefore, I had time to interact on a personal level with

the Nobel Laureates (as well as take pictures with them and obtain signatures from them). I learnt a great deal from each of the Nobel Laureates, especially from Prof. Toshihide Maskawa, who was very willing to talk to us students and inspire us. He had to rely on a translator (his daughter) to talk to me, but that inconvenience did not stop him.

A very interesting event also happened at that time. One of my SIYSS friends held on to a set of physics articles related to the Nobel Prize works to get signatures from the Nobel Laureates. While looking for the Laureates, he was stopped by someone who asked if he was reading the papers there during the reception. He said no, explaining that he wanted signatures, and he walked off. Near the end of the reception, when my friend was with me, that same person came up to him and gave him a card, with a picture of Bardeen Cooper. "He was my friend," that person said, before disappearing into the crowd. I was shocked, as Bardeen Cooper was an eminent scientist, and a Nobel Laureate. My friend did not realize it until a few seconds later, and by that time that stranger had left. My friend regretted not talking to the stranger, and tried looking for him for the rest of the reception, but to no avail.

10th December

I went up to the Golden Hall, and realized that the hall truly lived up to its name. Asking my partner for a dance, I started dancing a waltz, together with the King and Queen, the Nobel Laureates and other invited guests. The entire scene was spectacular, and unforgettable.

Finally, the day has arrived. In the morning and early afternoon, we got ready for the Nobel Banquet and Award ceremony. It was the first time I had to wear a tail, and it was not a very straightforward task. Fortunately, I had help from other SIYSS participants, and soon I was ready. It was a very formal occasion and all of the SIYSS participants were very well dressed, especially the girls with their gowns and styled hair. Inevitably, it also meant that it was photo-taking time. Unfortunately for us, though, it was extremely cold that afternoon, and all of us were trembling in the cold when we took our photographs. The pictures turned out to very well. Soon after the photographs, limousines arrived to fetch us to the Nobel Prize ceremony. All of us were pleasantly surprised. It felt so surreal.

The Nobel Prize ceremony was held at the Concert Hall, where the Nobel Laureates will receive their prizes from the Swedish King Carl XVI Gustaf. It was a solemn affair. For each prize, there will be a description of the work done for the layperson, before the Nobel Laureates were called to receive the prize. The Swedish Symphony Orchestra was also there, performing songs in between each prize.

After all prize presentation, we headed to the Nobel Banquet, where good food awaited us. It was raining outside, and all of the guests had to walk in the rain in the very cold Swedish evening. However, it did not dampen the spirit inside the Blue Hall, where the banquet was held. It was probably the best dinner I ever had, literally fit for a King. The performances staged during the dinner were humorous, and provided a drastic contrast to the formal setting of the dinner as there were plates thrown on the floor and rolls of tissue paper being tossed into the air. Right after the dinner we proceeded up to the Golden Hall where there was a formal dance.

At around midnight, it was time for a totally different setting. My friends and I went over to join the Night Cap, a party held in the Royal Institute of Technology organized by the Swedish students. The theme for the 2008 Night Cap was popular stories, and each room was decorated based on a story.

For example, there was a room based on 'Charlie and the Chocolate Factory' with an abundance of chocolates, sweets and ice cream available, as well as a room based on 'The Phantom of the Opera', where there is a beautifully decorated room with classical music and of course, the Phantom.

At around 3 am, I went back to the hostel as I wanted to see every SIYSS participant off. I was one of the last to leave the hostel for the airport; therefore I had the opportunity to say the last goodbye to most of the participants. It had been a long one week, and inevitably we all grew attached to each other. Each 'goodbye' was said with hugs and promises to keep in touch.

As I left the hostel to the airport, I realized that it was finally over. All the inspiration, lessons learnt, friends made, and lighthearted moments will always be remembered by me. It was indeed a once in a lifetime experience, and I express my sincere gratitude to World Scientific, Imperial College Alumni Association of Singapore and the Ministry of Education for providing me with such a wonderful opportunity. Thank you!