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Autobiography

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My scientific odyssey

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Abstract

Professor Uner Tan was born at Unye which is at the Black Sea cost on May 1st, 1937. He graduated from secondary school at Corum and started higher education at Ege University, Faculty of Medicine, at 1956. He continued his higher education at Goettingen University and graduated from this faculty simultaneously from the neuroscience PhD program at Max-Planck Institute at 1966. He returned to Turkey at 1969 and worked at Hacettepe University (Ankara), Ataturk University (Erzurum), Black Sea Technical University (Trabzon) and Cukurova University (Adana) by timely order and he was retired at 2004.

Professor Tan is a Member of Turkish Academy of Sciences, Professional Member of American Neuropsychology Academy, and Advisory Member of World Innovation Foundation.

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My scientific odyssey started when I was a child and continues throughout different periods, as if it has been pre-programmed. Therefore I would like to present my scientific odyssey by periods. Since long I have wondered; was I and how and where I spent my childhood, who my parents were, if I had any hobbies, how I became a scientist, which factors contributed to my success, how my international scientific relations have evolved, how I won many awards etc... The present story of my scientific odyssey will help the readers to find answers to all these questions briefly. Although my scientific odyssey is a long journey, to be suitable for the journal of Neuroanatomy, I shall start now. As they say, to start up is to finish the half.

My childhood

In 1937, May 1st, on labor and spring feast day, I was born in Unye, on the beautiful Eastern Black Sea cost. I remember my childhood as we were in Kuzdagi village (Ayancik) because of my father's occupation (health inspector for war against syphilis).

I was a 4-years-old lonely child. I did not play with other kids. I was growing up modestly, doing a lot of thinking. My father used to give money to the kids in the village so that they would take me in their games and play with me. I had other interesting things in my mind other than playing with children. For instance, I wanted to run under the rainbow because I had heard that, if a man passes under the rainbow, he turns into a girl, and if a girl passes under the rainbow, she becomes a boy. These first experiments of mine had always ended unsuccessfully.

I was a very hard working pupil at school. I especially liked literature and math classes. I used to teach math to my friends. In high school, Corum (second grade), our algebra teacher was accused of being a communist, and he was taken to Istanbul so we had to spent one year without a math teacher. After that I lost my interest in maths, and could not successful any more.

In Corum high school, I started to take violin lessons. My friends learnt to play most of the popular songs in a very short time, but I had chosen the more difficult way and decided to learn the western violin techniques. In 1956, at Ege University, I started to play as first violin in a newly founded Izmir Philharmonic Orchestra. At the same time, I was earning a bit money. After completing three years in Ege University, I went to Germany, where I was accepted, once again, as the first violin, in the academic orchestra.

University

I entered the Medical School at Ege University in 1956, as a result of strong pressure from my parents. Actually, I had an endless interest in philosophy. As I was a first-year student, I built up different philosophies, like the creation of universe. I asked if life can exist by itself. To understand it, I made an experiment. I filled a lunch box with bread and closed the lid tightly so that no air could get into the box. I waited for one month. As I opened the box, I saw that hundreds of small red eyed flies flew

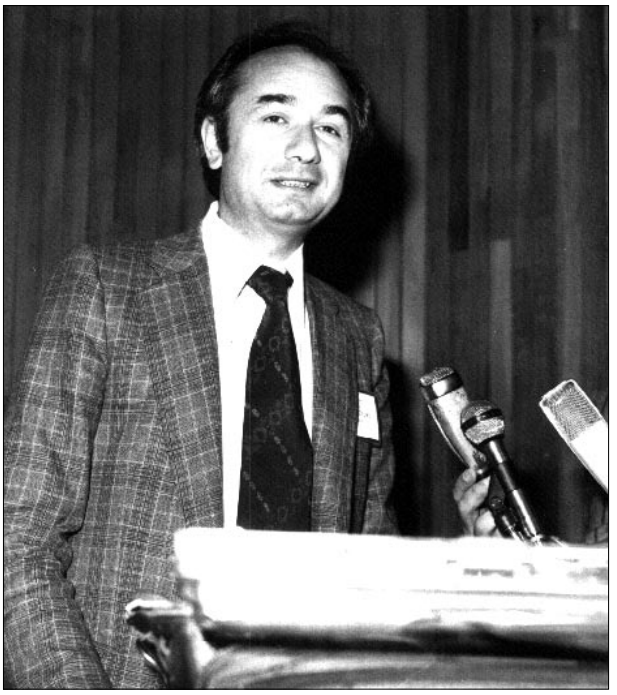

Figure 1. Opening lecture of Blood Syphosium, Ataturk University. Erzurum, 1978.

into the air. I watched the event with great excitement, and thought that the experiment was successful: a living creature could be formed spontaneously.

Another question I had in mind was, whether a dead animal could be made to live again. In order to answer this question, I built up a system. I put some water and a worm from our garden in a jar. I had a glass tube with a tab at the end which I held on top of the jar. My sister was collecting the worms and I was doing the experiments. I started putting salty water into the tube drop by drop. After a threshold salt concentration, the worm's motions started to slow down and after a higher concentration, it stopped moving at all. I thought that the motionless worm should be dead. Now it was time to try to give its life back again. This time I took out the worm from the salty water and put it into other dish which contained clear, pure water. After a while the worm started to move again. I was watching it with great amazement. I was right in thinking that it is possible to revive a dead animal.

Again, during my first year in Medical School, I bought a toy-like microscope. I mixed some water and soil and then started to observe the mixture under the microscope. I was watching this mixture constantly because a lot of beautifully colored single celled living creatures were moving in it. I loved watching this. The single celled creatures soon started to divide. Maybe they were some kind of amoeba. With a great excitement I watched the cells multiply.

Our chemistry instructor was very tough. He told us that Kekule had seen Benzen's formula in his day dream. I also had a dream which I cannot forget (year 1956). There were short cut spaghetties in a solution in a dish. Two electrodes, opposing each other, were attached to the dish. Some spaghettis moved to one electrode and others to the opposite electrode.

I have not mentioned this experiment to anyone, in order to study them in the future.

So my first year in Medical School of Ege University passed: classes, playing violin every evening, philosophy, experiments and some poetry writing. I did not date girls at all. The neighbor's daughters complained about me, telling my mother that I never looked their way.

In the second year of Medical School, I discovered a reflex, which I called "middle finger reflex". I studied this reflex with my physiology teachers (Prof.Dr. Nathan Scheinfinkel and Dr. Nuran Hariri). I was very excited. I recorded their middle finger reflexes using a kymograph. I filed the reflex records with great attention. Interestingly, the patella reflex could not be elicited in everyone, but my middle-finger reflex, without exception, could be seen in everybody. In order to study this reflex in patients I went to Manisa and stayed there for a week. I examined the middle finger reflex of all patients who had mental diseases.

During the third year of Medical School, I decided to become a scientist. I was in neurosciences. But I did not know how to become a scientist. There was a student assembly in Ege University. They were helping volunteering students to go to Germany for a chance to see a well developed country and with a good possibility of finding a job as a nurse assistant. I joined the program and went to Germany to learn how to be a genuine scientist. Where should I start? Where should I go in Germany? I decided to go where a famous neurology book was written. This was Goettingen University. During that time a military action took over the government in 1960. Leaving the country was forbidden. Prof.Dr. Duenzing from the neurology department in Goettingen University had found me a job as a nurse assistant in the psychiatry department. I had special permission from the ministry of internal affairs and I flew to Goettingen. First, with a one-engine plane to Athens, from there with a two-engine plane to Rome and then to Frankfurt. I had 20 Marks in my pocket. I used this money to go to Goettingen by train. I had a violin in one hand and a luggage in another. I went to the hospital where I was going to work. When I got there I learnt that there were no rooms in the hospital to stay. In the evening, a student accompanied me to a dormitory. I was given a big great looking room for which I did not have to pay. I stayed there for one month. Then I was transferred to another dormitory for nurse assistants. I stayed there for six months and once again I was not required to pay for it.

I worked at the department of psychiatry as a nurse assistant for eight months, saved some money, and then applied to Goettingen University to study medicine. This was one step further in my goal to become a scientist. To be enrolled in the medical school, I was sent to Prof.Dr. Lendle, the head of the department of pharmacology and exam commission. He wanted to know if I would be a suitable student for Goettingen University. We had the following conversation:

Professor Lendle: "Why did you come to Germany"?

Me: "To become a scientist".

Professor: "Do you have anything to prove your scientific talents"?

Me: "Yes, I have".

Professor: "Can you show me them"?

Me: "I had experiments with worms and I found the middle-finger reflex".

Professor: "Have you reflex records with you"?

Me: "Yes, here you are".

Professor Lendle looked at the reflex records seriously. He did not say anything, but he was apparently amazed. There was a moment of happiness. He got a red face in addition to his red nose, apparently from drinking too much red wine. I felt that he was glad. It was my first success. I was very happy. He liked me.

Professor Lendle continued: "Do you have any hobbies"?

I knew now he was trying to decide what kind of a man I was: a schizophrenic person or really a candidate for science.

I replied "Yes, I play violin in a philharmonic orchestra as the first violin".

Professor was silent again, and his face, with full of happiness, got red.

He said: "I will write to the ministry of education a report about you and I will ask for your acceptance to Goettingen University".

As I learnt later, Prof. Lendle had written two full pages about me and by telling everything about me, he had asked for my acceptance. I took no exam for German language. I was told that my German was good enough. Later, Prof. Lendle and I had became very good friends. Everytime he saw me he used to say "Hi! Herr Ataturk".

Georgia Augusta University and Max-Planck Research Institute

In 1961, I started studying medicine, in the third class of Goettingen Medical School. Once, I wanted to tell a professor about my worm experiments, but knew nobody to talk to about my experiments. Then I chose the most symphatetic name from the list of professors: Prof. Ochwadt. I learnt that he was working at the Max-Planck Research Institute. In fact, I had no idea about the Max-Planck Institutes in Germany. What a serendipity!.. I told Dr. Ochwadt about my worm experiments. We had a small discussion. But we couldn't agree. I visited Dr. Ochwadt a couple of more times. At the end, he said that "there have always been students like you, who came here and discussed something, but usually they disappeared after a single discussion. You are the first one who insists in discussing with me again and again. You'd better quit talking about worms and make your PhD thesis with me". But, he was studying kidney physiology. I told him that I liked the nervous system. Then, he introduced me to a young neurophysiolgist, Dr. Joachim Haase, and left us alone. A few years later, Prof. Ochwadt had a spinal cord cancer and died from it. God bless this excellent man.

Dr. Joachim Haase and my first neurophisyology experience

I decided to make my PhD thesis with Dr. Haase. He had recently returned from Sweden after working with Prof. Granit, a Nobel Prize winner in motor control. Dr. Haase gave me two of his essays which were in English. He told me to learn English and in two months he wanted me to make a summary of these papers. He asked: "Do you have skilled fingers". I said: "I really do not know, but my fingers can play violin". He did not say anything, but I felt that he was glad. He usually did not say anything if everything was well done, but became very angry even at smallest failure. Dr. Haase gave me a task; if I could answer this question I could start to work with him. I accepted at once, since I was going to study neurophsiology in Max-Planck Research Institute.

We did the first experiment together. It was very difficult. We were using cats. After an initial decerebration, we opened the spinal cord by laminectomy; then we prepared the medial and lateral branches of the gastrocnemius nerve; the soleus nerve was also prepared in the hind leg. In the spinal cord, we cut the ventral roots L6, L7, and S1. There were three stimulating electrodes put on the three nerves. One of the prepared ventral roots was divided into filaments, to find a single motor neuron, by stimulating the extensor nerves and streching the extensor muscle, gastrocnemius muscle. Splitting a ventral root was made under a preparation microscope, but I did not use it, I used my eyes under people's amazed stares. After one month I had answered the question. One extensor motor neuron was also stimulated by skin afferents. So, I was allowed to work with him. The topic was: the effects of amphetamine on spinal extensor and flexor motor systems [1, 2].

In Germany, you can study in more than one faculty. So, at the same time I went to the lectures in Medical School, and Faculty of Philosophy, since my strong interest in philosophy continued. I was also taking music lessons and played violin in the Academic Orchestra. I usually added my philosophical considerations into the protocols

Figure 2. Eczacibasi Medical Award ceremony. Prof.Dr. Ekrem Seref Egeli gives the award to Dr. Tan. Istanbul, 1975.

written following each experiment. However, Dr. Haase was not pleased about it. He told me that I could continue doing philosophy when I reached the age of 60, and he asked me to make a choice between philosophy and neurophysiological experiments. I listened to him and quit doing philosophy. At age of 67 I created the philosophy oriented "psychomotor theory".

My struggles ended up with graduation from the Medical school with an average degree in 1966; the same year, I completed my Ph.D. with an excellent degree.

Turkish Embassy

When I came to Germany, my passport was valid only for six months. While I was attending the Goettingen University I had a problem with my passport's deadline. The embassy was not extending the deadline because I was not a registered student in the ministry of education. Vezirkopru military office was postponing my military service since I was a student but the embassy was not in consentment. In Germany everybody had to be registered but I could not because I did not have a valid passport. So I got an invitation from the police. They told me that I either had to have a passport or go back. I told them that I was a student in Goettingen University and that I would finish my school. The policeman said: Okay, you can stay here, but you should inform us if you leave Goettingen. This permission lasted for almost nine years. I can not forget this help…

I was accepted as an assistant in Max-Planck Research Institute, but I still needed a passport. The Director of the Max-Planck Institute decided to go to Bonn and talk to the Turkish Ambassador about my passport. As he returned, he told me that everything was Okay now, that I could go to the Turkish Embassy and got my passport extended. The next day I went to Bonn. I had to wait for the Ambassador for nearly two hours. A short conversation occurred between us:

Ambassador: "What are you"?

Me: "Nothing, I am only a hard working research assistant, and they like me because of my success"

Ambassador: "Okay, I extend your passport to return to Turkey within six months"

Me: "Thank you. Bye Mr. Ambassador..."

I returned to Goettingen. Our director was astonished, since he was informed quite differently.

Returning to Turkey

In 1969, I decided to return to Turkey. I preferred Hacettepe University, since Prof. Dogramaci offered me opportunities more favorable than Ord. Prof.Dr. Sadi Irmak at Istanbul University.

Hacettepe University

Neurophysiological studies were not carried out on an international level in Turkey as I returned to Hacettepe University in 1969. I started to work on spinal motor neurons in decebrate cats. I started working from early morning and ending the experiment 24 hours later. After six months I started to write my first personal essay without the help of my instructor. I was on my own. I wanted to see if I could survive in the neurophysiological community, or not. Fortunately, the paper was not rejected. I usually published one or two papers a year in Hacettepe University.

One day, the secretary of TUBITAK (The Scientific and Technical Research Council of Turkey) called and asked me to give my papers to him as a candidate for the scientific encouragement award. I told him that I was not ready yet but the next year I would submitted my papers to him (1973). Next year our Dean told me that my work was not going to be nominated, instead someone else going to be nominated as the candidate. Then I took the files to TUBITAK myself. The same year I won the award, not the Dean's candidate.

In 1973, I left Hacettepe University for my military service. In 1975, I completed the military service in the Physiological Education Center of the Eskisehir Airforce Hospital. There, I gave lectures to the pilots and wrote a book, Physiology of Flying for Pilots. The Director of the Hospital, Dr. Ilhan Cankat, gave me a plate for my outstanding services.

After the Military Service: Erzurum

After completing my military service, I looked for another university, since my accomplishments in Hacettepe University caused displeasure to some people, who steadily disturbed me. As far I can remember, ten professors were appointed to go to Ataturk University in Erzurum. But all rejected to go there. The main reason was that Erzurum was not suitable for research.

I decided to go there. I wanted to show everybody that research can be made anywhere.

So I applied for a position at Ataturk University (1975). I couldn't receive an answer for months. Then I went to Erzurum personally and had a talk with the University President, Prof.Dr. Kemal Biyikoglu. He was very positive about my visit and about my willingness to work there. Then, I got an acceptance to work in Ataturk University as an associate professor. Despite the President, the Dean of the Medical School did not want to accept me (To this day, I still do not know why).

During that time I could won the Eczacibasi Medical Science Award. In my laboratory, there was only one EEG machine which I could use. Using this machine, I studied the effects of epileptic and antiepileptic drugs on the cat's cerebral cortex by local application to different cortical areas. The results were published in internationally recognized journals.

Then I set up the spinal motor system laboratory, and a microelelectrode laboratory, using the old machines we had. I worked on the spinal motor neurons, cortical motor neurons, and cortical pain neurons. I have overworked in Erzurum from 1975 to 1999. I had to teach all the physiology and biophysics classes, for the first ten years. I used to start the experiments in the mornings and then go to teach a class after that. The experiments sometimes lasted for three days uninterrupted. I've invited the most well known scientists to give lectures in Erzurum. I won a lot of national and international awards during my stay in Erzurum. Unfortunately, after Prof.Dr. Kemal

Biyikoglu's departure from the university I lost all the support I had for research. My international success had bothered some of my colleagues. I told them: "I will be able to do research despite every hinderness. A pen and a paper will be enough for me to undertake internationally recognized scientific works. And so I did.

I quit working on single motor neurons (1982), since this kind of work completed its time, and we knew many things now. As a result, two scientists got Nobel prizes on the subject which I was working on: Sir John Eccles and Ragner Granit. Accordingly, I started to study the integrated functions of the nervous system. The easiest way to do it was to study the manual asymmetry in men and animals. I really needed pencil and papers to do this kind of research. I published many articles on hand preference, hand skill, and intelligence…

In 1999, I accepted the invitation of Prof.Dr. Turkay Tudes, the President of the BlackSea Technical University, and moved to Trabzon. As a person who worked in Erzurum for nearly 24 years, I could not stand this university for 3 years, and had to leave.

Cukurova University

In 2002, one day, I picked up the phone and said to Prof.Dr. Tuncay Ozgunen who had been inviting me to Cukurova University for years that I accepted his invitation to work with him in Adana. I came here two years ago in my most experienced period as a scientist. I understand now that doing science is a very long-lasting and very hard job. At my age of 67, I am just beginning to understand how to do science; and I am retired now, which I can never accept; I will not retire until my death…

At the end, I have found a really scientific milieu with my friend Tuncay Ozgunen, great thinker, great philosopher, and a wonderful man… After Erzurum and Trabzon, for the first time we have an animal laboratory. Contrary to many researchers, with my PhD students we have found that "humans are not unique in right-handedness" [3]. My students have the advantage of having my 45 years-long scientific experience. I have been appointed as an editor in the International Journal of Neuroscience. A lot of important essays have come from Turkey and published in our journal under my editorship.

Resulting from 45 years of experience related to scientific and philosophical studies [4], a theory is born. This is the "psychomotor theory". Soon it is going to be published as a book chapter. This theory argues that there is a triad consisting of soul, brain and body instead of soul-body duality. It denies the metaphysical concepts of mind or soul. The theory is arguing that there are expressions of common motor nuclei's output by using verbal motor systems. It implies the important role of a common motoneuronal system in emergence of human mind in health and disease, and give some clues for the happiness of human being.

Conclusions

The above presented summarized version of my scientific odyssey suggests that being a scientist is an inborn trait. A man is born as a scientist, and follows his or her route according to a genetically prewired behavioral pattern. Hard work, patience, insistence, enthusiasm, intelligence, and intuitions all may be the result of a genetically science-oriented human mind. Nobody can change this hard wire.

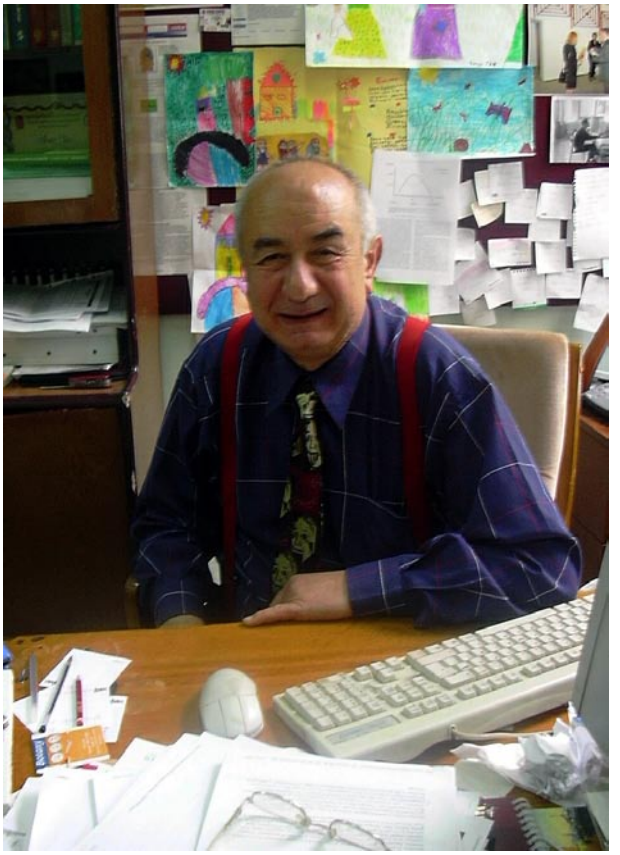

Figure 3. Cukurova University, Faculty of Medicine, Department of Physiology, Adana, 2004.

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