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## It's interesting to persistently pursue apparently minor things that are less popular among most other people.

Over the years Dr. Yukawa has taken up and persistently pursued hobbies and sports, such as soroban (abacus, a traditional calculation tool), table tennis and dancesport, which appear to be minor (in Japan) yet are of great depth. This attitude overlaps with his mindset as a researcher who devotes himself to the theoretical side of studies rather than jumping at themes in fashion. Behind his way of life were valuable encounters with good friends and respected teachers, not to mention the support from his family.

### What was your childhood like?

As far as I was told by my mother, I was a very talkative boy, who often reported to my nursery school teacher about everything that had happened at home the day before. To make the matter worse, I spoke out clearly and in an easy-to-understand way. Later my mother complained to me that she had felt pretty embarrassed (*Laughter*).

I was born in Minami-Ashigara City, Kanagawa Prefecture. Both my father and mother were public servants, father working for the Odawara City Office and mother for the Ministry of Finance's Printing Bureau. Both of my parents were good at math in their school days. Presumably having inherited their genes, they say I was good at mental calculation since my nursery school days.

Soon after entering the elementary school, I attended a soroban school. Thanks to a good teacher, I liked the art of soroban and continued to learn it up to the end of junior high school second year. I hold a first dan license in soroban and a third dan license in mental calculation. On the occasions of soroban competitions, I was always among the best; at an All Kanagawa Prefectural soroban competition when I was an elementary school sixth grader, I became the champion in the category of calculating figures read off aloud. Even today I still do two-digit addition and multiplication by mental calculation – not so well as in the past, though.

I used to teach arithmetic and mathematics to my friends. Looking back now, I may also have learned something by teaching them. I'm still grateful to my friends.

### Were you an indoor-oriented boy?

I don't think so. An expanse of rice fields could be found around my house, so rice and flower fields were ideal playgrounds for us children. Actually I was an active elementary school boy; the

moment recess time began, I dashed out of the classroom into the schoolyard to enjoy ball playing with classmates. In my junior high school days, I served as captain of the table tennis club and even participated in the prefectural tournament. The more I exercised, the better I slept at night (*Laughter*).

### Didn't your parents tell you to study hard?

No, they didn't. My parents never criticized me about my attitude about studies because I did at least what I should do – I did homework as assigned and listened carefully to classroom lessons. I'm grateful to my parents for basically allowing me to do whatever I liked.

Following entry to a local junior high school, I began to attend a small cram school in my neighborhood partly because of my elder sister's influence. Thanks to the cram school teacher's enthusiastic guidance, I became more and more interested in mathematics. In those days, however, I wanted to become a certified public accountant in the future, not a researcher.

As for senior high school, I chose Prefectural Atsugi High School, which was outside of my school district. It was my routine to make a 40-minute trip one way on the Odakyu Line train while reading the mathematics textbook on board. Presumably, this experience may have made my backbone as a researcher as I am today.

From halfway through the first year to the end of the second year, one of my schoolmates and I took up a part-time job at a co-op store near my high school – for a bit of real-world experience and earning pocket money. There I was assigned to the deli corner, so it became my special skill to neatly wrap food in cellophane. Once I demonstrated this skill and surprised my wife (*Laughter*).

### You advanced to the 5th Academic Group of Tokyo Institute of Technology, didn't you?

I did so partly because of recommendation by a father of my friend and partly because of advice by a tutor at my prep school. By this time, I became inclined, vaguely though, to choose in the future a career based on IT-related or mathematical knowledge.

To be honest, however, I was not so serious about study while I was in the lower undergraduate grades. Although I knew I was interested in theory-oriented subjects, such as on Fourier transform and Laplace transform, I was still unable to narrow down my academic interest. Under such circumstances, as an undergraduate I focused on club activities and a part-time job at

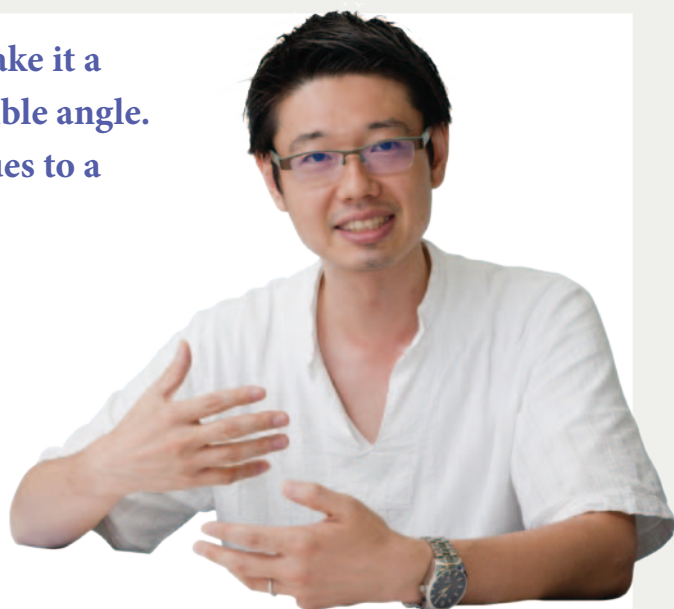




**Whenever I face a difficult research task, I make it a rule to think it out patiently from every possible angle. This is necessary so as not to overlook any clues to a solution that I may encounter by chance.**

## Masahiro Yukawa

Dr. Yukawa received the B.E., M.E., and Ph.D. degrees from Tokyo Institute of Technology in 2002, 2004, and 2006, respectively. He is currently an Associate Professor at EEE Department of Keio University. He is pursuing a new horizon in the field of Signal Processing using mathematical tools, particularly Convex Optimization and Fixed-point Approximation. He has served as an Associate Editor of several journals including IEEE Transactions on Signal Processing. His academic carrier includes Postdoctoral Fellow at University of York, U.K. (JSPS Postdoctoral Research Fellow); Special Postdoctoral Researcher at RIKEN; Guest Researcher at Technische Universität München, Germany; and Associate Professor at EEE Department of Niigata University. He received the Young Scientists' Prize, the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in 2014, among many others.



a fast food restaurant.

Another pursuit I took up after entering the university was dancesport. While inspired by a TV program as the first opportunity, I can say that something minor, or something that not many people are doing, caught my interest. The dancesport club had only four or so male members for each undergraduate grade – really minor wasn't it (*Laughter*)? In this sense, it seems to have something in common with soroban and table tennis. Turning to my research side, signal processing is quite popular in the world, but I'm focusing on themes on which few people have an eye on.

### It's a surprise. Were you not shy when dancing with a female partner (*Laughter*)?

In the beginning yes, but very soon I got accustomed to dancing with a female partner. To tell the truth, soon after marriage I invited my wife to enjoy ballroom dancing with me, but she gave up after only several times. Her excuse was that she got fed up with the way I instructed, which was too strict and specific ... (*Laughter*). I didn't mean to be too strict with her, but it seems that the habits I had acquired through dancesport lingered, which urged me to specifically advise her on posture, shift in the center of gravity and so on. In everything, once I get started, I tend to forget myself, which, I admit, is my forte as well as my shortcoming.

It was when I became a senior and joined a lab specializing in signal processing and communication theory that I became hooked on the attraction of research work.

Studying in the master program, I came to have opportunities to present my research works at international conferences, which motivated me to study more and more – so immersed in study that my desire to live a researcher's career became immovable and I made up my mind to advance to the doctoral course.

Although it was already decided that the Institute of Physical and Chemical Research (RIKEN) would employ me as a Special Postdoctoral Researcher – a coveted post – following completion of the doctoral course, I was fortunately able to complete the course six months earlier. Taking advantage of the remaining six months, I visited the U.K. to study at University of York. After returning from the U.K., I worked at RIKEN for about three years from April 2007.

Then I worked for Niigata University (April 2010 ~ March 2013) before accepting a post at Keio University.

### Sounds like you have smoothly proceeded with your research career.

So far, so good. I'm sure the fact that I have somehow been able to continue research work to date owes much to valuable encounters with good teachers and advisers at each turning point of my life. Above all, my special gratitude goes to Prof. Isao Yamada at Tokyo Institute of Technology and Dr. Shun-ichi Amari at RIKEN, not to mention the soroban instructor and the prep school tutor in my younger days.

By way of repaying my obligations to these teachers, I'm trying to teach and guide my own students as earnestly as possible. But I'm afraid my eagerness may sometimes be too much for them (*Laughter*). When dealing with my son, meanwhile, I'm trying not to be too particular about his studies just as my parents did for me.

### How do you take a breather from your busy research work?

Ever since my childhood, I like eating; so each meal is the best breather for me. Next, my blissful time is when I listen to jazz or Latin music while enjoying sweets together with a cup of coffee that I've brewed for myself. My routine on the campus is to go to the cafeteria together with my students. I also enjoy a coffee break with them, which is enjoyable.

### What do you think are good points of Keio University?

Keio has a well-developed public relations system effectively encouraging us younger researchers in research activities, for which I'm truly grateful. At Keio, even lower-grade students have easy access to professors – or an easy distance between students and professors, you might say. This is an enviable environment. Keio also offers a variety of student support systems, allowing them to become conscious of their future courses at an early stage. This is another strong point of Keio.

### ◎ Some words from students ... ◎

● Dr. Yukawa has a cool, objective eye to research, yet demonstrates extreme enthusiasm when striving to achieve research goals. His pet phrase is: "Let's make our lab No. 1 in the world!" Our lab is a pleasant place to be in, always brimming with conversations and laughter – exchanging ideas and developing discussions during lunch meetings or coffee breaks.

(Reporter & text writer : Madoka Tainaka)

For the full text of this interview

<http://www.st.keio.ac.jp/kyurizukai>

