

Memoir

The Path Hunter with a Scientific Mind
in a Sound Body

Mitsuaki Nishibuchi





轍 (*Wadachi*) literally means the track of a wheel or a mark in the ground that usually fades away through weathering before anyone notices its presence. However, it has a special meaning for me. I have tried to live a day-to-day life so that my “wadachi” is distinct from others as it were a flash of light or the special odor of sweat resulting from intelligent and physical hard work that wove into my “wadachi.” This may serve as a small milestone for others who may follow and overwrite it before it disappears. As such, I would be very happy if my “wadachi” can serve such a function. Mitsuaki Nishibuchi

Picture on the front page

“Run.” I was a member of a university cycling club while I was in Japan. After hard training as a member of the club’s touring group, the senior members were allowed to go on solo tours. I enjoyed the area-specific nature and discussions with local people rather than conversations with the tour members.

Picture on this page

“Walk.” I used to serve as an academic advisor for WHO/FAO while affiliated with CSEAS. Upon completion of each specific mission in Geneva, advisors were allowed to take a short holidays. I took up the challenge to hike the trails around the Matterhorn and surrounding high mountains.

Picture on the back cover

This picture was taken during Prof. Nishibuchi’s talk regarding “useful research.” The Kinki branch of the Japan Patent Attorneys Association hosted a festival to introduce daily life use inventions by Kyoto University to the general public in July 2017. Prof. Nishibuchi was asked to present the invention of a new food disinfectant and explain it.



Memoir:

The Path Hunter with a Scientific Mind in a Sound Body

Mitsuaki Nishibuchi

Professor, CSEAS

Interviewed by

Yoshitsugu Nakaguchi

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Professor Mitsuaki Nishibuchi's scientific mind developed from an interest in fishing and through various experiences within different research genres. This culminated in a unique research approach merging experiment-based laboratory science and observation-based field investigations in Southeast Asia. This resulted in him being awarded the Japanese Society of Tropical Medicine Award of Excellence (2011). He has attempted to internationally disseminate his unique scientific approach to a younger generation of scholars. His approach has been internationally recognized through honorable awards given to him from academia as well as educational institutions: an honorable Ph.D. degree from Prince of Songkla University in Thailand (2016) and an Honorary Emeritus Fellowship Award (2018) from the Centre for Environment Fisheries and Aquaculture Science, England (CEFAS). Sports and related activities strongly supported the construction of a robust mind and body and strong collaborations with people. It is through this synergy that great science was achieved.

Nakaguchi Yoshitsugu (NY): Could I start by asking you to share some of your most impressive memories when looking back over your life so far?

Nishibuchi Mitsuaki (NM): I am a very lucky person to be surrounded by warm, understanding and compassionate people, including my own family, who have always let me live my life freely as I wished, so it is hard to choose a few memories out of so many.

Briefly looking back over my life from early childhood, I can recall playing in nature when I was little and I made a lot of friends as a student, through enjoying sports and drinking parties both in Japan and in the U.S. I also came to be interested in machines through bicycles and cars. Since I became a researcher, I have been able to enjoy multidisciplinary international joint studies with researchers from various countries by making use of such experiences. In retrospect, I could say that my childhood experiences had an exceptionally strong influence on shaping my personality, as they provided me the most important basis for my life. Let me explain in a little more detail. What has remained in my memory since then mostly formed as they accumulated upon this basis. Luckily, my major activities are recorded in pictures, taken by a camera I'm proud of, so let me introduce some of them through those images (carried within interview).

NY: To begin with can you share some memories and your circumstances from childhood through to your adolescence?

Birth and memories with my family

NM: As my father was in a construction related business, we had to move a lot: I was born in Hikari City, Yamaguchi Prefecture and a year later, we moved to Yahata Ward,

Kitakyushu City, and then again to Abeno Ward, Osaka City and we lived there from when I was in sixth grade until I graduated from high school. Then, I moved to Hiroshima, my parents' hometown, as I had decided to go to university there. Afterwards, I moved to Fukuyama to join a specialized faculty, studied abroad two times in the U.S. and then obtained a job (as a postdoctoral researcher) there, as well as employment at a Japanese university with an additional two transfers over the course of my career.

The most impressive memories I have with my family, is one with my father. Until I went to study in the U.S., I used to climb a nearby mountain on a day trip with him every year on January 2nd, during the New Year's Holidays (Picture 1). It was at this time when I learned various sayings and useful



Picture 1 Even during my school days, I would return to my hometown of Osaka and climb Mount Kongo and Mount Yamato Katsuragi.

words that have become a rule of my life. “Hardship makes the man” (*kannan nanji wo tama ni su*) and “when you find yourself at a crossroad in life, take the more difficult way” (*Jinsei no kiro ni deatta toki ha, yori muzukashii michi wo erabe*) are the most unforgettable ones. When I boarded for the first time in Hiroshima City, he accompanied me in a double-breasted suit to politely greet the owner of my boarding house. Since then, people from the boarding house would always appraise him, saying he was a “respectable father.” Besides, he understood me quite well and graciously provided financial assistance to buy items that played important roles in my life: a custom-made bicycle, a single-lens reflex camera “Nikon F2A” and a zoom lens set (quite luxurious items in those days).

Interests from early childhood

NM: When I was a child, there was nothing like video games to play indoors, so I mostly played outside, and as such I particularly looked forward to the summers. The vicinity of my elementary school in Yahata Ward, Kitakyushu City, was a naturally rich environment with wooded areas and I used to run around them with a butterfly net and insect cage in my hand till dusk, in search of insects like cicadas, grasshoppers, beetles, and stag beetles. What is still vivid in my memory is the death of a grasshopper I caught, as I pulled it too strong by the body, while it was biting on my shirt. It taught me a lesson about how transient and precious life is.

During summer vacations, I very much looked forward to visiting my parent’s hometowns. One was in the mountain areas of Hiroshima Prefecture. What I was interested in more than insects were the various fishes that resided in the middle reaches of the river or in upper mountain streams. As the day of returning home drew nearer, the scenery of the river as well as figures and moving images of fish there would start appearing in my dreams, leading me to make frequent visits to a fishing equipment shop.

My mother was originally from Kimita-son, a village in the piedmont region of Hiroshima, and her house, somewhat looked like a log-house, was built facing a gravel road where few buses passed by during the day. Spring water from the hillside served as our drinking water and irrigation canals on the roadsides provided us with water for bathing and washing. We could get food supplies at a country store at a walking distance of around 30 minutes for a child. Villagers were growing rice on terraced paddy fields and looking forward to the harvest festival in the autumn. There was a mountain stream, right at the back of our house and often in my dreams, I was communicating with the big game, such as the unseen *Gogi* (a head-spotted char/ a kind of Iwana char (*Salvelinus leucomaenis imbricus*)) in the depths of the river through a float. The water in the shallow part of the river was incredibly clear, and I could spend hours without realizing it, lying on my stomach on a bridge, struggling to catch fish, such as a school of *Oikawa* (freshwater minnow *Opsariichthys platypus*) or *Kawamutsu* (dark chub *Candidia temminckii*), that could be seen under the bridge. As I put grains of steamed rice on a hook at the end of the fishing line, I would send them right in front of the eyes of fish, mumbling “eat it, eat it!,” while being amazed through observing their movements: keen and efficient, fighting over the grains of rice. I had no idea that it would be a help for

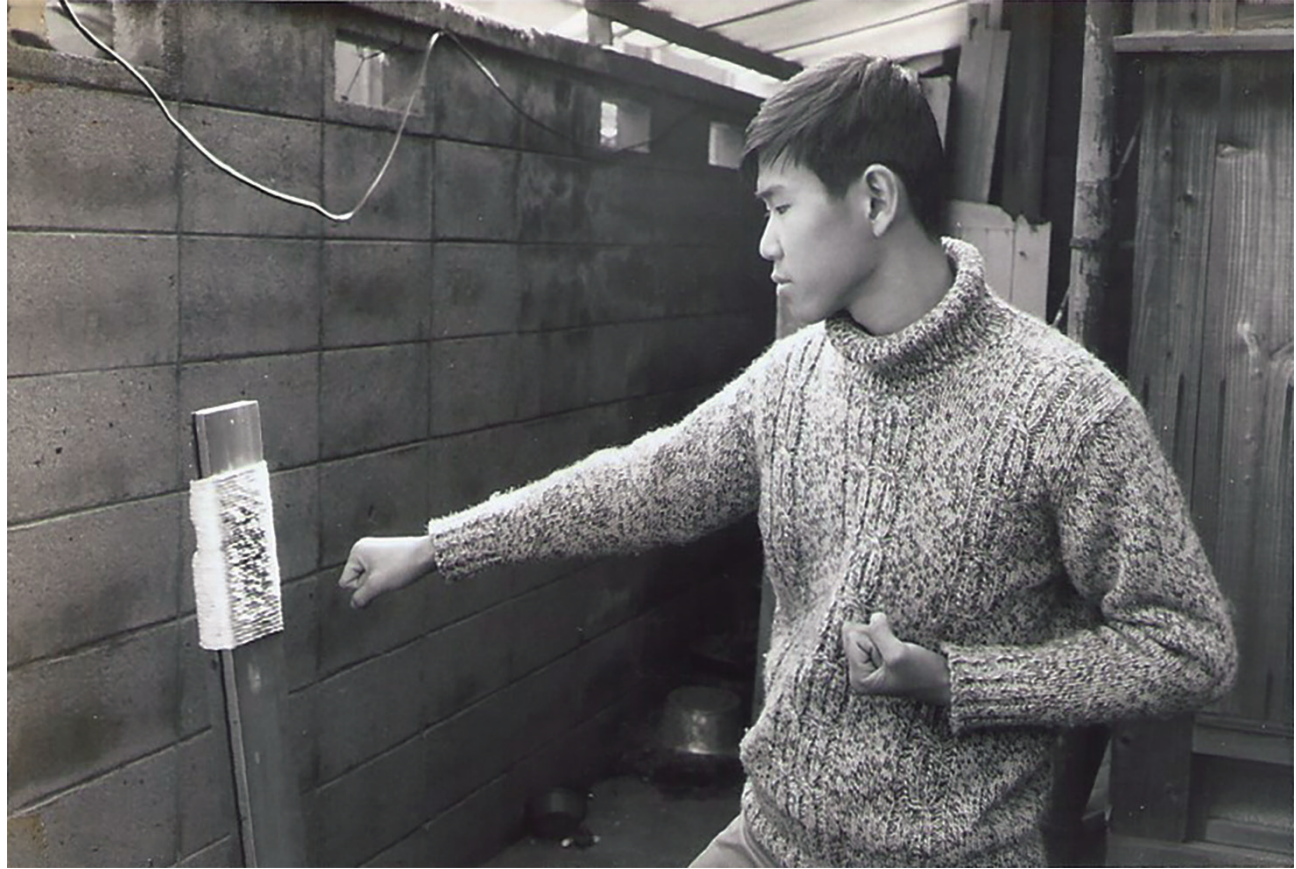
me to learn later, from my uncle, the secret techniques of *Myakuduri* (a fishing method without using a float) to catch *Oikawa*.

My father was originally from Miyoshi City, where three large rivers merge and at that time, it was an area with an abundant catch of fish, such as *Ayu* (sweetfish *Plecoglossus altivelis altivelis*) and *Ugui* (Japanese dace *Tribolodon hakonensis*) that could only be found in clean streams, or large fish-like carps. Since I was a child, I was wondering why there were plenty of fish like that. I clearly remember the night I caught sight of people discarding a bucket full of food scraps into the river from a bridge and that I heard the splashing sound of the fish munching in the dark down the stream. Later, when I learned the proverb, “Clear water does not breed fish” (*Mizu kiyokereba, uo sumazu*), it sprang back to my mind. And again, as I was in a higher grade (at 16 years of age) and obtained a soft fishing rod (drum reel-type) for surf fishing to catch surface water fish, I recalled the night one more time. It also overlapped with the impressive image of a movie, shown by a children’s association back in my childhood, about traditional drift fishing using pupas as bait to catch black sea breams in the Yaizu fishing harbor. Then, it had set off intense sparks in my head, trying to connect multiple neurons, old and new. Thus, I named a style of fishing, “Nishibuchi-style drift and float *Ugui* fishing,” which used the reel-type soft fishing rod for surf fishing, standing in the middle of a stream, putting small pieces of bread to each of the approximately 10 branched fish hooks drifting on the surface of the river. I know it’s just self-congratulatory, but it was even more exciting than



Picture 2 A print of a large fish caught using the “Nishibuchi-style drift and float *Ugui* fishing.” The dirt around the mouth was the result of bait which flowed back up from the stomach at the time I was making the rubbing. It now decorates my office.

fishing *Ayu*, to struggle in the middle of the river, trying to catch a group of *Ugui*, nearly 40cm in size. As contenders who were driven competitively and tended to forget to be alert, they could normally be caught simultaneously on multiple hooks. “Face the moment, face the site, learn from it” (*Toki ni nozonde, ba ni nozonde, kore wo manabu*). I believe that learning from history and the field is important for both invention and area studies. In order not to forget this spirit, I display a fish rubbing (*Gyotaku*, a fish print) of the



Picture 3 Intense Karate training. As I couldn't go to the Dojo during long vacations when I returned home, I would strengthen my fists by hitting a 'Makiwara' (a padded striking post used for training in Karate).

Ugui I caught back then in my office (Picture 2).

Development of interests and their relation to study

NM: My passion for fishing was derived from my interest in the biology of fish. When I was a junior high-school student, I went fishing once or twice a month on Sundays. I started to develop a desire to see fish every day, and finally came to grow ornamental fish, such as goldfish and carps in aquariums laid out in my yard. The variety of fish I was growing had gradually shifted to specialize in fancy goldfish, such as *Ranchu* (roundfish), appraised for their beautiful appearance in fairs. Besides, their existence started to appeal to a sense of beauty I had begun to develop in my youth. By that time, my expertise in raising fish had reached a certain technical level, hatching eggs laid by adult fish, sorting out juvenile fish, and so on. Shortly however, I was to face a big problem: if I was not careful enough, fish could often catch diseases. Though I tried my best through consulting some books and trying to cure them through medicine, they usually ended up meeting a sad fate. I submitted my records of raising goldfish, including such struggles of mine, as a summer vacation research project to junior high school. Since it caught attention of a teacher of modern Japanese, it appeared in a schoolwide newspaper. I thought the proper way to understand this event was to take it as if I had gone through a great conflict and that I had gained enough power to strongly appeal to a third party.

During my high-school days, my interest in fishing and raising goldfish never abated. Rather, since I was the chairperson of a library committee, I was often stationed in the library and as such, outdoor activities had helped me maintain a balance between the mind and the body. Yet, I couldn't find a solution to the problem of my fish catching diseases and it left me with pangs of sadness.

NY: Which was the field that interested you and led to your

decision to go on to graduate school?

NM: After graduating from university, I had the vague desire to work for or conduct research for the sake of those in need. Therefore, despite the fact that I was interested in pollution problems in oceanic environments that had been much-talked-about in those days, the issue of fish disease was personally, a more important matter for me. I came to learn there was a laboratory for such studies at the Faculty of Fisheries and Animal Husbandry, Hiroshima University. Going to the university there meant living away from my parents. Fortunately, however, Hiroshima was my parents' home town and as it also made me feel easy, I decided on my career path.

NY: As you continued your study at the faculty of the university, what did you wish to further enrich?

NM: I started to study science of fisheries in general at the Department of Fisheries, Faculty of Fisheries and Animal Husbandry, however what I realized at the welcome party for new students was that this academic discipline was quite feudalistic and required robust physical and mental strength, aside from the matter of scholarship. After passing the exam, I took it easy and was a bit slow in looking for my boarding house, so I boarded in the area called Kusatsu, on the West coast, quite a distance from the city center. I took my long-distance of commuting for good and decided to train my physical strength by commuting on a bicycle. For that reason, I bought a bicycle for serious cycling (and that was my encounter with the bicycle). Besides, as there was a Dojo (training center) named Shobu-kan (尚武館) near my boarding house, there I practiced Wado-ryu Karate (和道流空手道), trying hard to concentrate on training my physical and mental strength. Thanks to great instructors, including the director of the Dojo and Shihandai (assistant instructor), I felt I was steadily growing toward my objective (Picture 3).



4-2



4-1

Pictures 4 The University Fishing Club President (4-1). Even though it may seem that fishing is a carefree hobby, there is an incredible amount of planning, making contact, material preparation, and accounting. (4-2) At open fishing competitions, we would show off our surf casting to other general participants.

Most of all, I was able to obtain vigorous mental strength and I felt as if I had nothing to be afraid of in this world. Furthermore, what was memorable were the incredible lectures given before the training sessions. Among them, phrases such as “*Shin soku tai*” 心即体: Mind is nothing but the body (generally known as “*Shin soku ri*”: Mind is nothing but the law) or “*Gi shin ni iru*” (技神に入る: to be divinely skilled, explained in such lectures, were so versatile, that they would just pop out of my mouth in various situations of my life later, but at the same time were considerably rich. In order to enjoy my student life with more friends, I joined a fishing club in university. As I had a long experience and prominent skills in regards to fishing, they immediately made me captain of the club. Thanks to this, I was also able to gain some experience in organizational operations in the “mini” society (Pictures 4).

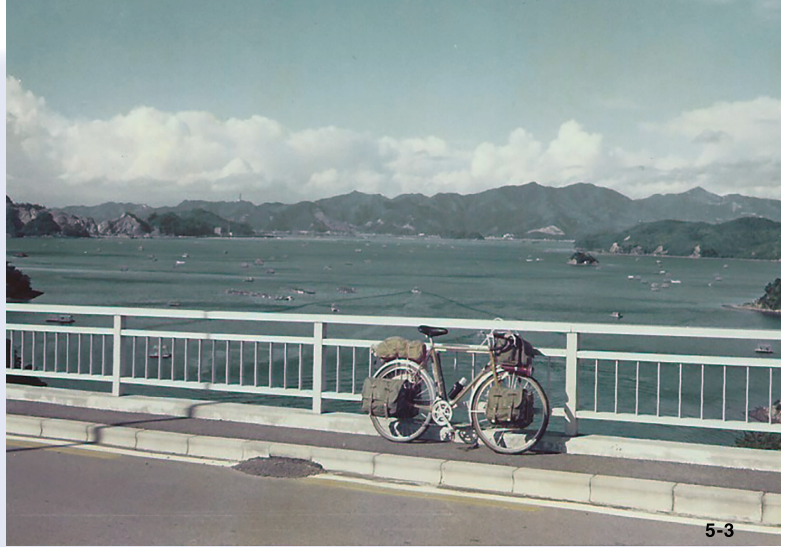
After learning basic science for a year and a half at the Hiroshima campus, I spent the rest of my undergraduate years at the Fukuyama campus to study my speciality, the science of fisheries. During this period, I served as captain of the fishing club at the Fukuyama branch, while joining the cycling club of the Fukuyama branch. I was also assigned the post of sub-manager to pursue the full-blown art of cycling (Pictures 5).

In my fourth-year at the faculty, when we had to work on my graduation thesis, I was assigned according to my wish, to the laboratory of Professor Kiyokuni Muroga, who had specialized in fish diseases. Communication skills I had cultivated over my student life through sports and drinking sessions helped me carry out smooth activities in the laboratory, as well as allow me to concentrate on academic research (Pictures 6).

NY: Can you share how you entered the graduate school for



5-1

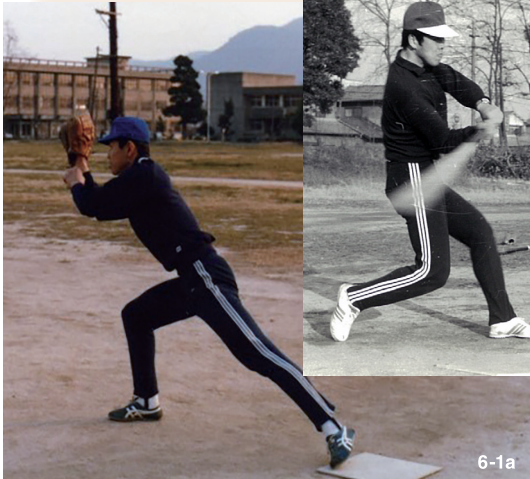


5-3



5-2

Pictures 5 The deputy head of the University cycling club: (5-1) As this was the second challenge, after having made it to the top peak of Shikoku island's famous mount Kenzan or Tsurugi-san alongside three juniors who had been selected, it was fun to make the descent [Nishibuchi: to the left]. (5-2) Touring on my own in the Chugoku and Kinki regions. Due to carrying much equipment the pace was slow. I visited a relative's house to take a rest. (5-3) Touring on my own in the Kinki and Shikoku regions. Only the scenery and my beloved bicycle are in the photo because I had to push the shutter button.



6-1a



6-1b



6-1c

6

Pictures 6 Sports and drinking (in Japanese *Nomyunikeshon* [communicating through drinking]) in my department and research laboratory. At the time when I was at the Muroga research laboratory, participation in softball was a must (6-1c) [Nishibuchi: the left of the middle line]. I was fourth on the plate (6-1b) and a defensive first (6-1a). My professor told me I was an ace with alcohol beating the mold. (6-2) That I formed a fishery department team at the faculty soccer competition, destroyed the faculty of education high school physical education team and drank sake from the trophy cup, remains memorable.



6-2



7-1



7-2

Pictures 7 At my study destination in the U.S. I enjoyed socializing with many friends through sports and *Nomyunikeshon*. (7-1) Softball was popular in my laboratory [Nishibuchi: fourth from left of the bottom line]. (7-2) Soccer matches were a staple of campus competitions. I was a member of an international team known as the squirrels (this was the name of the sponsor's watering hole; [Nishibuchi: fifth from the right in the bottom line]) and we enjoyed games and beer.



7-6



7-3



7-5



7-4



7-7

- (7-3) Drinking Style A* (Formal and the start of the first overseas beer club in Japan [Nishibuchi: to the left]).
- (7-4) Drinking Style B (A little serious, at the strategy meeting at the sponsor's watering hole [Nishibuchi: to the left] in the front).
- (7-5) Drinking Style C (Slightly relaxed and still interested in food [Nishibuchi: to the left])
- (7-6) Drinking style D (Quite relaxed and the eyes say it all. [Nishibuchi: to the right in the front])
- (7-7) Drinking Style E (Very relaxed and close to graduate's condition on a Friday night [Photographer: Nishibuchi]).

* This are all subjectively ranked according to Prof. Nishibuchi.

7



8-1

8-2

Pictures 8 Midnight friends from my day's in Oregon: John Baros (8-1) used most of the autoclaves in the microbial building as culture devices for bacteria to culture high temperature bacteria found near submarine volcanos. I intensively carried out experiments at night and didn't have to wait in line for the experiment equipment. (8-2) A shot with one of the cleaning staff. She worked the night shift and I met her at midnight. One time when she got trapped in an elevator and called out our names we had to go and help her out.

the master's program and came to visit the United States as an exchange student?

NM: While in the laboratory, I was really able to fully study fish pathology, however, the more I studied, the more I was made aware of the issue that Japan lagged considerably behind the United States and therefore, I had gradually developed a desire to study in the U.S. Above all, a research team led by of Professor John L. Fryer of Oregon State University was publishing wonderful research results, based on a solid microbiology and taking the approach of incorporating fisheries, so I came to admire their existence as something akin to the "Godfather" of fish pathology.

At that time, the Ministry of Education, Science, Sports and Culture (MEXT) had been implementing a program to dispatch exchange students (100 students per year) for the undergraduate and graduate students of national universities, so I studied English and after passing the exam, I was given a chance to study abroad for one year (in the middle of my master's program) from September 1977 at Professor Fryer's laboratory.

NY: Can I ask you about your life in the United States, for example about your research activities and other things?

NM: I was quite wild. I did what I had to, but at the same time, socialized with many friends through sports, as well as over drinks, absorbed in study and fully enjoying the freedom I had (Pictures 7). I conducted research (experiments) intensively and effectively during the nights, when there was no waiting time for using equipment (Pictures 8).

Moreover, thanks to Professor Fryer, I was able to accumulate a variety of experiences that it made that one year feel very long. Not only was I able to develop my own research I had been working on in Japan, but I could also take important classes related to microbiology, take part in other activities in relation to fish disease (such as helping out with a project for salmon farming business by Oregon State Fisheries & Wildlife), and enjoy my own hobby of fishing as well (fishing specific to that area, such as rainbow trout in a stream and salmon on a shore) (Picture 9). It was especially meaningful for me and I was highly impressed by Professor Fryer's class. He had received the Loyd F. Carter Award, which was bestowed to excellent educators (only one recipient a year) and his method would go on to influence the class I was to be in charge of later on in Japan.

Returning to Japan after completing the master's program, and going on to university in the U.S for a doctoral degree

NM: When I was preparing to return to Japan, as I finished a year of study abroad, Professor Fryer suggested me to take up the challenge of a Ph.D. under his supervision, once I had finished the master's program in Japan (and that with an assurance for a research assistantship). As I came back to Japan, I had a chance of going on to a domestic university for a doctoral program, but I finally decided to make a career choice of returning to the U.S. again. Back then, as it was deemed difficult to make such oversea studies successful without considerable efforts, I needed to prepare myself mentally to some degree. Before leaving

Japan, I declared to my junior fellows at the laboratory and to my parents that I had no intention to come back to Japan again.

Doctoral research in the U.S.

When I returned to Oregon in September 1979, the first thing waiting for me was a drinking competition with my bad old friends from the laboratory, over shot glasses of whiskey at a western bar downtown. It turned out to be a good start. Thus, thanks to the support of my friends from my previous stay and the research assistantship, I could enjoy, once again, wild and meaningful days, education and research for three and a half years until I obtained a Ph.D. in microbiology (though, there was a big change within myself). In order to solve problems of my research on fish disease (the new bacterial species of pathogenic vibrio that could trigger canker for cultured eels) as well as of those commissioned from Japan, I asked Professor Ramon J. Seidler, a specialist of microbial taxonomy, based on environmental microbiology and molecular (genetics) studies (whose laboratory was located three floors below Professor Fryer's), to carry out collaborative research. The result was a great achievement and we were able to bring up the issue of pathogenic vibrio which Japanese fisheries science and fish pathology had had. Later, Professor Seidler took on sharing the research with a National Sea Grant on pathogenic vibrio in the oceanic environment and I was singled out, as he needed a specialist, who could conduct research on this. Taking the offer meant that I had to change laboratories I had been assigned to, the contents of my doctoral thesis, as well as my doctoral advisers. With the doctoral thesis, I would have to start it from scratch. As I consulted Professor Fryer, he shared his opinion with me: "I would agree on this for your future: if a chance is offered when you are young, it is good to accumulate as many experiences as possible." His words did not just encourage my transfer to the laboratory of Professor Seidler, but have served as a basis for me since then: not to refuse those who would knock on the door of my office as an applicant to graduate school or as a young researcher. Personally, leaving the fish pathology project even for a while, went against my will, despite the fact that it had not been carried out on a full scale yet. However, by that time, I was able to understand that even with different themes, research of this kind could basically proceed in the same way. As I



Picture 9 Through a chartered boat, we could easily enjoy trawling for coastal salmon for a daily rental fee of \$30.



Picture 10 I received the “Sea Grant Association National Student Research Award (1981)” from Washington D.C. in Oregon.

presumed it to be meritorious from a long-term perspective, to participate in a major project when a chance was there and to be able to absorb a large amount of knowledge and skills on sites, as well as to expand human networks, I decided to follow the precious advice of my senior.

After the transfer, studies in my doctoral years went smoothly and I published a lot of papers. Among all, I was honored to receive “The Sea Grant Association National Student Research Award (1981)” and “N. L. Tarter Research Award (1982)” for my research on “Development of new animal model for enteric infectious bacteria test” (Picture 10). It was known throughout the university and when there was an outbreak of *E. coli* (the so-called O-157) infectious disease in Oregon and Michigan for the first time in the world in 1982, I was to help with the investigation into the cause in the state of Oregon. In other words, I was the first Japanese researcher, who engaged in the investigation of the O-157 incident.

Life in the U.S. as a postdoctoral researcher

NM: After obtaining a Ph.D. at Oregon State University, I was introduced by professor Seidler to Dr. James B. Kaper, who was in the Department of Bacterial Genetics at the Center for Vaccine Development, University of Maryland School of Medicine in Baltimore and started my academic life as his first postdoctoral researcher in February 1983. The first message from Dr. Kaper was to turn up in Baltimore soon and to start working on the research. Following his instruction, I accomplished a lone cross-country drive in the middle of a snowstorm in February, driving my precious car (1974 Ford LTD, Picture 11) on Route 80-N from Oregon to Maryland in six and half days. The theme of the research project was a genetic analysis of pathogenic factors of *Vibrio Parahaemolyticus*. It was just around this time, when the U.S. was taking the global lead in genetic engineering techniques, including gene cloning, and these were being developed and published one after another. I made up my mind and devoted myself to the research (though I was still a late-night person) for three years, and as a result, I acquired the latest genetic engineering techniques. As those were the early days for experiments of molecular genetics without sufficient experimental kits, it was necessary for us to follow the basic procedures of experiments faithfully and it required immense time and work every day. Again, what had supported me mentally and physically during such a tough life as a researcher was sports (swimming

and football) (Picture 12). When I was leaving Baltimore, as I had completed the mission, Dr. Kaper said to me for the last time; “enjoy it while you can.” I’m trying to give the same words to my graduates in my laboratory.

NY: What were your reasons for deciding to return to Japan?

NM: The U.S.-Japan joint conference (annual assembly) of the Cholera Panel of the U.S.-Japan Cooperative Medical Sciences Program has been held biennially in Japan and in the U.S. Since I had started working as a postdoctoral researcher, I attended the conference as a member of the U.S. side, and it seemed it did not take much time for the Japanese side to find it out. When I was a guest speaker at a symposium in Japan, I made a presentation on the results of analysis on pathogenic factors of *Vibrio parahaemolyticus*, employing the latest methodology of molecular genetic studies, which was welcomed by fairly good responses and later, I was offered a job opportunity in Japan. I was made aware that the gap between the levels of scholarly progress in the U.S. and Japan could not be found just in fish pathology, but also in other fields. Whatever the field, if it was possible to reduce the gap, it would surely affect related fields and I wondered if pathogenic bacteriology and fish pathology could make good examples of this. I believed that, as soon as possible, what I had obtained in the U.S. would reflect back on academic disciplines and ultimately bring benefits to the world, so I decided to return to Japan.

A little before then, I had received an envelope from my father. Inside the envelope was a whole Japanese newspaper of a certain day. It featured a victory of the Hanshin Tigers, which was quite unusual in those days, and referred to the excited local fans jumping into the Dotonbori River one after another out of joy. I was wondering why my father, who had been an enthusiastic fan of the Hiroshima Toyo Carp, had sent me such a paper. Since then, I had occasionally received newspaper articles, covering major incidents and episodes that had been taking place in Japan and finally realized that it was the first indirect message from my family, trying to encourage me to pay attention to Japan. It would be a lie to say that it had not, in the slightest, affected my decision to return to Japan.

NY: Once you were back in a Japanese research



Picture 11 My beloved 1971 Ford. It came equipped with the biggest engine that Ford had produced for a passenger car at the time (cylinders at 439 cu inch [=7 ltr]). I always looked forward to tuning the engine myself in spring and autumn.

environment, did you recognize any differences from those in the U.S.?

NM: In the U.S., they put emphasis on fundamental education in extensive fields during the period of graduate education up to Ph.D. level and they provide an educational system that enables students to understand the philosophy behind each of the several fields, at least those relevant to their specialties. They also have a system with a certain level of freedom for postdoctoral researchers, allowing them to take up the challenge according to their bold ideas, but at the same time, making sure that they would be responsible for the whole project and make it a “success” in the end. On the other hand, it seems to me that the research environment in Japan generally tends to make a young researchers “mature early” as a specialist of a certain field at an early stage.

NY: Tell us about your research during the time you were at the Faculty of Medicine, Kyoto University.

NM: Before the end of my postdoctoral contract in the U.S., I had unofficially been promised a job by a certain research institution in Japan, however, I also got an offer from the Research Institute for Microbial Diseases, Osaka University and I was finally hired as an assistant by the latter for a period of one year and nine months from April 1986. After that, I had the opportunity to work as a lecturer and assistant professor for a course on microbiology at the Faculty of Medicine, Kyoto University. During those days, what I was particularly trying to do with regard to aspects of research, was to work with young Japanese researchers (postdoctoral researchers and graduate students), who had been engaged in pathogenic microbiology and to convey to them what I had learned in the U.S. (such as a vision for tackling research and the latest technology), as well as the fact that when the principle of “the three arrows (three pillars of stability)” would work, they could expect far greater results than research done by any individual. The

romanticism (ideal) that I have as an academic is to conduct research that would bring about something beneficial for many. Personally, I am content with what I achieved during this period. According to internet information, my thesis to date, has been quoted in other papers more than 11,700 times. Among them, those ranking on the top two (quoted more than 500 times) have been published during this period.

NY: Could you tell us about the development of your research after you took office at the Center for Southeast Asian Studies (CSEAS), Kyoto University, and about the conflict you faced doing so?

The resolve to expand research into Southeast Asia

NM: In the graduate school of Medicine, I was conducting basic research, based on some analyses of experimental data from the laboratory, with the aim to reveal such things as the mechanism of bacterial pathogenicity. There was a request from CSEAS to recommend an academic and I was told that the Faculty of Medicine was willing to recommend me for the position of professor, so I made an application hoping that it would make it possible for me to develop my research to serve many who were actually suffering from illnesses in Southeast Asia. As a result, I was able to take up the post of professor in April 1996. Since then, I have been under their patronage and this is my 24th year at CSEAS. Though before then, I had been with different laboratories and learnt various issues every few years, with the longest record of nine years at the Faculty of Medicine for the course on microbiology, I had never seriously thought about transferring since I took office at CSEAS. Southeast Asian studies was such a fascination for me. Still, around the time I assumed the post, I had to go through more than a few struggles as I was not so familiar with the new environment. Among professors at CSEAS at that time, there were those who would frequently raise the question “what is area studies?” or those who had stereotypical ideas about those from the Faculty of Medicine and that they



Picture 12 In Baltimore, I participated in the city league team and enjoyed Soccer [Nishibuchi in the left of the upper line].

were all “shaking test tubes in a laboratory” as well as those who had declared in the interview before my acceptance that “once you take office at this institution you should not conduct any useful research.” Those were the people I can never forget. Later, as somebody told me that there was no one who would know the answer to the question of “what is...” and with an opportunity of a two-month investigation in Indonesia (Picture 13), including the experience of joining the research of three so-called prominent area studies professors, and through taking other comments as negative examples to learn from, I was able to make up my mind to develop my own way of research in Southeast Asia.

New studies bridging the fields of medicine and area studies

NM: When I was transferred to CSEAS, a professor from the Faculty of Medicine gave me advice that I should try to cover activities that would reinforce the deficiencies of each department. My own initial understanding was that the Faculty of Medicine had lacked tropical studies, while CSEAS had lacked useful and practical studies. Nowadays, however, the latter considers cross-over studies between field research and laboratory experiments that fit the conditions of being suitable for both fields of Medicine and Area Studies to be more appropriate. One of the successful examples of this could be the result of cooperation between the members of various departments of CSEAS as well as collaborative researchers from respective Southeast Asian countries, namely, through a Grant-in-Aid for Scientific Research (S) “Infectious Diseases Spreading Across International Borders in Southeast Asia: The Elucidation of Area-Specific Features Based on Multifactorial Analysis (2007-2011)”. For this contribution, the Japanese Society of Tropical Medicine Award of Excellence (2011) was awarded for the first time in Kyoto University, and the certificate contained a comment that my study clearly demonstrates how future studies of Japanese tropical medicine should be directed (Picture 14).

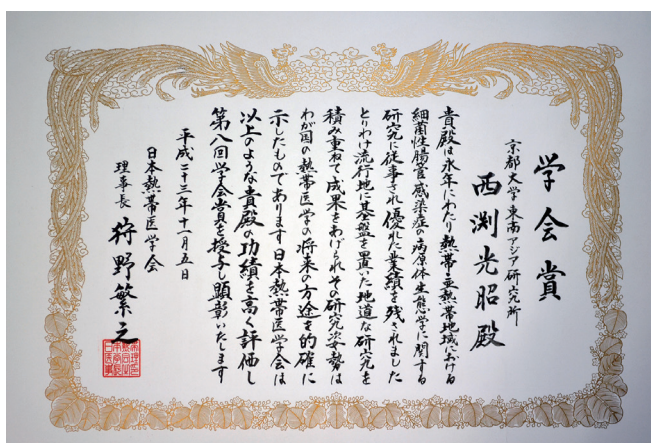
Colleagues I met in the fields of Southeast Asia

NM: Over the last 24 years, there are innumerable colleagues I have met in the field (oversea venues of research). Moreover, at present, there is no more framework for different regions and the whole world has become our field. I would like to introduce some of the representatives of the major groups that have offered enthusiastic cooperation for holding research collaborations and workshops, as well as for the promotion of interactions among researchers on the ground (Table 1). Organizations of affiliation listed to the right and are indicated by names from the time of collaboration. In addition, respective groups include a lot of members who we became familiar with on each other’s sites, such as graduate students and technicians. Currently, active interactions are mostly taking place among the next generations of respective groups. My commitment to the enlightenment and education of colleagues of similar ages as well as a younger generation of scholars in various parts of the world resulted in international recognition exemplified through an Honorable Ph.D. degree from Prince of Songkla University in Thailand (2016) and the CEFAS Honorary Emeritus Fellowship Award (2018) (Picture 15).

NY: Would you be able to share your feelings toward your



Picture 13 With Profs. Yoshihiro Tsubouchi, Tsuyoshi Kato and Koji Tanaka who accompanied me on a research fieldtrip to Ternate, in the Halmahera region of Indonesia [Photo credit Nishibuchi: 1996].



Picture 14 The Japanese Society of Tropical Medicine Award of Excellence Certificate (2011).

Table 1 Representatives of major groups that had offered enthusiastic cooperation for holding research collaborations and workshops, as well as for promotion of interactions among researchers

Name	Country	Affiliation
Son Radu	Malaysia	National Food Safety Research Centre, Faculty of Food Science and Technology, University Putra Malaysia
Varaporn Vuddhakul	Thailand	Department of Microbiology, Faculty of Science, Prince of Songkla University
Abdul Aziz Djamal	Indonesia	Faculty of Medicine, Andalas University
Firdausi Qadri	Bangladesh	International Centre for Diarrheal Diseases, Bangladesh
G. Balakrish Nair	India	National Institute of Cholera & Enteric Diseases, Kolkata
Ng Lee-Ching	Singapore	Environmental Health Institute, National Environment Agency
H.-C. Wong	Taiwan	Department of Microbiology, Soochow University
Yung Bu Kim	South Korea	Department of Microbiology, College of Medicine, Pusan National University
Chengchu Liu	China	Shanghai Ocean University
Oscar Roberto Escalante Maldonado	Peru	National Center of Public Health, National Institute of Health
Nasreldin Elhadi	Saudi Arabia	College of Applied Medical Sciences, University of Dammam
Rachel E Rangdale	United Kingdom	CEFAS Weymouth Laboratory
James B. Kaper	United States	University of Maryland School of Medicine



Picture 15 Prof. Mitsuaki Nishibuchi received a degree in “Doctor of Science (Microbiology), Honoris Causa” from the Prince of Songkla University (PSU) in Thailand. The diploma was handed to him directly by Princess Chulabhorn of Thailand (2016).

family?

NM: Needless to say, thanks to an understanding family, I was able to be absorbed in and continue my study, as I wished. Research is challenging the unknown, and progress does not always go as expected, and many times, it requires great self-sacrifice both in terms of time and money. I had already received approval from my family on this point when I was assigned as professor, yet still I deeply appreciate their patience up to my compulsory retirement.

NY: What is your message for future researchers?

NM: It is often said that “what one likes, one will do well” and looking back over my research so far, I realize that while I ardently pursued my passion, I naturally passed the threshold of research and have been able to obtain a considerable depth of exploration. However, I did not just cling to one thing but maintained a degree of flexibility, so that it was possible for me to decide, when needed or requested by affiliated fields, to redirect my career path or to start working on international research collaborations without hesitation. As a result, my study has significantly expanded. In regards to the selection of a counterpart for collaborative works, I would recommend choosing someone of almost the same generation that one can communicate well with, rather than setting up a highly renowned scholar. A lot of such counterparts are included in the list on the table 1. In addition to your own interests, if there was an ultimate goal for one’s study, concrete and lifelong, such as “research that is useful for many,” it should be backed up by passion and improve our motivation for study.

So long as the above conditions are met, with increased motivation and where the possibility to challenge something exists, I would like to put my hands to different kinds of research. Among the list of my favorite things to do is

handcrafting; It is a hobby spun off from my penchant for machines, such as fiddling with bicycles and automobiles. I would like to introduce an example here. Since there was a demand for safe and reliable food from small- and medium-sized enterprises in the Kansai region and as I was proud of myself for being the first Japanese researcher to have participated in the investigation of the E.coli O157 incident, as well as being consistent with the ultimate goal of my research (useful for many), I felt a strong motivation that resulted in my involvement in the development of new sterilization methods that could realize the supply of inexpensive “Yukhoe” beef to be eaten raw. It was not just about the process of sterilizing lumps of meat, but about analyzing the characteristics of multiple handling processes, starting from the stage of slaughtering cows to that of them being eating, in order to devise new processing methods appropriate to respective stages. By taking advantages of such a synergistic effect of combining those with newly developed sanitizers and handmade washing equipment, I was able to achieve this goal. This intellectual production (a product of alliances between industry and academia) was introduced as one of the representative inventions of Kyoto University in an intellectual property-related event (see back cover). I am currently trying to further develop research on this invention. My path hunting will continue. I hope it will be considered a useful study for others.

Translation: Yoshida Chiharu
 Editing: Mario Lopez

Memoir

The Path Hunter with a Scientific Mind in a Sound Body



**Center for Southeast Asian Studies,
Kyoto University**

Memoir: The Path Hunter with a Scientific Mind
in a Sound Body
Mitsuaki Nishibuchi

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