High and Low Spirits of a Researcher

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As a researcher, I have periodically experienced elation and depression, particularly at two junctures. One is when I receive notice as to whether or not a paper I worked hard to write was accepted by a scientific society. The other is when at the beginning or end of the holiday period in May I find out whether or not I have been selected for a Grant-in-Aid. In both cases, I am in cheery spirits when selected and fall into the doldrums when not. Either way, my mood is so pronounced that it affects the people around me including my lab colleagues and family members. The unique feature of both selection processes is peer review. The feeling of tension that it evokes is the most vivid driver of research.

After receiving my doctorate in 1967, I became an associate professor in the University of Tokyo's Institute of Industrial Science. It was I recall in my first year at the Institute that I was awarded my first though small Grant-in-Aid. I believe it was in the category Encouragement of Scientists. Over the ensuing 40 some years, it would be fair to say that I have received Grants-in-Aid every time I started a new research project. My research themes across that period have seen an overlapping of control engineering, power electronics, mechatronics and robotics along with a shifting of analytical connectivity among them.

My research has received three major types of support: (1) Grants-in-Aid when starting new research initiatives, (2) other public funding for conducting mainly project research, and (3) private funding. Each is selected based on a different set of values. The diversity of research is bolstered by a variety of grants stemming from differing value systems. I believe that diversity is in fact the mother that gives birth to innovative ideas and novel research.

In the mid-1970s, I submitted a paper on the results of research I had started with a Grant-in-Aid to one of the IEEE Transactions. Though I was very confident of its value, the paper was rejected. In those days there was no Internet so I had to converse with the reviewer by air mail. After going back and forth with him, the essence of my paper had changed from the content of my research to its direction. So, I decided to give up publishing it. Nevertheless, that experience had a powerful impact on my life's vision: I wanted to become a leader in that society and have a hand in plotting its direction. Though it took a while, in the mid-1980s I became the president of the IEEE Society. I was the first person from outside North America to be appointed to that position. At the time, I recall being struck by a feeling that the Society's procedures and objectives had become somehow confused. As its president, along with taking the reins in leading the Society's research direction, I also served as the editor-in-chief of the Transactions. Participating in the establishment of two new IEEE Societies, I created a new volume of Transactions and served as its founding editor-in-chief. Then, I served as IEEE's overall secretary.

This is the photo on the cover of the April 2010 edition of the *IEEE Industrial Electronics Society Magazine*, with an article celebrating my contributions to robotics and mechatronics. The editors wanted to take the picture of me at my desk in the university, but I had them take it of me in rough attire against a background of the Amahashidate sandbar in Miyazu Bay. As I had injured a vertebrae in my neck in a traffic accident the year before, it would have been difficult to pose for the shot in a suit and tie. The only indication that I am a professor is the pen clipped to the collar of my shirt.