Foreword

Seeing is Believing

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Science and technology advance very quickly. You may be astonished when you realize that what you once dreamed of has actually become available as a commercial product, one after another.

50 years ago, Osamu Tezuka, who created the famous manga "Astro Boy" ("Tetsuwan Atomu" in Japanese), amazingly predicted the world today. I guess what Tezuka predicted at that time was dismissed right away by people, saying "that's absolutely impossible!" He was not a predictor, but as a scientist he must have humbly stared at the advance in technology and logically predicted the future. He probably kept a close eye on unnoticed scientific seeds that were usually dismissed by people as "just a dream". I think he saw such a dream as reality in his mind.

In the latter half of the 1980s, one of my friends from school called me. As we exchanged small talk with each other, the conversation focused on his job. He was involved in the development of smaller, lighter batteries for cell phones, saying "the age in which everyone carries a cell phone in their pocket will definitely come ". I said for certain; "Such a thing will never come true! Such an age will never ever come, or such technical development is impossible! First of all, there is no way that a secondary battery with such high energy density can become a reality". Surprisingly, however, the technology was gradually commercialized in the 1990s. I was among those who regularly used such a cell phone, and it was only within 10 years of that conversation with him. I, as an engineer, deeply regretted what I had thought. Thereafter I have always tried to directly see (look at) technical challenges with my own eyes before thinking, instead of judging only with my knowledge.

My research theme is manufacturing (or "Monozukuri") of plastic products. In this field we can hardly see (look at) the manufacturing process or mechanism directly because the industry uses molds and large machinery. Researchers during discussion often encountered a scene where they could not share the same image. Sometimes they spoke in a pessimistic or negative way like, "You'll never be able to do that!". Today, the resin flow analysis technology using computer simulations has advanced to enable you to "visualize" the resin flow behavior inside the molds, although it is a simulation image. We, who are involved in the technology, have successfully shared the visualization as a breakthrough communication tool. However, another question has arisen; "Is this visualized simulation really true"? Then, we have eventually come to believe it is essential to directly see (look at) the behavior so as to propose a mechanism that can be understood by everybody. This direct visualization has finally been achieved with the cooperation of Prf. Hidetoshi Yokoi of University of Tokyo, and Prof. Isao Sato of Tokyo Institute of Technology. Now we have just succeeded in actually visualizing the resin flow inside molds at last. "Seeing is believing". These visualized images have not only enabled us to share technical matters, but have also appealed persuasively to those who took a negative stance, leading to a contribution to the industry.

This seeing (looking at) is not limited to visualization of phenomena inside molds. Isn't it necessary for engineers to actually see (look at) various problems occurring on the site, eliminate any pessimistic or negative ideas, and positively address technical challenges above all? It is a substantial loss for you to shatter your dreams of future technology with your own prejudice or pessimistic/ negative way of thinking. I hope I can continue to always address further technical development with flexible ideas while placing importance on "seeing" (looking).

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