

Weaving the Boat of Biology

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Shion Miura's novel "Fune wo Amu" (Weaving the Boat) describes the process of publishing the Japanese dictionary "Ootokai" in the Dictionary Editing Department of the publishing company "Genbushobo." And it brilliantly depicts the main character, the editor, and the people around him in it. The publication of a new Japanese dictionary is a daunting task that requires selecting and collecting hundreds of thousands of words, carefully arranging the glossary for each word, piling them up, and editing them. It takes more than ten years to complete. The novel depicts editors and linguists with a high level of professionalism and humility toward words, who never tolerate small mistakes or corners cut, and who are passionate about creating dictionaries.

After reading this novel, I began to think that basic research in biology, for me, is the activity of accumulating new knowledge and discoveries about living organisms and creating a sizeable virtual dictionary of biology. The virtual biology dictionary, in my mind, would look like the one below. First, unlike a Japanese dictionary, this biological dictionary would be divided into chapters based on natural phenomena. A new fact is added and updated somewhere in this dictionary whenever a recent article is published. The degree of updating may be large or small, adding entries, letters, or changes and corrections. New chapters are added when significant phenomena are clarified or discovered. Essential chapters are those including cell cycle, intracellular protein transport, autophagy, etc. Yeast researchers contributed to adding these chapters newly. An actual biology textbook would be the one extracting the essential essences from this dictionary.

Anyone can be a creator of this virtual biological dictionary, and in principle, everyone is equal. Researchers worldwide, fascinated by the phenomena exhibited by living organisms, and members of the general public, are invited to participate as creators. I have participated in creating this dictionary in the functional analysis of intracellular protein quality control, and now, in addition to that research, I am also participating in the creation of this dictionary of intracellular changes in yeast when subjected to prolonged heat stress. However, there is a qualification to be a creator. That is, one has to be honest. It is also necessary to be a member of the lexicon with strong mettle so that one's findings will not be rewritten as a mistake. Of course, technological advances will often rewrite previous discoveries. Still, I

think it is essential for researchers to do the best they can at the time. When I find a paper from several decades ago describing a phenomenon or result with great care, even though the analytical technique was not very precise at that time, I appreciate its profound description, feel deep respect for the author of the paper, and often wish that I could be like them.

There is a scene in the novel where one editor blurts out that nowadays, it is welcome to produce a magazine that will surely get advertisements or a book whose content does not cost much to cover, but it is not the case in dictionaries. And the other editor replies that creating a dictionary is expensive and time-consuming. That may be true. However, if one thinks about it, even to write such a magazine or monograph, appropriate word selection is necessary, and dictionaries should be there to support this process. Members of the editorial staff believe that words are essential to convey people's feelings and thoughts. Therefore, they have a sense of mission to produce a Japanese-language dictionary, even if it means little profit and a lot of hard work. Something similar may be applied to basic research. The essential characteristic of basic research is that its results can be used by everyone and benefit everyone in society. In this respect, basic research, like "language," is a necessary asset for the community. And while the government used to support basic research as an asset to society, this is no longer possible today due to the nation's deteriorating finances.

I started a small laboratory at Shizuoka University in 2014. Like other regional universities, most students at Shizuoka University only go on to graduate school up to the master's level. In addition, quite a few students find a job after completing their undergraduate degree, so the lab is always full of amateurs. The university's finances are tight, and budgets and support for overall research and for individual researchers continue to decrease. Competition for external research funding is also harsh. I was very fortunate to receive a research grant from the foundation this time, but when external research funds cannot be obtained, the experiments performed are minimal. The research environment at the university continues to deteriorate due to the many duties outside of teaching and research. Despite this situation, I still want to pass on my pride as a lexicographer to young students, challenge myself to discover even a few discoveries with them, and contribute to creating a dictionary of biology.