

Atoms on the Earth

—The Fuel Cycle Controversy Overlooking the Larger Realities

The Wonders of the Earth, and Nuclear Energy

Our earth, the mother of humankind, occupies an extremely singular place in the galaxy and perhaps the whole universe. For example, the earth, for some reason, has substantially more uranium reserves — the fuel of nuclear energy — than any other planet or star. The uranium contained in the crust of the earth might be more than 0.1% the amount of carbon therein. In recent times, the trace of water has been confirmed on Mars, hinting at the possibility that life once existed there. However, I suppose, in case of our earth the presence of uranium on earth in significant amounts — in other words, the existence of natural radiation — combined with other factors, to allow the evolution of such an advanced species as ours. The reason that uranium is found so abundantly in the earth's crust may be the result of the estimated 20-plus collisions between the earth and other heavenly objects over the more than four billion years since the earth's formation, causing the uranium in the internal mantle to spew out into the crust.

Now that fossil fuels are approaching their limits, we must ponder on the deeper significance of humankind's having achieved the wisdom of nuclear energy. Furthermore, carbon — the most basic element of contemporary civilization — is becoming unexpectedly scarce in the earth's crust (because the aforementioned collisions burnt the carbon and converted it into carbon dioxide, which also kept the earth's temperatures at levels suitable to nurturing life). We must be aware, when making prognostications about the future of civilization, that the limits of carbon resources pose an even graver situation to us than the future of energy resources.

So far, I have expounded on the connections between nuclear energy and humankind, and in that process I realized how the raucous debate about the nuclear fuel cycle in the world, particularly in Japan, is really a subject that belongs on a completely different plane of importance. Far from it, if I unwittingly blurt out that "uranium exists in abundance," that

statement could be misused by once-through advocates who support the one-time, throw-away use of uranium. I might try to say something like, "You could dig up all the uranium in the earth, building mines here and there for nuclear-weapons source material, necessitating ultra-long-term management. Would that be acceptable?" However, some people would give a frenzied response — "what about the costs, or the risks?" or "the government's policy is ..." — and thus would not lend an ear.

State of the Nuclear Fuel Cycle Debate in Japan

At any rate, as "Atoms in Japan" has frequently reported, a giant debate has erupted over Japan's Rokkasho Reprocessing Plant — now about to undergo trial operation — and the fate of the plutonium to be produced there once full-scale operation gets underway. Not only that, but people from some quarters are now calling for a review of the country's whole nuclear fuel cycle policy. Those include even the former president of Japan Nuclear Fuel Ltd. (JNFL), the owner of the plant, and some younger legislators from the ruling Liberal Democratic Party (LDP). (Several powerful legislators have condemned that opposition, but the people in question continue to bare their fangs).

However, the "padrone" of Japan's electric power companies, the Federation of Electric Power Companies (FEPC), along with the LDP, have consistently upheld their view that "the (nuclear fuel cycle) policy remains unchanged." Moreover, the opposition parties have not intensified their criticism of the fuel-cycle policy. Although domestic criticism of the nuclear fuel cycle and plutonium utilization has remained deep and strong since the days of U.S. Pres. Carter's reversal of that country's plutonium policy, the groundswell of recent criticism can be uniquely characterized as the result of cacophony within the Establishment itself — internal squabbling, so to speak.

From the perspective of the Japanese media — and what

stands for "common sense" in this country — there is nothing quite so unexpected as internal organizational squabbles in Japan, making it a ripe topic for news. Another unusual thing, as far as Japanese society is concerned, is the fact that the insiders making "personal" comments or submitting papers concerning the nuclear fuel cycle include such luminaries as a former company president (mentioned above), as well as several former ambassadors and a few national university professors, along with researchers from the Central Research Institute of Electric Power Industry (CRIEPI), which is funded through electric power companies' contribution. Journalists would never be expected to meekly sing the praises of the substantial opening of Japan's decision processes, but rather, their curiosity has been naturally piqued, as if "there must be a catch somewhere."

Several Suspicious Factors in the Background

In the past three years, an intense debate has played out concerning the nature of the electrical power system in Japan, as the country moves toward total industry deregulation. The participants in the debate have been the economists, commentators, consumers, and industry representatives attending the various subcommittee meetings of the Advisory Committee on Energy, under the Ministry of Economy, Trade and Industry (METI). Much attention has focused on the question, posed by the electric power companies, of who should shoulder the burden of the back-end costs of nuclear power (i.e., those for which provisions have not been reserved), and by which methods that should take place.

However, when those power companies released figures that were intended to provide a basis of discussion, it was initially reported that "unexpectedly huge amounts of money" were being hidden therein. However, people have now gradually come to understand their explanation, as a per-kWh calculation still would not upset the cost-wise superiority of nuclear power vis-à-vis thermal energy. Still, it has become obvious that the real problem is not actually the cost of the nuclear fuel cycle itself, but rather its "uncertainty."

Besides the shaky international circumstances surrounding plutonium utilization, another uncertain factor is the excessively long time taken to deal with troubles and accidents at NPPs in this country. An extreme example is the fast breeder reactor (FBR) Monju: although the sodium leakage accident

in its secondary draining system happened in 1995, there is still no prospect for its resumption of operations. Also, controversy is brewing at a certain uranium mine and fabrication plants, where work has come to a halt owing to the demand to remove slag out of the prefecture because it is "radioactive waste." And so, there is huge uncertainty surrounding the reprocessing plant, which is basically a chemical factory: who knows how long it might be shut down after just a trivial incident? In such a situation, a litany of implicit and explicit criticisms has been aimed at the Rokkasho Reprocessing Plant: its huge cost run-ups, the revelation of several cases of sloppy construction after another, and the inadequacy of its management framework.

Given that background to Japan's nuclear fuel cycle debate, the readers of this essay can probably speculate wildly about who exactly the instigators of the debate are, and what they are trying to attack. Aside from that, however, the differences between the two opposing sides in the debate are not actually so clear and decisive as they may appear. For example, at the panel discussion that took place in Session 4 of the JAIF Annual Conference in April, there were few people holding either of the opposite viewpoints on the issue: namely, "spent fuel should all be disposed," or "spent fuel should all be reprocessed immediately, with the plutonium stored or burnt." Indeed, it almost felt as if people were waiting for the arrival of a compromise plan, such as to stop a moment to think, or to wait until a more inexpensive reprocessing technology came along. Seen along a chronological axis, then, there does not seem to be so much a difference in the two sides' opinions after all.

In other words, the grand "debate" about the nuclear fuel cycle, now raging in Japan, is nothing more than a minor argument that ignores the bigger issue around it. As the ancient Chinese proverb puts it, it is "like two eyes of a snail fighting each other," the eyes not noticing the larger body beneath them.

With petroleum prices now hitting their all-time highs, perhaps the real identity of the "snail" might be the giant, glistening bulk of petroleum civilization that envelops the whole world. Everyone must be on guard not to slip off its back! ■

Editor in Chief

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