Remarks on Special Issue on Ironmaking

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I visited Brazil, Australia and India to see several of their iron ore deposits.

While there, I noticed a lump of banded iron ore lying at my feet.

The iron is thought to have been oxidized more than two billion years ago and then subjected to a series of changes under pressure, temperature, rainwater, etc. for over one billion years.

Ironmaking can be considered a grand, global-scale iron recovery process by which iron ore formed by the workings of the Earth over more than a billion years is returned to its original iron form within several months of being dug out.

In Japan, in particular, the iron is extracted from the iron ore just a few days after it is imported.

The workings of the Earth that created iron ore deposits and the process by which iron ore was formed widely differ from region to region and from period to period. It is fair to say, therefore, that no two iron ore deposits are exactly the same.

For me, the fascination and profoundness of ironmaking technology lies in always being able to produce uniform molten metal from a raw material that varies so widely.

Japan's ironmaking technology represents the accumulation of more than a century of effort by our predecessors, and has reached the world's highest level. One requirement for the Japanese steel industry to ensure continued vitality through the next century is the relentless search for improvement of our ironmaking technology to permit the most effective use of the many different raw materials that are imported to Japan across the Pacific, Atlantic and Indian Oceans.

In November 2005, we invited schoolchildren to the Science Museum in Tokyo so that they could experience the making of iron using "tatara" (foot bellows) under the guidance of Prof. Kazuhiro Nagata of the Tokyo Institute of Technology. The tatara bellows method is a traditional Japanese ironmaking process that has been handed down from generation to generation for some 1,500 years.

In this process, the workman determines the conditions of the reducing and oxidizing reactions that take place in the furnace from the color of the flames and estimates the change in furnace temperature and the workmanship of the finished iron from the condition of the slag flow.

The schoolchildren are exuberant as they make iron from the familiar iron sand for themselves. They directly feel the heat and weight of the iron and watch the flow of the red-hot slag with sparkling eyes. The tatara process is a perfect example of how to make iron from iron ore and charcoal.

Another requirement for the Japanese steel industry's continued survival through the next century is that we get a firsthand look at those principles, learn them by experience and fully understand the reasoning behind them.

Along with various ironmaking techniques, our predecessors have left us ironmaking engineers a number of good guiding principles in life.

One of them is this: "Love your coke, your sinter and your blast furnace just like you love your wife."

We, too, together with the next generation that follow in our stead, would like to continue to press ahead with the development of ironmaking technology in a determined manner.