

A Pioneering Attempt at Environmental Enrichment at Ueno Zoological Gardens

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[Slide 1] I'd like to talk about something that took place about 10 years ago when environmental enrichment was gradually beginning to be recognized in Japan.

Many of you here today have probably read "What Zoos Can Do", written by Hiroto Kawabata, published in March 1999. This book was written for the general public about zoos and animals, by someone who had nothing to do with zoos. The concept of environmental enrichment became widely known in Japan through this publication.

[Slide 2] It was around this time, in April 1999, that I was assigned to care for the giant pandas at Ueno Zoo. There was a biologist visiting us from San Diego Zoo who was studying animal behavior. It was her intention to observe how Ueno Zoo was caring for the giant panda in hopes of learning from our experience as we had cared for them for a long time. [Slide 3] However, as she started making her observations, she found that the panda was showing a lot of stereotypic behavior and its condition very poor. So the zoo staff along with the panda caretakers held a meeting with this biologist. She lectured to us on how the panda was cared for at San Diego Zoo, giving us many examples and showing some videos. [Slide 4] She concluded by strongly recommending that we introduce environmental enrichment to improve the situation.

Let us look again at how pandas live in the wild. [Slide 5] According to George Schaller's study, 99% of a panda's diet consists of bamboo. Of course, we were well aware of this fact and were feeding our pandas bamboo. [Slide 6] But in the wild, pandas spend more than half their day foraging for food and obviously the growth of bamboo varies in the wild. There are also bamboo shoots, soft leaves, etc. So the pandas in the wild are spending their time searching for the right bamboo to

feed on and therefore have to cover a wide area to find it which means they spend most of their day feeding.

Now, if we compare this situation with the pandas at Ueno Zoo. [Slide 7] We were feeding our pandas bamboo, as well as man-made foods, fruits, and vegetables also. We had learned about this menu from Beijing Zoo in 1972, and had followed it faithfully ever since.

The greatest difference between a panda in the wild and a panda in the zoo is that the latter does not have to search for food. [Slide 8] Discussing which of the two is happier is something we could talk about later - would it be the panda spoon-fed all the various "goodies" or the panda that spends all day looking for food, and only bamboo food, at that? Different values become essential when considering what is best for the animal and its well-being.

We believe that a scientific approach to animal husbandry is better for the animal. A safe environment with no threat of predators may have its merits but it is also monotonous and lacks stimulus, [Slide 9]. That is understandable as even we, as humans, get bored without stimulus.

[Slide 10] So we decided to try feeding our pandas with something called a "puzzle feeder". The photo shows a bamboo cylinder hanging down. [Slide 11] The bamboo is eight to ten centimeters in diameter and cut so that the ends are closed. A triangular opening has been sawed into it, and small pieces of sugar cane placed inside. This bamboo is then given to the panda and the panda feeds on the sugar cane pieces one by one as they fall out. So it takes a much longer time to eat.

We thought the panda would kick the bamboo cylinder

around with its front paws, and eat the sugar cane pieces as they happened to fall out. [Slide 12] But as the photograph shows, the panda held the cylinder with both front paws, stuck its nose to the opening and turned the bamboo around. When a piece fell out the panda would catch it with his mouth, lay down the bamboo, and then hold the sugar cane with one front paw while chewing on it. After finishing one piece, the panda would eat the next piece by repeating the same action. We had not expected that the panda would feed like this.

In the wild, pandas sometimes push down a length of bamboo about a meter tall. They hold the wide end with their front paws, and then turn the bamboo around to peel off the skin to feed on it. I came to understand this behavior sometime later when I saw pandas in the wild eating this way in a National Geographic documentary. I thought it was a unique trick but actually it wasn't.

Let us watch a movie clip showing the panda's outdoor cage. We fed the panda bamboo, as well as the bamboo cylinders. The smaller bamboo cylinders were packed with sugar cane so that the panda had to peel away the bamboo to get to it. Animals savor sweet foods and it is the same with pandas. When the panda finds the sugar cane filled bamboo, it tosses away the regular bamboo it was eating and gets to work on accessing and eating the sugar cane. It is not forced to eat the cane, but it chooses to do so, even though it takes more time and effort. As I previously mentioned, this behavior is similar to the way pandas feed in the wild. We feed the pandas 500 grams of sugar cane at one time and, using this feeding method, the eating process takes double the time it used to. This may not be much but it is a small step closer to the wild pandas behavior.

However, some zoo staff have been critical of the new feeding method. Firstly, our vet said that the panda could stab its eye when the sugar cane falls out of the cylinder. I counter-argued that pandas have sufficient natural reflexes to instinctively shut their eyes. Some felt sorry for the panda, claiming that it is stressful to the animal - eating used to take such little time whereas now it takes 20 minutes. Some have said that this is

not enrichment but harassment. Others have criticized the practice by suggesting that the panda is now being forced to perform tricks to entertain visitors. (It does turn out that visitors are thrilled to see these lovable animals in action).

So our primary objective was completely misunderstood, as indeed was the concept of environmental enrichment which of course has nothing to do with showing visitors interesting animal behavior. Being able to observe more interesting behavior is only an incidental result of the enrichment program. When we started this enrichment program ten years ago, visitors were so entertained that only this aspect was highlighted, even through the media. Consequently the term 'environmental enrichment' became better known, and may have encouraged some other zoos to take it up, yet, the true purpose and meaning have been misunderstood over the years. I may have had something to do with that misunderstanding and perhaps I have some feelings of guilt, so that is why I have talked about it today and reflect on what happened. It will be interesting to compare our program with the Higashiyama Zoo enrichment program which will follow. Thank you for listening.



【Slide 1】



取り組みの発端

The beginning of the thing

- ❖ 1999年4月、サンディエゴ動物園の研究者が上野動物園でジャイアントパンダの行動調査を実施。

A behavioral biologist from San Diego Zoo researched the behavior of giant pandas at Ueno Zoo in April, 1999.

【Slide 2】

野生での採食時間

The foraging time in the wild

- ❖ 野生のジャイアントパンダは1日のうちの50%以上を採食に費やす

Giant Pandas in the wild spend more than half of their day foraging for food.



【Slide 6】

常同行動の発現

Stereotypic behavior

- ❖ その研究者が上野のパンダには常同行動が頻繁に見られることを指摘。

The biologist pointed that stereotypic behavior was frequently observed in giant pandas at Ueno Zoo.

【Slide 3】

上野動物園での食べ物

The diets of giant pandas at Ueno zoo

- ❖ 上野動物園では、タケの他にミルク粥、トウモロコシ団子、リンゴ、蒸したサツマイモ、ニンジン、サトウキビ、干しナツメなどを与えていた。

The giant pandas had be given rice porridge, corn dumpling, apple, steamed sweet potato, carrot, sugar cane, dried jujube, and bamboo at Ueno zoo.

【Slide 7】

研究者の勧め

The recommendation of the biologist

- ❖ ジャイアントパンダのための環境エンリッチメントの実施を勧められた。

The biologist recommended us to carry out the Environmental Enrichment for giant pandas.

【Slide 4】

動物園での採食時間

The feeding time at Ueno zoo

- ❖ 食べ物を探す必要がなく、食べるために費やす時間が非常に短い

The feeding time is very short because the pandas do not need to seek their food.



【Slide 8】

野生のパンダの食べ物

The diet of giant pandas in the wild

- ❖ 野生のジャイアントパンダの食べ物の99%以上はタケである

More than 99% of the diets of giant pandas is bamboo in the wild.



【Slide 5】

やるべき“仕事”がない

Captive pandas have no "job" to live

- ❖ 常同行動の原因は単調で刺激がない環境
The cause of stereotypic behavior is monotonous environment without stimulus.



【Slide 9】

パンダに“仕事”を与える

Give a "Job" for the panda

- ❖ パズル・フィーダーによる給餌を試みる。
Attempt to give sugarcane using "a puzzle feeder"



【Slide 10】

食べにくくする工夫

It is hard to eat

- ❖ 直径8~10cm、長さ30cmほどの両端が節で塞がった竹筒の一方の端に鋸で三角形の穴を開け、この中にサトウキビを入れて与える。

A bamboo cylinders of diameter 8 to 10cm and length 30cm and with both ends enclosed by joints, make a triangular-shaped hole in side of each cylinder using a saw, and fill the cylinder with sugarcane, then feed.

【Slide 11】



【Slide 12】

