

Humans

Are The Only Ones with



GRANDMOTHERS?

By Masaomi Ise

You may be surprised to hear that human beings are the only mammals on the planet that have grandmothers! There are virtually no “grandmothers” among any other animal species. Note that we’re using the word “grandmothers” (*obaa-san*) to refer to any older female who is past her child-bearing years. Though we would probably be scolded today for calling a vibrant 50-year-old woman a “grandmother,” it is in fact the technical term in use in the life sciences, so please don’t be annoyed. As to why humans are the only animals to have grandmothers, it may have been determined by nature herself that it is a good thing for grandmothers to live a long life. You may be under the impression that there is nothing “unnatural” about grandmothers, but in fact in the natural animal world it is actually an extremely unique situation. Even among chimpanzees, which are the closest mammal to humans, females die off very soon after passing out of their child-bearing years. That’s why the only animal species in the world that has “grandmothers” is the human. In terms of evolution, it is an extremely curious phenomenon for there to be such a thing as a “grandmothers.” Creatures continue to survive as a species by reproducing and leaving behind their offspring. A “grandmother” who is past her reproductive years does not contribute to the continuation of the species, so among animals a female who is no longer able to reproduce dies very soon. However, among the most highly evolved animal, namely the human, “grandmothers” do exist, which may mean that the existence of “grandmothers” somehow plays a very important role in the continuance of the human species, which is how some scholars of evolution see it.

Grandmothers' Wisdom and Experience

Their theory goes something like this. After a female is released from her own reproductive cycle, she makes use of her wisdom and experience to assist in the child-rearing activities of her own daughter or other female relatives, which, as a result, elevates the breeding success rate of the species. "Breeding success rate" is a rather dry term, but it means the probability that offspring will be born and raised successfully. Anthropologist Kristen Hawkes who propounds this theory verifies it with detailed data compiled during her studies of the Hadza people, a hunter-gatherer tribe in Tanzania, showing how much the existence of a "grandmother" aids in the breeding activity of her own daughter as she becomes a young mother.

Because of their knowledge and experience, the grandmothers are efficient at obtaining difficult-to-gather foods like deeply buried tubers, and can gather much more food than a mother can on her own. They also lessen the burden of the young mother who is busy with her infants and make it possible for the mothers to be more active.

There are also great advantages to be gained from the life knowledge of the grandmothers in terms of how to treat a child's illness or how to surmount conflicts with their husbands or other families. This is something that anyone living in a three-generation household can surely attest to.

Grandmothers Bring Prosperity to the Species

A number of facts have been introduced that support the "grandmother theory." For example, compared to our closest relatives the chimpanzees, humans have bigger bodies and longer lives. But, compared to the five-year interval between childbirths for chimps, it is only two years for modern man, and four years for hunter-gatherer types who lead a more primitive life. And in the average number of females born in a year, in contrast to the chimps with 0.087, humans had 0.142 which is 62% more.

Normally, the larger the animal, the longer its lifespan, and the longer the interval between childbirths and the less the number of offspring born in a year, yet humans with their comparatively large bodies have a short interval



between childbirths and so give birth to a large number of children. The strength of the human breeding potential is the cause of rapid increase in humanity's numbers, but compared to the chimp who has to somehow take care of her young all on her own, for humans, with the aid of the grandmother, the young mother's burden is considerably lightened. The theory seems reasonable when seen in this way.

Another very interesting fact is that about the black whale, which seems to be the only mammal besides humans where non-child-bearing females can live a long life. Black whales also live in groups of blood relatives, with ample opportunity for the "grandmothers" to aid in the younger females' breeding activity.

Special Characteristic of Humans: Take Care of Older Individuals

Professor Toru Nishigaki of the University of Tokyo who studies humanity and its societies from the viewpoint of information, called information studies or informatics, is in agreement with the grandmother theory.

"I think that humans have a special feature that causes them to treat older individuals with care. Perhaps there are other creatures like that, but relatively few. When a creature gets older, it loses strength, and among most animals will be pushed out of the main group or ostracized, or at least removed from a leadership position, but as for humans, the existence of the society's elder is in contrast an esteemed one."

Professor Nishigaki believes that this is because the human brain has advanced and obtained a broadened view of the axis of time or its orientation in time. For example, if humans can remember a past when a certain tree would begin

to bear fruit just as the summer heat began to taper off, then they are able to predict that the tree will bear fruit around the same time again in the following year. Through this type of memory and prediction, human beings gained an enormous advantage in terms of survival.

Once past memories were able to be used to predict the future, this gave meaning to the concept of "experience." From that point on was born the special human characteristic of taking care of its elders and "grandmothers," who had this "experience" in abundance. Not just in terms of physical help with their daughters' birthing and child-rearing activities, but knowledge that rose

same object as the others, which is a phenomenon observed among many animals, but I don't believe there are any other animals that practice active education in the manner of instructing 'do this' 'do that' or 'don't do that.' Through the practice of education that only humans do, humans themselves have changed greatly. It is thanks to education that a variety of activities can be accomplished efficiently and knowledge begin to accumulate. By transmitting the knowledge of the previous generation to the next generation, the next generation had a new point of departure. In the sense that human individuals were able to accomplish what they wanted without having to



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out of experience was also very helpful, such as what works when baby gets a fever. And the knowledge gained by elders through their long life experience, for example, where and when certain kind of trees would bear fruit, or how to mediate quarrels between clans, would greatly aid in the prosperity of a tribe.

Only Humans Give Proactive Education

"Education" is the communication of this "experiential wisdom" to the next generation. Mariko Hasegawa, professor of anthropology, Waseda University, has this to say.

"I've looked at a lot of animal studies, and I think there are almost no animals that proactively engage in education. They all practice observational learning. When the individual that is themselves has to do something, they look at what the other individuals around them are doing to get a clue. But most animals are not able to do 100% imitational learning. They may move to touch the

discover all the necessary knowledge for themselves each time, the speed of the accumulation of knowledge was an extremely powerful force behind our development."

The fact that only humans were able to create an advanced culture and civilization is probably thanks to this proactive education.

Chimps Are Preoccupied with Social Relationships

Something that Professor Hasegawa discovered in his observation of chimps was how hard it can be for them to live in a group where they always have to be aware of and careful of their relationship with others in the group. When offering her milk to her own nursing baby, if the mother hears the cry of another chimp, she stops nursing and looks around. If it is the cry of a chimp that has a close relationship to itself, the mother leaves her baby to run to the other chimp and attempts to pacify it or back it up if it's involved in a quarrel.

When a chimp of superior social ranking comes nearby, it has to run to it to offer its greeting. If it is a chimp of lower standing, it has to consider the future benefits and decide whether to attack it, ignore it or make nice with it. As to which chimps are above or below it in terms of social standing, or whether a quarrel between certain chimps will have an impact on its own social relationships or not, consideration that a chimp has to pay to the constant adjustment of its social standing keeps it very busy.

Under this kind of stress, the chimp has to pay constant attention to its surroundings, which is a considerable detriment to the chimp's child-



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birthing and child-raising activities. In comparison, a mother aided by a grandmother so that she can give her full attention to her baby enjoys considerable "luxury."

The Mechanism of Empathy

Why are humans allowed to enjoy this luxury of "focus of attention"? One theory that answers this question says that humans carry on their social relationships with a constant subconscious conjecturing of what others are feeling or thinking.

For example, when a typically griping boss approaches, workers become nervous and the situation does not permit full "focus of attention" on the work before them. But if the worker is able to guess as to what the boss is feeling or thinking as he approaches, the worker's stress is significantly relieved. For example, if the worker is able to read the expression on his boss's face, and

discern a twinkle to the boss's eye in contrast to his normal gargoyle-like expression, the worker can postulate that "something good must have happened, so I probably won't get yelled at today," and will be able to remain immersed in his work.

This ability that humans have to guess as to the workings of the inner mind of another, or to grasp the other's feelings from his facial expression, can be called the "neuro-mechanism of empathy." The concepts of sympathy and compassion also arise from this very brain function.

In contrast to humans, chimps do not have a brain mechanism for empathy, or even if they do

have it is at a very germinal stage. Meaning, if an easily angered boss chimp approaches, the other chimps have no understanding of what might anger him in what way, and they have no idea as to whether he is in a good or bad mood on this particular day. They have to turn their entire bodily attention to him during the whole encounter in order to be ready for his reaction. If all of sudden the boss chimp screeches at them angrily, without knowing what they are being scolded for, they have to wrap their tails around themselves and run away, or lower their heads to show submission. This is a pretty stressful situation. The bigger the group gets, the more stressful for each individual as they have more relationships within the group. That's why chimps can only thrive in smaller groups.

Humans on the other hand, if their mechanism of empathy is fully activated, are able to live with relatively low stress even among much larger

groups. Of course, the larger the group, the more advantage in terms of protection from outside enemies and job-sharing of food sourcing activity. In this way humans with their mechanism of empathy became able to create large-scale social groups, and as the group grew larger, so the mechanism of empathy become more evolved. This is how the human brain became so incomparably more advanced than other animals, according to the "social brain" theory of evolution. As a theory that attempts to answer the problem of why humans have such big brains, it is the most prominent today.

Mechanism of Empathy and the Nation

The fact that humans can conceive of and behave according to the Confucian Golden Rule, i.e. Do not do to others what you do not want done to yourself, is because we have this mechanism of empathy. Since we are able to empathize with the workings of other's hearts, we can guess that things that we don't like are probably not liked by the other as well.

From this develops courtesy, like "it felt good to be greeted with a smiling face, so I'm going to do the same," and morals, like "I wouldn't want my possessions to be stolen, so I won't steal things from others." Law is a promise by the entire society to stick to those morals. As courtesy, morals and laws develop out of the mechanism of empathy, forming the basis of cultures and civilizations, humans became able to establish nations, in which they were able to join in solidarity with an uncountable number of people that they would never even encounter. The attachment we feel to these others that share our history, traditions, culture and civilization become love for one's native place and patriotism. This love protects the hometown and the nation, and helps develop them further.

Animals cannot build nations. Only humans,

with the mechanism of empathy advanced to the highest degree, can have nations.

Education That Lets "Humanity" Grow

The mind that respects history and tradition, in other words, the knowledge and wisdom of our grandmothers and ancestors, and the education that serves to actively transmit these to the next generation—if these are a broadening of the mind in a vertical sense, then the morals and patriotism that developed from the human mechanism of empathy can be seen as a horizontal broadening of the mind.



Humans have evolved through broadening the dimensions of their hearts and minds in all directions. And parallel to this psychological development, we evolved physically too, as the lives of our "grandmothers" grew longer and our brains grew larger. The result of this physical and psychological evolution is what comprises the "humanity" that makes us different from all other creatures on earth.

The Edogawa Gakuen school in Ibaraki Prefecture's Toride City, as we reported upon in a previous issue of *Japan Close-Up*, instituted an educational philosophy of "improve the student's character and academic growth will follow," and under this philosophy the school has made remarkable achievements in both academics and sports. The chief ingredient of "character" in this sense is "empathy." The pursuit of these authentic elements of "humanity" in our places of education creates humans who are full of empathy, who are grateful to their ancestors and who love their homeland and their nation. That this philosophy has succeeded is surely because this education follows the same path that human evolution has taken. ■

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