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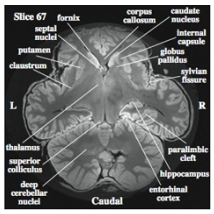

CT scan of an elephant brain
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Why Elephants Have Such a Long Memory?

A complex social life

In a top of intelligence, humans are followed by apes, elephants and dolphins. The elephant brain is denser than the human's, and the temporal lobes, associated to memory, are more developed than in humans. Elephant's lobes also have more foldings, so that they can store more information. That's why elephants have excellent memory. But why? Elephants can recognize over 200 different individuals. This is essential, as females depend on one another for raising the young, more than in the case of other mammals. A mother can remember who is trustful and complex bounds are the bricks of elephants' society, while the memory is the cement. When two elephants approach one another, they emit a "contact appeal": if the other recognizes the appeal, it responds and approaches; if not, it starts to agitate and adopts a defensive position. This capacity of recognition lasts a very long time, even after one individual is dead: even the recording of a dead animal attracted the attention of its relatives and descendants. The group life allows the elephants to raise their young together. A female gives birth, in the best case, to one young every 4 years, and this one will be well cared. In critical moments, the family stand on the experience of the oldest and wisest female in the group, called matriarch. She controls the daily activity of the herd and leads the family in areas outside the normal domain. Now, her remarkable memory is employed. She will remember where to go during drought periods and what to do in case of danger, as she already passed through these situations, and the older she is, the more effective she is. Her death is tragic for the group, and poachers usually target her, as she possesses the largest tusks in the herd of females. But the good memory can have bad effects. A female may remember good feeding places now replaced by crops, and this how human-elephant conflict emerges. And in the end, the elephant always loses. Males have a very different behavior. They leave the maternal group when adolescent, living a solitary life, wandering around in search of mates. Young males are disadvantaged by their smaller size; females will always reject them. Males can also fight for access to females. The fights are violent, even deadly, that's why a good memory can bring important information about the rivals, since the test fights of the elephant's "childhood". This way, the male knows a lot about the force of the other competitors. But the order can turn into chaos when a male enters a special heat period, called musth, when he turns extremely aggressive due to an overload of testosterone. If a female in heat is nearby, males in musth may fight to death. Mating requires perfect synchronization. A male can wait 40 years to mate, so that he must know with precision when the female is fertile, meaning 2 days in 4 years! In the rest of the name she is pregnant or suckling a young. People were amazed for long by the elephants' amazing communication ability. About three decades ago, it was discovered that they use infrasounds, sounds under 16 Hz, which humans cannot hear, to sends signals to other elephants up to 20 km (12.5 mi) away. Sounds we hear do not go far because they are shattered easily by obstacles, like trees or bushes. But infrasounds go around the obstacles, without being shattered, so that they propagate on longer distances. When emitting infrasounds, elephants use to flutter their ears in a specific way. When they "chat", the fluttering is very slow, but when they greet, the fluttering is rapid. Of course, not all they emitted sounds are infrasounds; some can be heard by humans. Calls have various meanings, like "Let's go!" or :"I want more milk", and over 35 different calls were identified: grumbles, lows, snorings, groans or roars, each with a different signification. This communication is at least as sophisticated as that used by apes and cetaceans. Some consider elephants to posses consciousness: they have emotions and feelings one for another. The way how they behave with the body of a dead elephant seems to confirm this.

It's like they would understand death. They turn the bones and examine each crack, like wanting to wake up a sleeping baby.