

# What would life be like if the K-T extinction didn't happen?

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Imagine you are back 65.5 million years ago. It is a new day and the sun is rising. You are standing in what will one day be northern Montana. You hear the honks of a distant herd of Edmontosaurus. A large Ankylosaurus trundles past slowly on his daily route to the watering hole. You hear some cracking. As you turn to where the sound has come from you spot a Troodon by a large Tyrannosaurus nest. This small theropod is a hunter but will not turn down the opportunity to snack on eggs or even fruit.

Meanwhile an asteroid is heading towards Earth. Or is it? Let us imagine that for some reason or another, the asteroid doesn't hit. The dinosaurs don't become extinct. How would life on earth be different?

Back on Earth: You hear a huge roar behind you. A Tyrannosaurus! You duck behind a rock whilst the T-rex advances on his nest. The Troodon was eating his eggs and he is angry. But the Troodon is prepared. She calls to the rest of her pack



who are sheltering in bushes. They leap on to the Tyrannosaurus, biting and kicking him. The dominant female (the egg thief) grabs a stone and hits the T-rex straight in the face. He falls... and is disembowelled. Dinosaurs are already evolving.

## Troodontids

The smartest dinosaurs that ever lived were the Troodontids. These agile omnivores had intelligence which would rival that of a cat, fox or dog. It is known that if they had evolved further they would have become smarter. However some people take that to extremes and theorise that Troodon would evolve into a "dinosauroid", basically a dinosaur which looks like a man. Not only is this very unlikely but it is also very arrogant to think that our body structure is the perfect one for intelligent life.



Errr... Unlikely!

However, the idea that it could use tools is not too far fetched. Many birds use them as do many mammals. Also, if it was as smart as a dog 65.5 million years ago, it would be at least as bright as a dolphin by the Quaternary. It is important to note that dolphins are probably the smartest animals on Earth, possibly even smarter than us. And they don't look like humans either, but they do use tools.

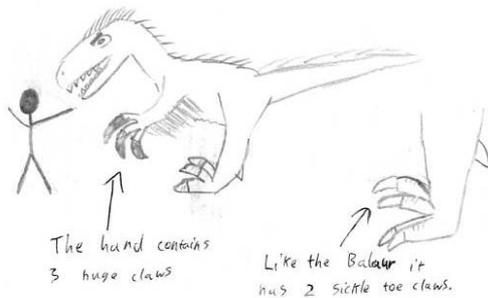


Another important thing is the question "Who would be the dominant carnivore". At the time the dominant carnivore group were the notorious Tyrannosaurs. Or were they? In the region of northern Canada there once roamed a Tyrannosaur named Gorgosaurus. However, it did not make it to the end of the

Cretaceous. The reason: they were probably wiped out by a huge 4 metre race of Troodon. This could mean that as time went on the Troodontids pushed the Tyrannosaurs out of their power.

More evidence for this is found in Mongolia. There used to be a wide abundance of tyrannosaurs millions of years before the K-T event. However, when it happened, there was only one type of Tyrannosaur, Alioramus. There was also a 2 metre Troodontid, Borogovia. Could it be that these small carnivores lead to the demise of the tyrannosaurs? Maybe so, but even if they didn't, that doesn't change the fact that there were very few Tyrannosaurs, leaving a space for the Troodontids to take over as top predators.

Scissor-blade claw

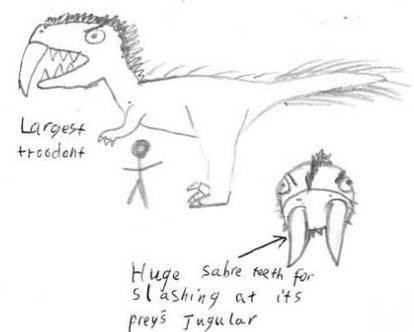


Some of these Troodontids were brutish monsters, armed with sharp

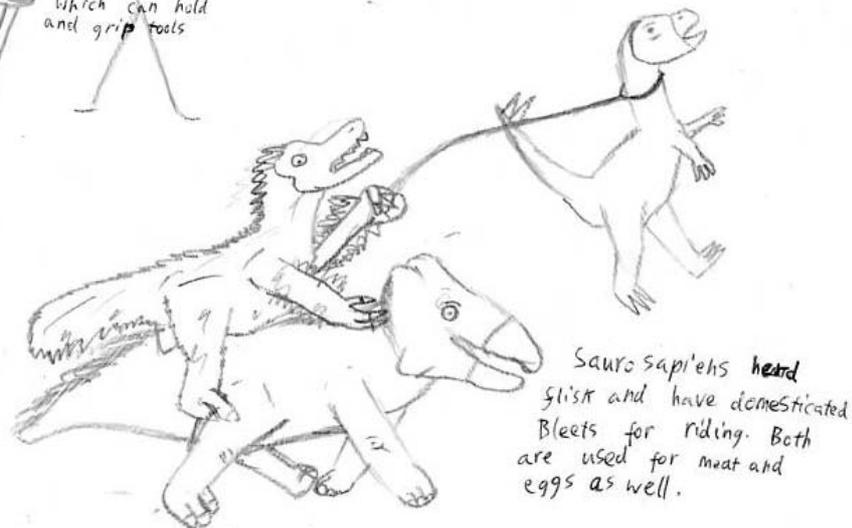
claws and sabre teeth. They removed almost all of the last Tyrannosaurs and replaced them. The medium sized ones, such as the Scissor-blade claw, had the largest claws whilst the biggest, such as the Monstermagus were similar to the Tyrannosaurs, the Carnosaurs before them and the Abelisaurids in the south. This body plan had a big head and small arms.

The only difference this time was that the Monstermagus was a lot smarter than the previous large carnivores.

Monster magus

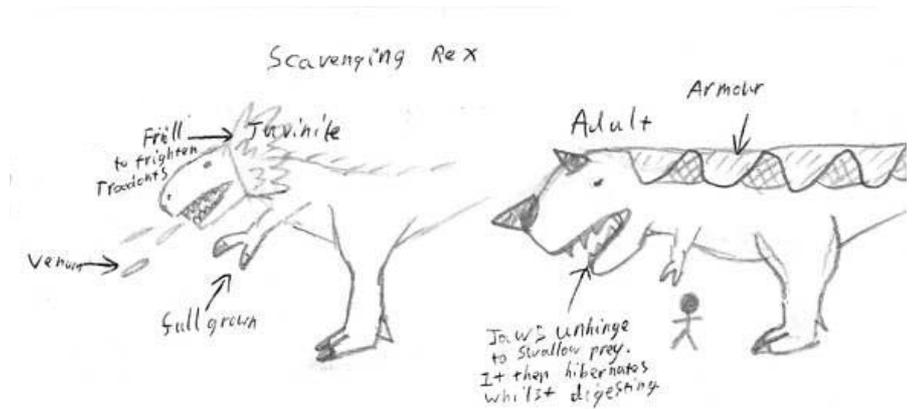


A later Troodontid was the Saurosapiens. Its name means wise lizard as it was the smartest dinosaur ever. It was very human-like; it used tools, communicated vocally and even harnessed the power of other dinosaurs.



# Tyrannosaurs

However, just because the Tyrannosaurs were not dominant doesn't mean that they became totally extinct. They became cleverly adapted scavengers. The adults were huge, 20 metre monsters. The youngsters on the other hand, were small, agile animals. They had venom to kill their prey, and to repel Troodontids. They did hunt, and the adults would often have to rely on them for food.

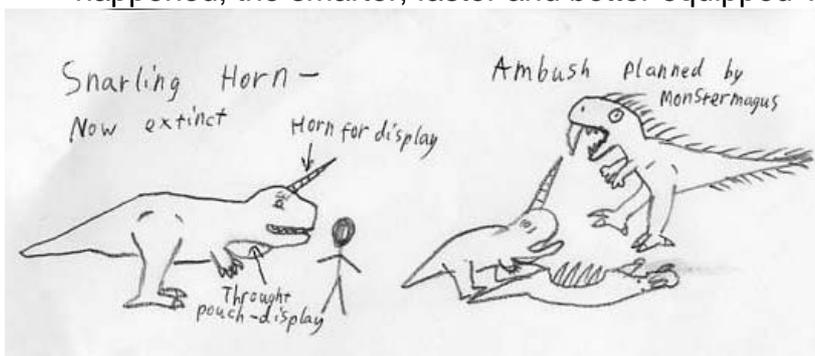


# Abelisaurids

Whilst in the northern hemisphere the dominant animals were the Tyrannosaurs (and later the Troodontids), the southern hemisphere was ruled by the Abelisaurids. This group had small, clawless hands and a short, thick skull, which often displayed horns. The exception to this rule was the Noasaurids. These were small, agile theropods, with longer arms and clawed hands. Their heads were similar to those of Troodon or Velociraptor and indeed evolved to fill the niche of small hunter. At the K-T boundary, there were Noasaurids and Abelisaurids in South America, Africa, Madagascar and India.

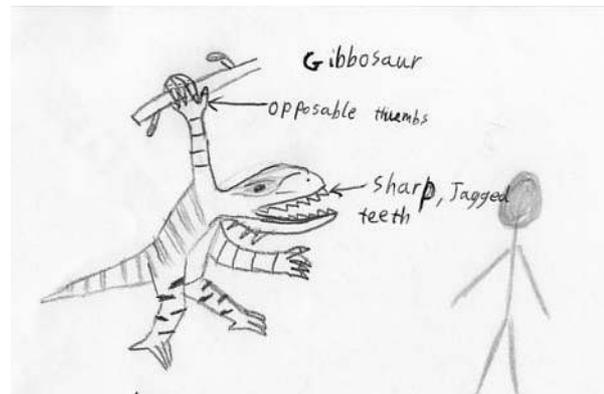


However, as the tectonic plates moved, Africa made contact with Asia, South America with North America and India with Asia. In each case the same thing happened; the smarter, faster and better equipped Troodontids wiped out the large



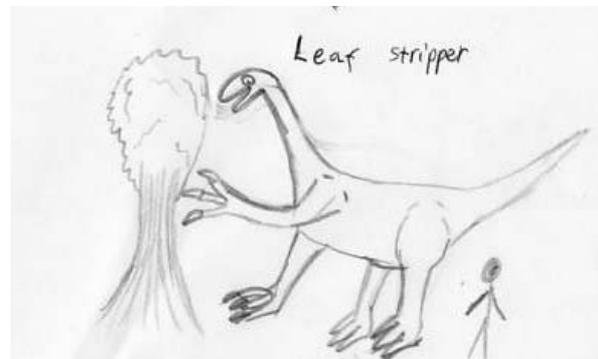
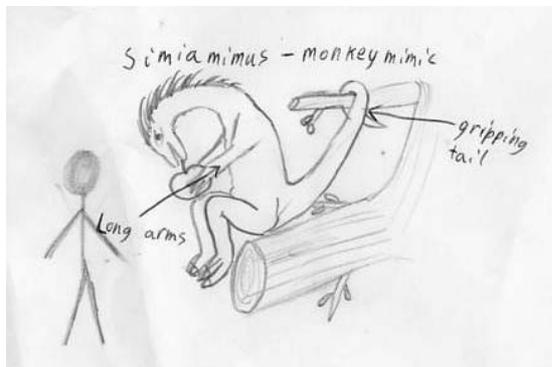
Abelisaurids. By modern day the only surviving large Abelisaurids would be the Majungasaurus of Madagascar, which would have changed very little as there would have been little intervention by the outside world.

The Noasaurids on the other hand would have done well. Some of them were fish eaters while others ran after prey. When the Amazon rainforest was formed, some of them took to the trees. They swung through the branches away from Abelisaurids and later Troodontids.

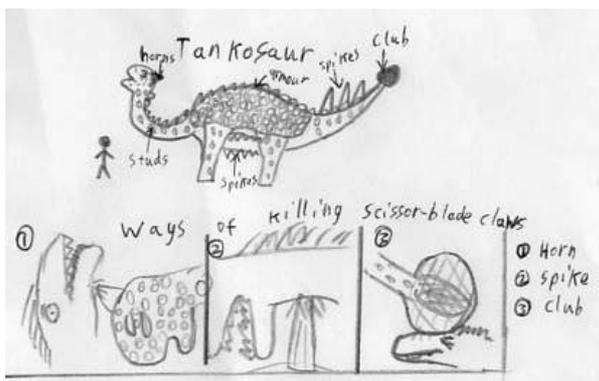


## Ornithomimids

The final group of theropods were the Ornithomimids. These animals were fast omnivores who looked very similar to ostriches. However, by the end of the cretaceous, some Mongolian Ornithomimids, such as Anserimimus and Deinococheirus, were growing longer arms. I hypothesise that they would grow larger and larger arms, some for climbing and some for reaching out for leaves.



## Sauropods



The Sauropods were the long necked dinosaurs which were most dominant during the Jurassic. They are not very common any more, partly due to competition with the Ornithomimids and also being too big to defend against small, fast dinosaurs which were hard to step on or hit with their tails. One dinosaur, a descendant of the South American Saltasaurus, was armed with spikes, horns and a huge club, as well as 10cm of solid bone armour. It is not surprising that it is known as the Tankosaurus. It lived on the

pampas of Argentina with enough space and trees to support it.

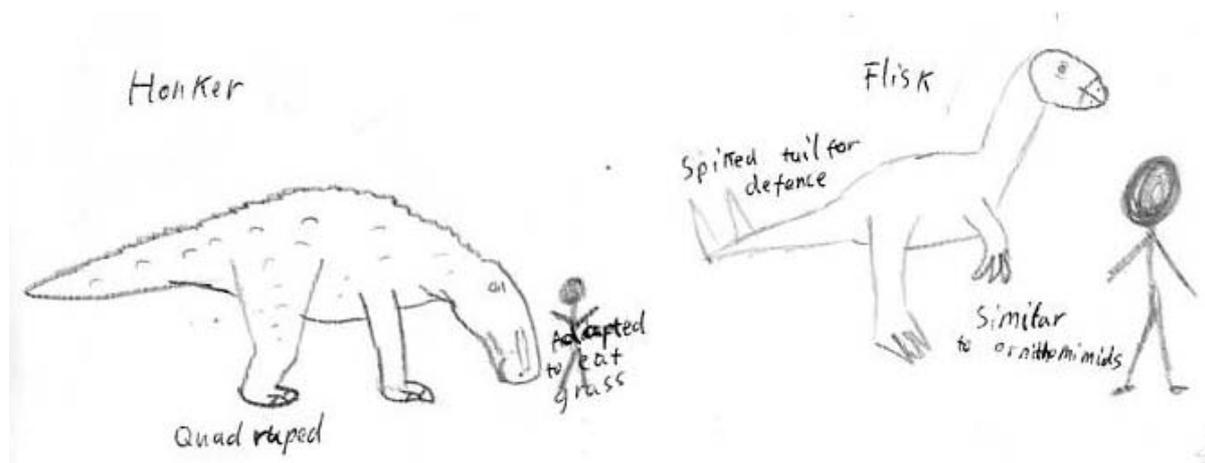
Another Sauropod was the descendant of Magyarosaurus, a tiny Sauropod which lived on Hateg Island, Romania. Unlike the other Sauropods in Europe, it was tiny, as it lived on an island with limited food resources. When Hateg joined the rest of Europe the Saurosapiens adopted them as pets. They selectively bred them to be smaller so by modern day would be the size of a small cat.



## Ornithopods

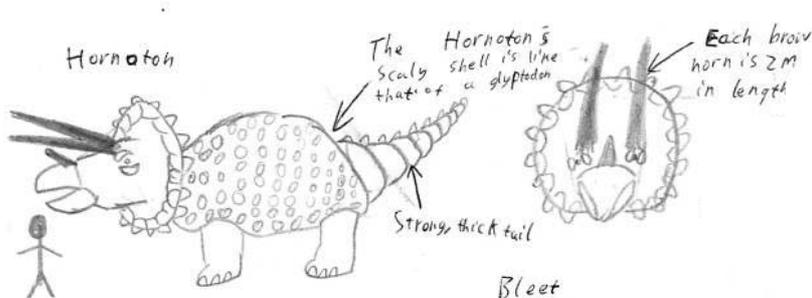
The Ornithopods were a group of herbivores which came in many different sizes, ranging from the tiny Hypsilophodontids to the huge Hadrosaurids. By the end of the Cretaceous, there were Edmontosaurs and Thescelosaurids. The Edmontosaurs were the largest of all Hadrosaurs so would probably get larger and maybe also slower. Meet the Honker. The Thescelosaurids however, would get faster and fill the ecological niche left by the Ornithomimids. This animal is called a Flisk.

The Ornithopods would have to adapt to eat the newly evolved grass. This would mean that the Honker would have a downward curving neck and the Flisk's neck would have to be flexible to reach down too.

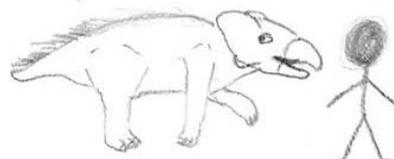


## Ceratopsians

Of all the dinosaurs, the Ceratopsians had the most decorative and dangerous head gear. They were omnivores with powerful jaws which could crush branches and bones. By the end of the Cretaceous there were Torosaurus, Leptoceratops and the famous Triceratops. However, with the rise of the Troodontids they had to get better armed. The Leptoceratops dug holes, climbed trees or just ran. Torosaurus, with its neck frill with holes became extinct. Triceratops on the other hand, with a solid frill evolved to be more armoured, resembling a Glyptodont.

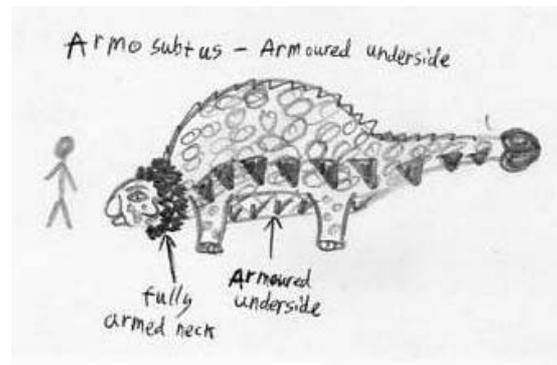


However, with the coming of the Saurosapiens, the Leptoceratops (now called Bleets) took on a new role. A Saurosapiens chick would grow up with a Bleetlet and bond with it so they can work together when herding Flisk or building shelters.

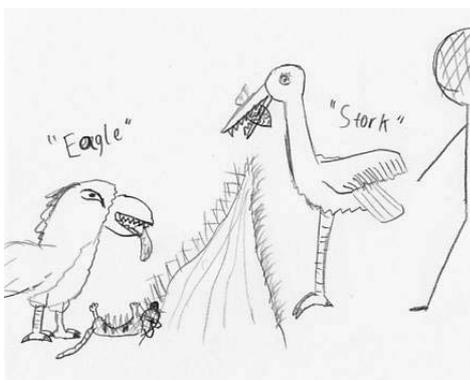


## Ankylosaurs

Of all dinosaurs the Ankylosaurs were the most armoured. The final Ankylosaur was so well defended even its eyelids were armoured! However, with the rise of the Mega Troodontids, even Ankylosaurus was at a disadvantage, as they could get at its soft underbelly and neck. Thus, the Ankylosaur of modern day would be armed on its underneath and all around its neck too.



## Birds



It is unlikely that birds would be very different as they were already replacing Pterosaurs as dominant flying animals. I would imagine that birds would look very similar to those of today. However, it is unlikely that birds would have evolved into ostriches and terror birds, as the dinosaurs took those ecological niches. Also, some birds would still have teeth. This would be advantageous for a fishing bird as it could hold onto fish easily. Teeth would also be useful for a bird of prey to grip struggling prey.

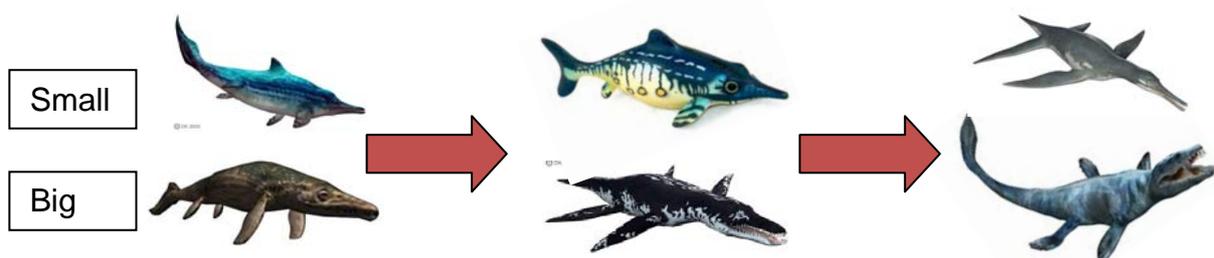
## Pterosaurs

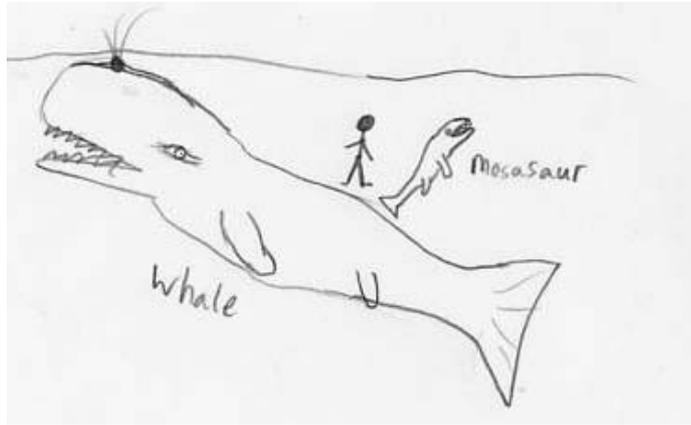
For most of the time of the dinosaurs, the Pterosaurs ruled the air. However, by the end of the cretaceous, the only Pterosaurs left were the large ones. It is likely that by modern day they would be even bigger, but not able to go very far, just hop from island to island.



## Sea reptiles

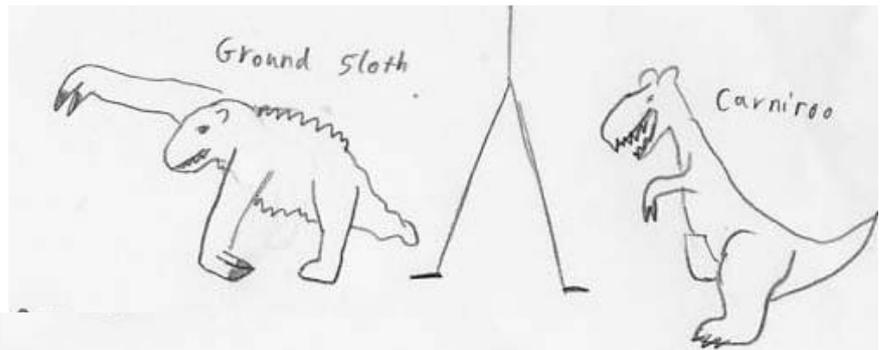
Sea reptiles keep changing. Originally, the Ichthyosaurs were dominant. They were pushed to the bottom of the food chain by the Pliosaurus, who in turn took the place of the Ichthyosaurs when the Mosasaurs were dominant. If this carried on happening the Whales might become dominant and the Mosasaurs would become small.





## Mammals

And now for the big question: How would mammals change? They would not become dominant on land and instead would be limited to about the size of a large dog.



However, some mammals living in trees would probably evolve into bats, which would be very similar to modern bats. Also, as I have said, other mammals would become dominant in the sea as whales and dolphins.

## Conclusion

However much we speculate about life without the K-T extinction, it doesn't change the fact that all non-avian dinosaurs became extinct. I have given my theories of what could have happened and I hope you enjoyed reading it.

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