

From Fossils to Pixels: Palaeontologists Playing and Streaming Digital Games

Interview with Jake ATTERBY
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Caitlin Syme is a research associate at the Dinosaur Lab at the University of Queensland in Australia. Her research focuses on the taphonomy of Lower Cretaceous dinosaurs, crocodyliform, and fish fossils found in central-western Queensland. In addition to her research, she has also been contributing to numerous science outreach shows and initiatives. As a co-host for the *Palaeocast Gaming Network*, she has reviewed games such as *Jurassic Park: The Game*, *Path of Titans*, and *Saurian*.

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Jake Atterby is a palaeontologist at the University of Birmingham in the United Kingdom. His research focuses on the evolution and internal anatomy of Mesozoic fossil fish, and he recently co-authored a research article on the perception of palaeontology in commercial off-the-shelf digital games. As a co-host for the *Palaeocast Gaming Network*, he has reviewed games such as *American Truck Simulator*, *Minecraft*, and *Spore*.





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Victor Monnin is an early-career historian of science. His research focuses on the history of palaeontology, palaeoart – the science-based artistic reconstruction of extinct animals –, and the representation of the geological past in popular culture. After studying Art History at the École Normal Supérieure in Paris, he received his Ph.D. in Epistemology and History of Science from the University of Strasbourg in France.

Victor Monnin (V. M.): What are some of your first memories of digital games featuring references to palaeontology or the geological past?

Caitlin Syme: My first memory comes from playing *Microsoft Dinosaurs* (1993), which had a pretty scary – for a 7-year-old – stop-motion video called ‘The Hunt’ that has stuck in my memory ever since. I loved reading dinosaur encyclopaedias and playing digital games, so it was an obvious choice for my parents to buy me an educational dinosaur game. I loved it, and similar games such as Eyewitness Virtual Reality *Dinosaur Hunter* (1996). So, some of my earliest memories of dinosaurs and palaeontology in digital games were as educational experiences, but I did also enjoy playing other dinosaur games like *Dinotopia* (1996).

Jake Atterby: I can vividly remember as a kid going on the BBC website and playing some of the tie-in games for the *Walking with Dinosaurs* TV series. The one that I remember most fondly was based on a documentary called *The Ballad of Big Al*, which I loved watching as a kid. It was a documentary on an Allosaurus skeleton found in America covered in different injuries. We have a cast of it in our museum in Birmingham, and I love looking at it. The tie-in game is very simple, but because it’s so simple, a lot is left to your imagination while you go through the lifespan of this single Allosaurus. You start out as a juvenile chasing insects to a fully grown adult taking on herds of giant sauropods and eventually finding a mate. The original game is no longer available, as the website was abandoned over a decade ago. But someone remade the game from scratch, and it still holds up. That game is specifically designed to be educational. The only non-educational palaeo-game I remember playing as a kid is the tie-in game for the Disney *Dinosaur* movie. I have very vague memories of a Pterosaur character being stuck under a rock, and I could never figure out how to help it.

V. M.: Where did the idea of the *Palaeocast Gaming Network (PGN)* – a YouTube channel featuring palaeontologists playing digital games – come from?

Caitlin Syme: The idea came from Dave Marshall, who hosts *Palaeocast*, an influential palaeontology podcast. He saw it as a unique way to do science outreach, and given that I love gaming and palaeontology, I immediately put my hand up to take part! There are plenty of good games out there with bad science, and while I still want to play and enjoy them, I understand that what I’m seeing doesn’t reflect modern understanding of the ancient world. The idea of being able to play the games I’ve always played while also sharing what is correct and what is maybe not as correct was the main drawcard for me. And if you’re ever playing a palaeontology-themed game and wondering, just how accurate is this? Then we’re the channel you can come to!

Jake Atterby: I joined the *PGN* maybe a month or two after the difficult work of setting it all up had already been done. The main idea was to make a *Palaeocast* spin-off exclusively about digital games. A lot of people are interested in both digital games and palaeontology, and the amount of palaeontology-related digital games is massive. It represents a huge market that no one else had really covered.

V. M.: What are the most widespread misconceptions about the practice of palaeontology that we can encounter in digital games?

Jake Atterby: In a lot of games in which fossils are a resource, those fossils are usually sold for in-game currency. This is very common in *Animal Crossing* (2001-2020) but also in *No Man's Sky* (2016), *The Sims* (2000-2022), and *Stardew Valley* (2016). A lot of people seem to have this idea that palaeontologists go into the wild, find these priceless fossils, and sell them for millions of pounds. It's quite funny to see how in one of the recent *Jurassic World* movies, a real dinosaur sells for less money than actual dinosaur skeletons have sold recently. This is not what most palaeontologists do though, and my worry is that some of these digital games might normalize that exploitative approach to palaeontology. On the flip side, some of the work that palaeontologists do can be exploitative. Palaeontology is currently going through a much-needed ethical reckoning, and a lot of our practices in the field are being re-examined. One of those practices is known as "parachute science". It refers to palaeontologists usually from North America or Europe going to foreign countries to find fossils that they bring back to their universities and museums to study, most of the time without collaborating with local communities. Games usually portray this kind of practice as normal. In *Jurassic World Evolution* (2018), you can send out your fossil dig team to real world dig sites, but even sites in Mongolia or Brazil, countries where it's literally illegal to do that. Clearly, a lot of legal and ethical issues related to the practice of palaeontology have not yet reached the community of digital game designers.

Caitlin Syme: One other misconception is that palaeontologists in the past had no idea what they were looking at and made stupid assumptions, while nowadays we know *the* answer. But if this answer happens to change at all, then we must also be stupid!

V. M.: What are some of most pervasive tropes about the geological past and extinct animals that we see in digital games?

Caitlin Syme: Extinct animals are usually represented as if they were violent animals that constantly roared and screeched and fought each other! Luckily, modern documentaries, and now some digital games too, are showing dinosaurs and other extinct animals with more realistic and natural behaviours.

Jake Atterby: There is a common misconception that all the geological past consists of dinosaurs, and especially of T. rex, velociraptor, and triceratops, those classic children's book cover dinosaurs. There is a great diversity of extinct animals, but games rarely explore it. Even when some games do, the animals are labelled as "dinosaurs" anyway. In *ARK: Survival Evolved* (2015), the game shows a variety of early mammals and even fishes, but they are still called "dinosaurs". But I think the most common trope is that ancient animals are "monstrified": they are given long claws, sharper teeth, and their skin is tightly wrapped around their skeleton. This "monstrification" shifts extinct animals away from real animals into the realm of myth, and that's where the problem is. This is even more noticeable in digital games, where the creatures are interactable. This can contribute to disconnecting people from the past of our planet and therefore interfere with palaeontology's role in teaching people about climate change and extinction. Think of it this way: There is a game called *Second Extinction* (2020), where you fight off waves of oversized raptors. If they were replaced with a living animal, like lions for example, players would be asked to do unspeakable things to endangered animals. It's interesting how dinosaurs in digital games can be more easily replaced by zombies or robots than by living animals.

V. M.: The PGN is not a channel designed to critique digital games but rather to explore the potential of certain games to teach the public about palaeontology. Could you give some examples of games that show such potential?

Caitlin Syme: There are some standout games that intend to accurately portray ancient environments, such as *Saurian* (2017), or games that have accurate prehistoric animal models such as *Path of Titans* (2020), *Isles of Yore* (2022) and *The Isle* (2015). It's great to see more games emulating real animal behaviour and relying on accurate science to make their models. I was pleasantly surprised by *Dinosaur Fossil Hunter* (2022), in that it delves a little more into what palaeontology as a career is like, and the amount of time and energy that goes into preparing fossils. The most recent pleasant surprise came when playing *The Sinking City* (2019) and I found a quite realistic Spinosaurus skull – while the game didn't tell you anything about dinosaurs, or say that this was a dinosaur, it was still nice to see an accurate dinosaur skull in a digital game.

Jake Atterby: We try not to make PGN just a reaction channel. Instead, we use digital games as a virtual stage to talk about different topics related to palaeontology. One of the most detailed games we have ever tested is *Ancestors: The Humankind Odyssey* (2019). This game is interesting because it takes place in a very specific prehistoric period in Africa. In the video we did touch on the surprising accuracy of the creatures in the game, but we mostly delve into deeper themes, like how scientists first assumed that early humans were apex predators and how this conception has changed. Now, we believe that our ancestors were most certainly prey, which is really what that game is about. The most surprising game from an educational point of view was *The Elder Scrolls V: Skyrim* (2011). The video starts with the observation that there are mammoths and cave bears in the game, which led us to talk about how fossils may have inspired myths all over the world. For example, the hole in the middle of an elephant skull – where the trunk comes from – looks like an eye, and there is evidence that suggests that it inspired ancient myths about cyclopes. Then, we ended the video by talking about the game's dragon skeletons and how they can teach us about homology and the evolution of wings. Afterwards, the designers of the dragons found the video and got in touch with us! I like to think what we do on the PGN is transformative and not just reactionary.

V. M.: What do you hope an initiative like the PGN can achieve regarding the relationship between the paleontological community and the game design community?

Jake Atterby: I make a series of videos using *American Truck Simulator* (2016) to run virtual fieldtrips, and the developers love it! I have done live streams with them, where we have talked about the rocks and fossils that they have or could show in their scaled-down version of America. Before, the developers would use generic rock textures, but now they are so dedicated to capturing the environments more accurately. Besides that, we have also been chatting with the developer of an educational game called *Fossil Corner* (2021), where players can learn about phylogeny and how to organize fossils. I believe that this game would do wonders if installed in a museum for example. I have also made a series of videos using a modified copy of *Minecraft* (2011) which adds a lot of obscure extinct animals. I fully believe that using a digital game engine like this one, we could make a *Walking with Dinosaurs*-style documentary, where players could role-play as nature documentarians and observe prehistoric animals. This would be way cheaper than any similar documentaries ever done before.

Caitlin Syme: I hope that the *PGN* can help continue the conversation happening around digital games as an educational tool even when that's not the main goal of the game and help link up interested game developers with palaeontologists. I think it's also helpful for palaeontologists to remember that time constraints, strict budgets, artistic direction, or marketing strategies can influence the way ancient animals are portrayed in games, not just a lack of knowledge. But we love playing and promoting games that help people learn about palaeontology, so hopefully the market for these types of games can continue to grow.