

# The Writhing Tentacles of History

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Jay Werkheiser

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Mottled-Brown-Pattern wriggled through his lab's circular port, letting his arms do most of the work while he contemplated his response to Light-Blue-Ripples' latest dirty trick. Curse that arrogant female. Curse her back to the sea. Four arms through the port. Potassium-argon dating put the fossil-bearing rock stratum at sixty-seven million years old, plus or minus two million years. That placed it firmly in the mass-extinction boundary.

Eight arms through, suckers grasping the inside of the wall, secondary arm-brains independently flexing muscles to pull him through. She'd known he would dig there; the region had been coastal at the time of the extinction boundary and had a lot in common with other rich sources of pre-extinction fossils. She'd waited until he was committed to the dig before announcing her computer model of the migration patterns of prehistoric mammals.

Nictitating membranes closed over his eyes as his mantle slipped through the port. The pressure rippled across his rubbery skin like a circular wave. He'd already found what looked like the fossilized endoskeleton, nearly intact, of a vertebrate's hip. A mammal, by the looks of it, probably a member of the dominant species of the time. It was more complete than any previous find, showing some rather peculiar features. But it wouldn't be enough, now that Blue-Ripples' models predicted this to be a fossil-poor region. The Ruling Octet would probably close his dig before he had the chance to find even one more fossil.

In his peripheral vision he saw one of his arms flipping the light switch on. Dim, vertical LED strips bathed the lab in soft blue light. Gray-Ring-Pattern lay next to the recessed lab surface, his arms manipulating glassware.

Mottled-Brown felt his chromatophores dilate, darkening his skin to an angry near-black. The ancient territorial instincts rose; this was *his* lab, *his* space.

Gray-Ring shifted position, and his left eye came into view. The pupil dilated in alarm, and his

color shifted to surprise. “I didn’t expect you so early.”

Mottled-Brown purposefully kept the black color, let an interrogative brown ripple over it. “What are you doing here?”

Gray-Ring’s arms nervously fiddled with the glassware, and his skin coloration filled in the details. “I thought I’d do a little cleaning while you were away.”

“I’m not away.”

Gray-Ring flashed an apology pattern and moved toward the port.

Mottled-Brown’s arms writhed in agitation. He should have let the kid leave, but . . . he gestured a command. “Wait.”

Gray-Ring turned so that his right eye faced him and assumed a submissive posture while flashing an inquiry pattern.

“Your competency exam is coming up soon, no?”

Affirmative reds and blues flashed on the youngling’s skin.

Mottled-Brown matched his affirmation coloring. “Tell me, then, the factors leading to site selection for a dig.”

Gray-Ring’s color faded, but he recovered his composure quickly. “We look for sedimentary formations laid down in areas that were once coastal or swampy. Theory has it that ancient mammals were semiaquatic and required—”

Mottled-Brown silenced him with a flash of color. “Be more specific.”

“We look for coastal regions along the boundary stratum,” he said hesitantly, “because it is a good source of vertebrate fossils from the time leading up to the extinction event.”

Mottled-Brown allowed his coloration to show a hint of disappointment. “Yes, but why specific sites along that stratum? Why do I dig where I do?”

“There have been rich finds—”

“Think, larva. Take time to think before you answer.”

To his credit, Gray-Ring’s skin tone turned neutral, carrying no further words. His arms wriggled in agitation. “The extinction boundary anomaly,” he finally said. His color brightened as he spoke, his confidence growing. “Yes, that’s the reason.”

“Explain.”

“All along the extinction boundary, the rock and clay strata are anomalously rich in iron, aluminum, and heavy metal ores. Like the previous extinction boundary except that one is rich in iridium instead. And it’s much more uniformly distributed.”

“And?”

“And we look for places where the ores are anomalously concentrated. Vertebrate fossils, especially mammals, correlate heavily with ore concentration.”

“Why?”

His color faded into uncertainty again, but it returned quickly to brightness. “It’s unknown,” he said in a confidant blue-gray. “That’s one of the mysteries we want to solve.”

Mottled-Brown displayed the barest hints of approval coloration. “You need to be more confident in your knowledge,” he said. “Study more.”

“Yes sir.” Gray-Ring scurried back to the recessed lab bench and continued his menial cleaning task. He flashed a mottled brown pattern followed by an interrogative blue ripple.

Mottled-Brown, on his way to his computer terminal, almost failed to notice the question. “What is it?”

Gray-Ring’s coloration was pale, hesitant. “I, uh, well, I mean, the dig site is far away. I, uh, wasn’t expecting you back so soon. Is it because of the model that Blue-Ripples published?”

Mottled-Brown turned black, then shifted to an affirmative red-blue pattern. “The Ruling Octet wants to see results.”

“But they’ve already granted—”

“And can easily revoke.”

“Of course,” Gray-Ring quickly flashed. “It’s just, well, what do you think? Could she be right?”

“No, of course she’s not right.” Mottled-Brown noticed his arms writing in agitation. Just the

thought of that female twisted his beak. “We already found a fossil here, didn’t we?”

Gray-Ring flashed affirmation. “It’s an odd one, too. Perhaps you can use that to keep the dig open a little longer.”

Mottled-Brown’s arms manipulated the computer’s input sleeves, and the screen displayed an image of fossilized bones. Its pattern-recognition software had inserted the newly found hip-bone into the known endoskeleton of the dominant prehistoric mammal and arranged in a way that best fit the shapes of the bones and previous knowledge of related mammals. The color ring around the image described the articulation of each joint and the probability of its being a good fit. “Odd,” he flashed.

“Yes, I just said that, sir.”

“No, I mean . . . well,” he said, assuming the posture of an examiner, “you tell me what’s odd about this reconstruction.”

Gray-Ring scurried closer. Mottled-Brown flashed a black warning—not too close. Ancient instincts ran deep; their presentient ancestors had not been social beings. Gray-Ring stopped where he was, surely not close enough to get a good view, and squinted. “Its . . . what is that bone called, the one that connects rear arms to the articulated axis . . . ah, the hip. Its hip structure is all wrong.”

Mottled-Brown flashed affirmation. “And look at the relative lengths of the four arms.”

“The front arms are too short to support much of the creature’s weight in this configuration.” Gray-Ring paused, contemplation rippling across his skin. His color brightened to nearly white. “Those hips! It supported itself on only two arms.”

“My conclusion exactly.” Mottled-Brown felt approval color his skin. His arms manipulated the computer sleeves, and the image on the display screen slid into an upright posture. “But why? It must have been difficult to remain balanced like that.”

“Such an oddity surely would give the Ruling Octet reason to continue our dig, sir.”

My dig, you ambitious larva. Mottled-Brown left the thought unsaid, but a hint of it showed in his coloration. Too much social interaction made him cranky. “That’s why I’m back from the dig early,” he said.

The Ruling Octet of the Historical Sciences met once every lunar cycle. That the meeting was inconveniently timed for Mottled-Brown and half a continent away from his dig was irrelevant. So he’d crammed himself into a travel bulb and endured an overnight ballistic express. The flight had given him time to contemplate the color patterns of his argument. His plea, really. At his age, a failed dig could easily be career death.

He knew the Ruling Hall of his home territory well. It stood out among the smaller domes dotting the landscape, its concrete construction textured to resemble natural rock. He wriggled through the main port and into the soft blue light of the hall itself. He’d arrived early, hopeful that the Octet would be impressed by his punctuality. Air vibrations from across the hall caught his attention. He swiveled to see what it was and—

He let out an involuntary compressed air jet, sending him backward a couple of arm lengths. Deep blue laughter roiled on Blue-Ripples’ skin. Mottled-Brown darkened in embarrassment, and her laughter brightened to intense blue. “What are you doing here?” he finally managed to ask.

“The Ruling Octet wanted to hear my evidence directly from me before shutting down your dig.” Blue laughter continued to tinge her words.

Mottled-Brown’s skin shifted to an aggressive black, but it was tempered by the sound of him sucking air into his mantle cavity to replace what he’d lost. “What evidence? You have a machine’s guess. I have a fossil.”

Blue-Ripples turned black and lifted her mantle up high. “It’s the only fossil you’ll—”

A sharp wave of air vibration from above interrupted the confrontation. Mottled-Brown tilted his mantle so that his right eye faced upward. The members of the Ruling Octet had entered the hall. Each sat atop his or her own platform that was molded to appear as a rocky outcropping overlooking the floor of the hall. Mottled-Brown quickly shifted his color to white. A brief

glance at Blue-Ripples showed that she had done the same.

The members of the octet wore imperious dark gray skin tones. Nearly simultaneously, their skins changed to a blue rippling pattern, then the color of their command. “Blue-Ripples, state your evidence.”

Mottled-Brown studiously avoided displaying his agitation on his skin. As Blue-Ripples began to speak, he saw that she maintained her dead white tone of submission as a backdrop to the colors of her words. She was a cool squid, that one. “First,” she said in muted colors, “I emphasize that my modeling software is built on code that has been used for many successful migration models in the past, including software that correctly modeled the migrations of modern animals like the giant plains slugs. The algorithms are used in many fields—historical, biological, and population sciences among them.”

“The Ruling Octet acknowledges your credentials.” The color pattern of approval rippled around the octet. “Cite your evidence.”

“Pattern analysis shows that ancient mammals migrated along a north-south axis up and down what was the coast of the continental landmass in question.” She went on to explain, in painstaking detail, how mammal migration was a scientific necessity. With rigid bodies, vertebrates had little ability to find shelter from the elements and had to move with the seasons. Thus, the north-south migration pattern.

“The location of Mottled-Brown’s dig,” she concluded, “was on a spit of land, or perhaps an island, jutting out from the eastern coast of the continental landmass. A north-south migration axis precludes movement along an eastward dead end. Those few who might have chosen that route died out, and their instincts for following that path eliminated from the gene pool, long before the extinction event.”

She fell silent, her color returning to a submissive white. The Ruling Octet signaled in near unison, “Your testimony is acknowledged.”

It’s also recorded, Mottled-Brown thought. They would surely review it over and over tonight. As well as his testimony. The Ruling Octet switched to a mottled brown coloration followed by the gray of command. It was his turn.

“The extinction boundary anomaly has been an indicator of rich fossil-bearing rock for three generations,” he said. He kept his attention firmly on closing his chromatophores. “Rich fossil fields accompany anomalously high metal ore concentration. My site shows every indication of producing a wealth of fossils, including potential new discoveries.”

“Cite your evidence.”

Mottled-Brown meticulously described the dig location, details of the rock stratum overlaying the extinction boundary, and culminated his statement with the discovery of the first fossil at the site mere days ago. “The interesting thing about this fossil,” he said, “is that it is a nearly complete hip from the endoskeleton of the mammalian species that was most populous at the time of the extinction. It has already led me to some exciting new discoveries about—”

“Be specific.”

“The species seems to have supported itself on only two of its arms.” Interrogative color rippled through the octet, but it quickly muted back to an attentive neutral gray. Today was not the day for discussion and debate. Mottled-Brown continued, “I haven’t yet determined how it maintained balance that way, or what it used its remaining two arms for. I need to continue my dig to pursue this exciting new avenue of research.”

Mottled-Brown fell silently white, and the Ruling Octet acknowledged his testimony. “We will convene tomorrow for debate and analysis.” As one, they wriggled through their ports and out of the main hall. Mottled-Brown relaxed his chromatophores back to a more natural skin tone.

“One fossil won’t save you,” Blue-ripples said. Her words were tinged with black. “And your conclusion is ridiculous. Two arms indeed.”

Mottled-Brown concentrated on keeping his skin a neutral gray-brown. He wouldn’t let her goad him into a confrontation again. “We’ll see the words tomorrow.”

He turned to leave, but Blue-Ripples stopped him. “I’ve filed a reproduction claim on you,” she said.

He froze in place, his arms writhing. He felt his skin turn black. "It'll never be approved. I'm still at the height of my career."

"And if the octet closes your dig?" Her words shifted blue. "A fossilized historical scientist with little hope of any further contribution? They'll give you to me before your third heart can finish a beat."

"Slug slime! My contributions have been—"

"In the past. The only thing you have left to contribute to the next generation is your flesh. Our eggs will grow strong on it."

He involuntarily pulled himself into an upright fighting posture, an instinct remaining from the presentient past. "The Ruling Octet will see the value of my dig. History is on my side."

"The writhing tentacles of history have slashed many of your kind," she said. Her arms began slipping through the port and out of the hall. Her mantle flashed one last thought. "You will be delicious."

As the last of her mantle slipped through the port, he saw her skin turn bright blue.

Mottled-Brown sat in an isolated dome in his home territory, his mantle crammed into a narrow crevice, his arms folded protectively in front of him. The ancient instinct failed him; the threats he faced couldn't be stopped by arms or faux stone. If only he'd had more time. Surely there were more fossils to find at the dig, each bringing a wealth of new understanding of the prehistoric past.

Perhaps. Or maybe the bipedal mammal hip was the only new thing to discover there. Maybe it was a fluke, or maybe he'd assembled it incorrectly. Perhaps Blue-Ripples was right, and there was nothing to find there. He'd never know. If only he had more *time*.

It could be worse, he thought. Many males died without having the opportunity to feed the eggs of the next generation, never having distinguished themselves enough to attract the notice of a female. It was exciting, in its own way, knowing that he would soon reproduce. His hectocotylus already tingled with anticipation. The reproductive arm swelled involuntarily.

The computer interface ring on his third right arm vibrated, and the twitching arm caught his eye. The color display showed a gray ring pattern. Ugh. What did *he* want? He considered ignoring the page, but after a few moments, he whitened in resignation and crawled from his hole. He scuttled to the computer station and waited for his arms to thrust themselves into the control sleeves.

He instructed his arms to contact Gray-Ring. Video only; he didn't need the distraction of full tactile and pressure-wave immersion. Gray-Ring appeared on the video screen, a bowl filled with sea snails before him. One arm after another plucked a snail from the bowl and stuffed it under his mantle. Mottled-Brown was glad he hadn't included full sensory input; he could imagine the annoying air vibrations from his beak crunching shells.

Gray-Ring turned a pale submissive color. "Sorry to bother you." His arms continued to work unheeded.

"Did you find another fossil?" Waves of anticipation rippled across Mottled-Brown's mantle.

The color of negation. "But I believe we will soon—"

"Not soon enough." He told Gray-Ring about Blue-Ripples' mating claim.

Gray-Ring flashed black anger and negation.

"She can and she will. I fear the Ruling Octet will find in her favor. I fear they *want* to find in her favor. They'll get to clear out another old timer, make room for a young upstart fresh out of the larvae tanks."

Gray-Ring paled in submission. "I don't want to replace you; I want to join you."

"Others are not so patient," Mottled-Brown said. "It's a win all around. The octet gets a fresh new set of arms, the next generation gets an infusion of proven genes, and Blue-Ripples gets a nice meal."

"Not if you're faster than her!"

Mottled-Brown let muted blue laughter dance across his mantle. "Perhaps ten seasons ago. But now, she'll be able to keep her grip after it's finished." At the thought, his hectocotylus

swelled further.

“Have you ever . . .” Blue-Ring dropped the sentence, reverting to a neutral pale gray.

“In my youth I took risks like that,” Mottled-Brown said. “Two or three times, with an older, slower female.”

Gray-Ring flashed pale affirmation.

Mottled-Brown read the unasked question on the youth’s skin. “It’s worth the risk,” he said in bold, confident colors. “Young male like you, fresh from the larva tanks, should be out there having fun.”

Gray-Ring paled to an indecisive tawny. “It’s dangerous.”

“Take some risks; that’s what youth is for. You won’t regret it.” Unless you misjudge her strength, he thought, or hang within arm’s reach just a bit too long. Bah. “You’ll get away easily enough. You’re young and sharp.” He paused again. “Not a slow old male. At my age, this will be my last.”

“If I had found a second fossil, it could have saved you.”

“The one should have been sufficient,” Mottled-Brown said. “If the octet had any real interest in the historical sciences, they’d have recognized its value.”

Color of affirmation. “That two-armed hip structure bears further study. And those other arms, the short ones that end with all those tiny bones. What were they used for if not walking?”

“Eating, probably.” Mottled-Brown fell easily into the analytical habits of a historical scientist. “They’re lots of little bones, heavily articulated. Probably gave them almost as much flexibility as our arms.”

“Why would a stupid animal, a vertebrate no less, need that much flexibility? What logical purpose would it serve?”

“The writhing tentacles of history,” Mottled-Brown said, tinted with the faded blue of a sad chuckle. “They don’t always writhe in a logical way.”

“I never really understood that saying,” Gray-Ring said. “I mean, it uses the wrong color, doesn’t it? Writhing arms would make more sense to me.”

Mottled-Brown let the thought hang in the air for a moment, then spoke with crisp mentoring shades. “That’s part of the metaphor. Arms wriggle and writhe, under control of their own lesser brains, for sure. But they move with a purpose, and that purpose comes from the intellectual brain that sets the goals and tasks for the lesser brains. That’s true even in the lower animals like tree squids.”

He paused, allowing Gray-Ring to flash the color of affirmation. “Yes, they grip tree branches, supporting the squid while it hunts.”

“Ah, but how does it hunt? Its long tentacles hang down, writhing mindlessly, luring unintelligent creatures to their doom.”

Gray-Ring was a neutral tan for a while, then finally spoke in muted colors. “I think I understand.”

A surreal juxtaposition of ideas flashed a humorous picture in Mottled-Brown’s mind—a vertebrate balanced awkwardly on two arms, trying to dodge the writhing tentacles of history with its stiff endoskeleton-limited movements. A tentacle knocked it down, and it fell flat, the bony digits at the ends of the limbs like ten tiny legs splayed beneath it as they’d been in the fossil he’d found at the dig. For some reason, his mind placed a metal digging tool next to the fossil’s arm.

The tiny, dexterous, articulated digits. Metal tools. The extinction boundary anomaly. “Oh!”

“What makes you brighten all of a sudden?”

He hadn’t realized that he’d spoken visibly. “Something just occurred to me,” he said. “It may be nothing.” But he didn’t believe that at all. Just this once, the writhing of the tentacles may not have been so random.

Mottled-Brown barely slept that night. He dug up some old software on his computer, then spent the next few hours running simulations. When sleep finally came, dreams of the extinct vertebrates with their ten mini-arms at the ends of their arms kept waking him. With each insight, he jotted another color circle and went back to sleep. In the morning, he tried to make

sense of his writings. Yes, it just might all fit together—the odd skeletal structure, the extinction anomaly, even the extinction event itself.

His arm-ring's alarm vibrated; he should already be on his way to the Ruling Hall. He'd wasted too much time poring over his writings! He squirmed through the port of his dome and rushed to the Ruling Hall. Blue-Ripples was already there, dark blue with confident joy.

He'd see about that. If he was right—if the Ruling Octet believed he might be right—he'd wipe that color right off her mantle. With effort, he forced his skin to a submissive pale white. Let her think it was going to be easy.

The Ruling Octet entered and assumed their perches. "Let the debate begin," they said synchronously.

"There isn't much to debate," Blue-Ripples said immediately. "One fossil versus a model accepted by the best minds in the sciences."

"But that one fossil is unique," Mottled-Brown said. "Providing new insights into a species we'd thought we understood."

Blue-Ripples turned a contemptuous muddy brown. "Bah. There are likely thousands of other sites that will produce much richer finds and much more intact endoskeletons."

Mottled-Brown struggled to keep the frustration from showing on his skin. She'd already sidetracked him into a pointless argument and away from the chain of logic he wanted to build. "But the unusual endoskeleton adaptations in this specimen are worthy of further study," he said, trying to get the debate on track. "You have viewed my findings, I assume?" *Or are you attempting to suppress them without even knowing their colors?* He didn't say that last part visually; he trusted the octet to pick up the shading.

Blue-Ripples' color darkened momentarily. She composed herself and said in even shades, "I don't see how an ungainly vertebrate balancing on two arms—if that's what it truly did—is a significant find. If it even existed as you suggest, it must have become extinct rather quickly."

"Perhaps," he said. "Except what did they use the other arms for?"

Bright interrogative color.

"The short ones. It's clear they couldn't help support the creature's weight. So what were they used for?"

"I don't know." Her color turned dark, hostile. "I imagine they just dangled there, looking ridiculous."

"Looking a lot like the dangling tentacles of a tree squid?"

"What are you trying to imply?"

"That form follows function." Mottled-Brown noted with satisfaction that the Octet was watching with a deep gray intensity. Some of their arms twitched in nervous anticipation. "That's how natural selection works, is it not? I seem to recall your earliest successful computer model showing just that—"

"What is your point?"

"That, according to your own models, their short arms had a function."

"And what might that function have been," she sneered in deep blue, "to catch them when they toppled over?"

"Perhaps early in their evolution," Mottled-Brown said confidently. "But have you really looked at the fine bone structures at their ends? They're flexible. No, not as flexible as our arms, but compared to other vertebrates—"

"Are you seriously suggesting that they could have used these appendages as we use our arms?" She tilted her mantle to look pointedly up at the Ruling Octet. "It's sad to see a distinguished scientist lose his grasp."

Mottled-Brown forced himself to ignore the taunt. "Run it through your models," he said. "I did."

Her color turned deep, dark, and scornful. "My models would never imply that lowly vertebrates had any such skill. They evolved on land!"

"Much as our ancient ancestors were seagoing cephalopods, these extinct land vertebrates evolved from aquatic forms."

“But our ancestors had a spark of intelligence that the vertebrates lacked.”

“And yet,” Mottled-Brown said in bold, confident colors, “both empirical evidence and theoretical models show the possibility of tool use.” Blue-Ripples started to reply, but he overrode her with an assertive upright posture and vibrant bold colors. “Even now, my apprentice is looking for signs of simple tools at the dig site. If he finds any—”

“Preposterous.”

“The Ruling Octet can verify the models.” Mottled-Brown clacked his beak together, metaphorically crushing his prey as he spoke his final argument. “A find is not guaranteed, of course, and I could be wrong. But if I’m right, the next few cycles could revolutionize historical science.”

“It was a brilliant strategy,” Gray-Ring said. “Using her own models against her. She won’t be bothering you anymore.”

Gray-Ring moved uncomfortably close as he spoke, ending up less than ten arm-lengths away. Mottled-Brown allowed only the barest hint of aggression to show on his skin. The larva had earned a little leeway. He’d earned the right not to be insulted as well, Mottled-Brown realized. No more calling him larva. “Something you said the night before the debate made me think of it. You’ve earned your adulthood.”

Gray-Ring paled. “Thank you.”

“Now get back to work. We need to find some vertebrate tools before the Octet’s next review.”

Gray-Ring scuttled away, but continued talking. “What kind of tools do you think they made? Stone?”

“I think,” Mottled-Brown said, “you’re going to be very surprised.”

Gray-Ring turned an interrogative color.

“Think about the extinction boundary anomaly.”

“Metals? You think they made metal tools?”

“That, and much more.”

Gray-Ring went back to work, and Mottled-Brown did the same. Then, suddenly, Gray-Ring scuttled closer again. “They built metal structures,” he said before Mottled-Brown could darken. “Maybe even made their domes of metal. That’s why metal ores are so concentrated at the extinction boundary.”

“It would explain the anomaly quite nicely.”

Gray-Ring’s color was hesitant. “But that would imply that they were more intelligent than we thought. Perhaps as intelligent as we are.”

“But not as wise.”

Interrogative color.

“Think about why the mass extinction event happened.”

“Rapid change in the climate,” Gray-Ring said. “Rising sea levels disrupted whole ecosystems.”

“Now consider the effect our industrial growth has had.”

Gray-Ring contemplated darkly for a moment, then suddenly brightened. “Oh! They did it to themselves.” After more contemplation, he added, “It’s sad, really. I would have enjoyed meeting their descendants.”

“No,” Mottled-Brown said firmly. “Impossible. The evaporation of those shallow inland seas drove our ancestors onto land in the first place. Without the vertebrates’ extinction event, we wouldn’t have evolved.”

Gray-Ring paled and went back to work again. Relieved at his blessed solitude, Mottled-Brown got back to brushing soil away from the rock samples in his grid. At last he could get something done.

Gray-Ring returned in a hurry. “The mammals,” he said. “They had sixty-five million years to evolve intelligence, right?”

Affirmation.

“Just like us. So equivalent intelligence makes sense.” He hesitated. “But . . . well, the previous vertebrates, the ones that came before the mammals.”

“The reptiles.”

## ANALOG

“Yes. They survived longer, right? Perhaps a hundred and fifty million years?”

“It’s difficult to say with precision when you go back that far,” Mottled-Brown said, “but that is a reasonable estimate. What’s your point?” The last was added with a dark coloration and the hint of an aggressive posture.

“Well, only, they had a climate change event in the middle of their reign, right? But they survived their catastrophe.”

Mottled-Brown was beginning to wonder who was the mentor and who the apprentice. “I don’t understand,” he said.

“The first hurdle,” Gray-Ring said. “Industrialization and changing climate. The mammals died when they reached that point, but the reptiles managed to survive their version of it. And they advanced. They advanced by another sixty million years. Just imagine what wondrous technologies could be developed in that time.”

“But they eventually died as well.”

“And what caused their mass extinction event?”

“An asteroid impact,” Mottled-Brown said. He thought about it for a bit, then his skin shifted dead white as he finally understood. “Oh.”

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*Jay Werkheiser has been writing science fiction since he was old enough to hold a crayon. He began writing professionally in 2009, when Stan Schmidt bought his story "Thanksgiving Day" for Analog. He is now closing in on thirty published stories, most appearing in Analog. When he's not writing, you can usually find him talking about chemistry. As a teacher that's his job, but he's never let that stop him from rambling on about nerdy science stuff outside the classroom as well. You can find him online, mostly posting inconsequential nonsense, on Facebook, MeWe, Twitter, and a million other social media platforms.*