

What's Bugging Me (About Kafka's *Metamorphosis*)?

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Franz Kafka's *Metamorphosis* presented a challenge to me on the very first page. The singular event of the story, Gregor's transformation into a giant cockroach, was clearly impossible. I am not expressing a concern about the change itself. It is not that difficult for me to accept the author's premise that a man could wake up one morning as an insect. However, even though I can agree to suspend disbelief regarding the transformation itself, thus allowing the story to move forward, it does not mean that permission has been granted to pile up improbability upon impossibility. Once the rules are made—this man is now an insect—biological and physical constraints can't be ignored. The dissonance between Kafka's descriptions of Gregor the insect and the reality of what is physically possible is distracting.

Insects actually have a lot going for them. They possess tough exoskeletons and are amazingly strong for their size. Insects are also agile and can run, fly, and/or swim. In fact some insects can walk on water or float in a breeze. As a group insects are quite successful from an evolutionary perspective. Whereas there are fewer than 300 different primate species, of which we are one, there are millions of different insect species presently living on our planet. Insects are exemplars of biological diversity. They are found in almost every habitat or location on earth.

Despite their attributes, insects are also limited. Contrary to the science fiction images of "fifty-foot bugs," insect bodies must be small. None could be as big as the "new Gregor." If the body with its exoskeleton were to scale up to human size, it would

be so heavy that even appropriately sized legs and musculature could not support it. Such an insect could not move. Also, because insects do not have a respiratory system with tubes connecting to internal lungs that have large absorptive areas, a giant like Gregor the roach would not be able to get enough oxygen to survive. Furthermore, our circulatory systems are powered by a large muscular heart that sends blood to all cells in the body through an elaborate network of blood vessels. Insects lack such a sophisticated circulatory system, so if you scaled the body to human size, insect blood (containing oxygen and nutrients) wouldn't be able to reach all cells. Finally, insects of the size we see in real life are small and as such, they have a large surface area to volume ratio, meaning that the body surface is not too distant from even the most centrally located cells. Delivery of oxygen and nutrients is straightforward, as is the removal of carbon dioxide and waste. When a body gets bigger, the surface area to volume ratio decreases, which means that it gets more challenging to deliver oxygen and nutrients to internal cells or to remove wastes. If the size of the body is big enough, it becomes impossible. (For context, here is a little math factoid. Pretend that the body is a sphere. The surface area to volume ratio decreases as the body increases in size because area increases as a square of the radius whereas volume increases as a cube of it.)

I hope by now you are getting a sense of my difficulty. In order to read this story, I had to push aside the image of Gregor as a giant immobile cockroach that was not able to breathe well. Either he was going to die quickly due to the inadequacies of his circulatory and respiratory systems or his internal tissues would decay for the same reasons and he would die slowly. Whichever the outcome, this view of Gregor's present situation and future definitely changes Kafka's story!

You might think that I am being too literal or too “scientific” and that my approach is antithetical to the “correct” way to read a story or appreciate a work of art. Well, maybe so, but I will point out that some of the movie *Finding Nemo* was redone because technical consultants (marine biologists) informed the filmmakers that some of the species in the movie would not be found in the ecosystem depicted. So it isn’t just me . . . Nevertheless, thinking along these lines reminds me of a conversation I had with a friend about Disney’s *The Lion King*. I want you to get the full picture of this discussion. We were in a Mexican restaurant having dinner and I was expressing my concerns, over a margarita, that the social structure of the organisms as shown in the movie was really inaccurate. My friend looked me in the eye and said, “Hello!—the animals are *talking!* *Talking!* And you’re worried about animal hierarchies?” Point taken. Still, I find it more pleasing as a reader to understand the “rules” of the fictional world I am going to inhabit. Once the rules are established I am happy to embrace them, but then the world needs to be internally consistent. Even if I decide to allow more dramatic license to Kafka and say yes to the transformation (not a metamorphosis, technically; in fact roaches don’t undergo metamorphosis—ironic, no?), and I presume that somehow Gregor can move, breathe, circulate blood and survive, I can’t accept that his exoskeleton could possibly be pierced with an apple, no matter how hard the father threw it. Evidently, Kafka did not know too much biology (or physics).

All of these ideas and issues notwithstanding, what does *Metamorphosis* reveal? What questions does it raise?

I think that my principle observation is that Gregor’s “metamorphosis” actually preceded the telling of this story. His transformed physical form was not the most impor-

tant change. In fact, when Gregor awoke that first morning in his new body, he did not seem all that unsettled about being a cockroach. Imagine what your own reaction might have been under the same circumstances. Gregor hardly focused on the gravity of the change. Instead he was preoccupied about what would happen to him professionally: would he be in trouble at work or even fired? This anxiety was born of an even greater fear: how could his family survive without his support? Even as Gregor tried to make sense of his new body he was trying to figure out if he could make the eight o'clock train and go on his sales trip. He had already ceased being a fully formed person long before he awoke that fateful morning. Gregor had sacrificed himself in the seemingly thankless task of supporting his father, mother and sister. They expected everything from him and except for Grete took without giving anything back. Ultimately, Gregor disappeared. Perhaps Gregor's real transformation was the relentless loss of self that preceded our first encounter with him.

Gregor's loss of self was accompanied by a gradual disconnection from his family. Once his physical transformation occurred, his grasp on his family grew weaker still. At first, his interest in his mother and father faded. Eventually, Gregor lost the bond he had enjoyed with his sister. Perhaps one of Kafka's points is that these connections we have amongst ourselves, even in families, are tenuous at best.

Interestingly, the rest of the family undergoes their own gradual transformations or metamorphoses. The father, previously a virtual invalid, gets a job and takes control. The mother, a largely ineffectual and easily distressed woman, finds her strength and also gains employment. The greatest changes of all are evident in Grete. At the earliest stages of the story she is a somewhat flighty girl without a serious thought in her head.

Yet it is she who cares for Gregor at first. She directs her parents about what should and should not be done about her brother. And eventually it is she who expresses what they all know: they won't be free until Gregor dies. When he finally does so, Grete and her parents plan their new life. Unbeknownst to her, the parents observe Grete's "nubile, young body" (146) and begin to hatch a plan to get her a suitable husband. Thus *Metamorphosis* ends—or is it about to begin again? I see ominous signs in this ending, for I fear that Grete is facing a metamorphosis like that experienced by her brother prior to his transformation into a cockroach. Her parents appear poised to take over her life, too.

There is a type of parasitic wasp that reminds me very much of Gregor's circumstances and fate. The father and mother wasp mate and the mother lays the fertilized egg on the surface of a caterpillar. The egg hatches and the tiny larva penetrates the surface of the caterpillar and takes up residence inside its body. The wasp larva eats the insides of the caterpillar's body, growing bigger and bigger as it continues its own developmental life cycle. Meanwhile the caterpillar continues to live, crawling, eating, and generally behaving like a caterpillar. Looked at from the outside, it appears completely normal and healthy. The very last part of the caterpillar that is eaten by the parasitic larva is the nervous system. Once this happens, the caterpillar bursts open and the parasitic wasp emerges. That caterpillar had been taken over, hollowed out almost imperceptibly, and then an organism looking nothing like it emerged from its body. Poor caterpillar. Poor Gregor. And I worry, poor Grete? Is she next?

Perhaps Grete is stronger than Gregor was before he was parasitized. We don't know what Gregor was like before his parents gained control of his life, but he certainly was defenseless by the time we met him. I suspect that Grete has a better chance of sur-

vival. Even though she started out caring for Gregor quite selflessly, clearly there were limits. She did not completely sacrifice herself for him. Grete was able to be hard-hearted and dismiss any notion that the cockroach was still her brother Gregor. She was able to stop caring, to protect herself, and to allow harm to come to Gregor. In the end, she looked forward to his death. She recognized that her own well-being was at stake. She was concerned about her parents, too, but I don't think she will sacrifice herself out of existence for them, either. Grete is a survivor; she will not be so easy to control or hollow out. Poor Gregor. Good luck, Grete . . .