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Century of the Gene

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Die, Selfish Gene, Die

1062 Words

1. “Die, Selfish Gene, Die” by David Dobbs for Aeon, 13 December 2013
2. The central argument of this reading is that the selfish gene model of genetics is outdated and is possibly holding back genetics, and it is still the overarching the overarching paradigm of genetics despite efforts to discredit it through scientific prose and evolutionary theories. The author uses metaphors to explain his point, often turning to insects and recreational activities. He begins by pointing out that grasshoppers and locusts are the same species but are only differentiated because of their gene expression; to quote the author, a locust is a ‘hopper gone mad.’ He then details the various theories that do not fit in with the single-gene model used in genetics as well as historical events that led to or solidified the position of the selfish gene as the overarching paradigm in evolutionary genetics. He finishes by pointing out the differences between Richard Dawkins and Mary Jane West-Eberhard; Dawkins promoting the selfish gene and West-Eberhard fighting it in a David and Goliath fashion.
3. This reading deals with the current paradigm in genetics and discusses why it should be replaced and what it should be replaced with. The author points out that epistasis, genetic assimilation, and other theories strongly counteract the single gene paradigm, but the support for the paradigm is strong and stretches to fit new theories or rejects new theories that go against the grain. Dawkins struggles to assimilate genetic assimilation into the selfish gene model, saying that “genetic assimilation doesn’t really change anything, because since the gene ends up locking in the change and carrying it forward, it all comes back to the gene anyway.” Dawkins commands tons of followers due to his education at Oxford, his well-crafted prose, and the fact that he is a celebrity scientist. West-Eberhard works from Central America, uses clunky entomologist jargon, and rarely garners sizeable crowds when she speaks. One of the reasons why the single gene paradigm is solidified is due to the simplicity of the theory. Humans are unaccustomed to thinking with complexity, and much prefer simplicity; this is why the central dogma of biology has lasted so long. However, genes change rarely; gene expression changes often due to environmental pressures and other fluid factors. To continue the use religious terminology to describe biology: a genome is like a holy scripture; writings vary but not nearly as much as interpretations. Dobbs suggests that a replacement for the single-gene model could be a social genome model as it includes the entire genome and recognizes the social effects that genes have on each other, as described in epistasis.   
   Dobbs also discusses Mendel’s pea plant experiments and how they led to the single-gene model of genetics. Because Mendel used the specific experimental system that he did (Mendel + pisum + mathematics + monastery + breeder’s culture and techniques +…+), he singled out the idea that traits are called for by specific algebraic rules (Mendel didn’t talk about genes; the term wasn’t even coined until Galton came along). If Mendel hadn’t killed the bees in his garden, he may have actually stumbled upon genetic assimilation.
4. I found the discussion of gene expression and the comparison of West-Eberhard to Dawkins compelling. It’s always fun to find a critic of Dawkins (he’s a bit of a jerk). I liked the metaphors to recreational activities, such as explaining gene expression using football and the importance of genes using playing cards. The writing was compelling and I appreciated that the article is online because I can easily find terms to later reference. The font size was big enough that I didn’t have to find my reading glasses in order to read the article, which is helpful because I can never find the darn things. The article was aesthetically pleasing, which made it more fun to read than other readings, namely the reading with the three letters to the editor of science.
5. I hate bugs. Therefore, the introduction that discussed the fact that locusts and grasshoppers are the same did not appeal to me. Despite that, I was fascinated by the fact that a simple change in gene expression could turn a solitary hopper into a member of a swarm through changes in its environment. However, I was grossed out when the author mentioned that a slow locust would be eaten by the locusts behind it because it couldn’t keep up. This reminded me of the fact that the 17 year cicadas are coming back in the next few weeks, and cicadas are my least favorite organism with an exoskeleton after scorpions. The sheer length of the article was also daunting.
6. 1. “For decades, the selfish gene metaphor let us view evolution with new clarity. Is it now blinding us?”
   2. “Not all grasshopper species, he explained (there are some 11,000), possess this morphing power; some always remain grasshoppers. But every locust was, and technically still is, a grasshopper — not a different species or subspecies, but a sort of hopper gone mad.”
   3. ‘Different groups of animals succeed for different reasons,’ says Wray. ‘Primates, including humans, have succeeded because they’re especially flexible. You could even say flexibility is the essence of being a primate.’
   4. ‘We’re stuck in an outmoded way of thinking that should have fallen long ago.’
   5. “This was the Holy Shit! moment that launched genetics’ Holy Shit! Century”
   6. “[T]he gene does not lead. It follows.”
   7. “It’s not a selfish gene or a solitary genome. It’s a social genome.”
7. When I was reading this article, it got me thinking about paradigms and pop science. The selfish gene model is used because of its simplicity and is defended by scientists such as Dawkins, despite mounting evidence against it. **What will it take to spark a paradigm shift away from the selfish gene? Can we move towards a social genome paradigm? How much disruption will a paradigm shift cause?**  
   Dawkins is like Watson in many ways; his words are brash, his prose compelling, and his political views disturbing. He ‘pointed out’ that a single college in Cambridge has won more Nobel prizes than the entirety of the ‘Muslim world,’ completely disregarding the fact that the Nobel prize system is set up to favor those of European descent. **Is there something about science attract unsavory individuals such as Watson and Dawkins?**