

Openly Addressing American Scientist Magazine, "Why Does Nature Form Exoplanets Easily", by Kevin Heng

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Abstract: This paper serves as an open address to American Scientist Magazine's article written by Kevin Heng, "Why Does Nature Form Exoplanets Easily." <https://www.americanscientist.org/article/why-does-nature-form-exoplanets-easily>

The second line to the article states, "The ubiquity of worlds beyond our Solar System confounds us." Not to be too cocky, but confounds them, not me. What is most confounding to me, is how slow it takes them to acknowledge the major scientific discovery that stellar evolution itself, in fact, is the process of planet formation. The planets and the stars, are the same objects. Taking the word ubiquity, or the fact of appearing everywhere/being very common, it becomes obvious. The process nature creates planets with, should be the most common process observed, because if planets are everywhere, then the process that makes them also has to be everywhere. Therefore the idea of honing in on specific star systems to catch the "planet formation" process in the act ignores the word ubiquitous, which means very common.

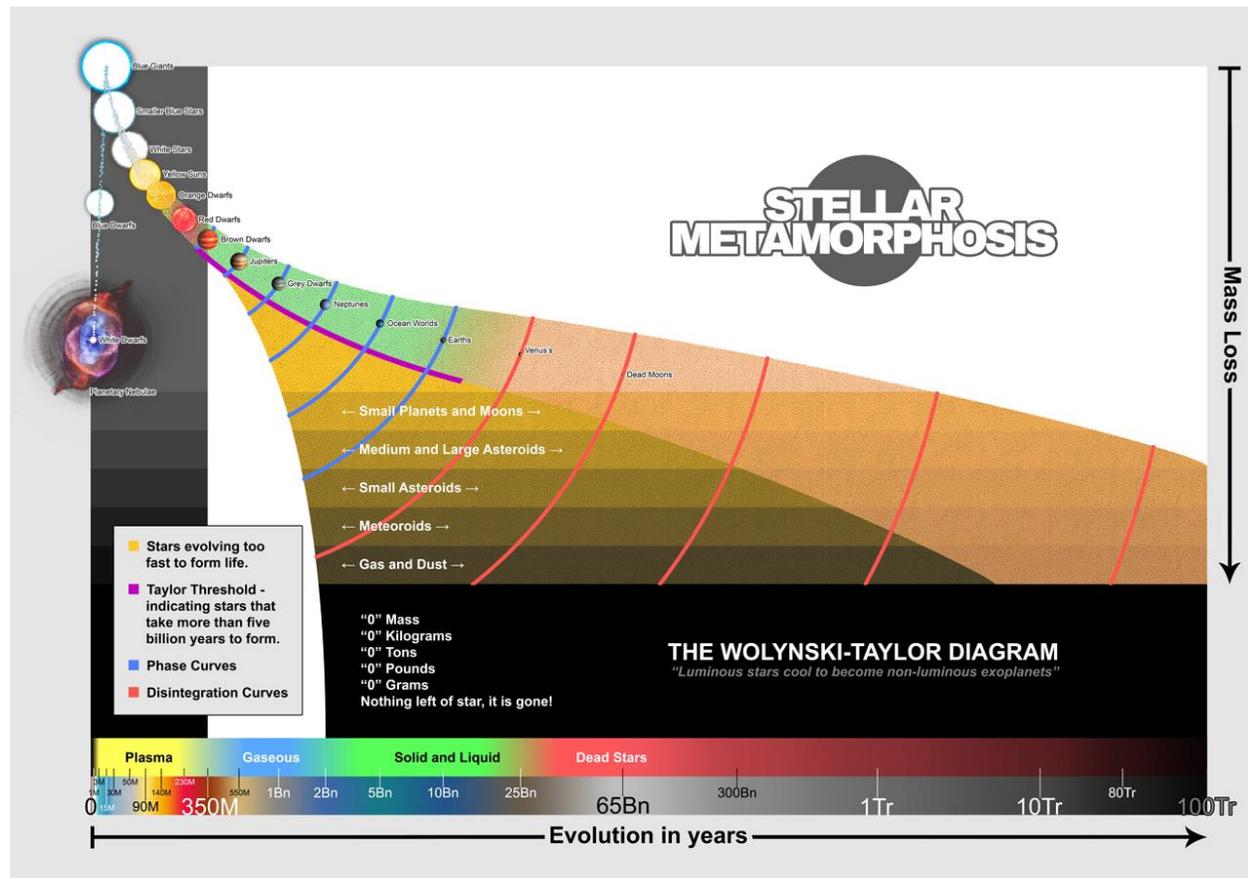
I would gather that the astronomers who study the objects in the sky, the stars, would call those common as well. Though, are planets more common than stars from their perspective? One should wonder. What was the most common part of astronomy? The planets or the stars? Did they have the same commonality? Did they have the same ubiquity? No. The commonality of "stars" as they were defined greatly overwhelmed any idea of exoplanet ubiquity, as exoplanets as they are discovered today did not even exist! They were not even on the radar when astronomers were drawing up theoretical models of how they formed and how stars evolved. The bright shining stars were the ubiquitous objects, though this has changed in recent times, clearly.

The counts of exoplanets are increasing, they are becoming quite common. How is this happening? Well, our technology is vastly more capable than it used to be, we can find them, by the tens of thousands. The next question astronomers should be asking now is, what ideas were drawn up before we realized how common "exoplanets" are? What ideas could be preventing us from getting to the truth? Are we wrong about something fundamental? Being that they are confounded, yes, of course! It wouldn't be a mystery if they knew how everything worked and all ideas were beyond question correct!

So in essence I'm not really addressing the whole article, just the very center, the meat of the argument. The worlds are ubiquitous. Why? I'll tell you why. They were never rare to begin with. Not only

that, but their evolutionary history was staring astronomers in the face, every single day and night. I mean day too, as the Sun is a very young planet. To address the center of the article on which model of planet formation is correct, top-down or bottom-up? Well, it is both. The large objects are the stars that condense down into planets as they lose mass and evolve (top down), and the objects that start small and grow (bottom-up) are their interior iron cores which then deposit compounds that are composed of combined elements, at any grain, pebble or gaseous size. In short, the planets evolve from being really hot and big, to cold, and composed of stable matter that can host life on its surface (and even create life as a result of the processes of stellar evolution itself).

We see the young planets and call them stars. We see the old stars and call them (exo-)planets. To the editors of American Scientist, the mystery is solved, in fact, the mystery was never really a mystery. Figuring out planet formation was nothing more than a classic case of pointing out misdirection, as in a murder mystery novel. The scientists, mathematicians and astronomers pre-2011 drew up models of star evolution long before they knew what actual old stars looked like. They were not standing on the shoulders of giants, they were in Plato's Cave confusing the shadows for real things.



So to answer the question, "why does nature form exoplanets easily?", it is because stars evolve easily. That is what a planet is, an evolving, evolved or dead star.