

Issues in Earth Science

“Topics for Debate”

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This is part of a series of essays from writers and scientists on the topic “At What Point Does Science Fiction Turn Into Fantasy?”

Fantasy versus Science Fiction: A Curious Divergence

by

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When does fantasy become science fiction? The seed thesis proposes that the two are distinct in one crucial way: while fantasy simply accepts magic as part of reality,

science fiction is characterized by the intrepid desire of human beings to understand the world around them.

Magic just is; science has an explanation.

This view is seductive, and appears sound in theory, but the situation on the ground is—as I shall argue—rather different.

Allow me to begin with the first assumption: that science fiction is marked by an investigation into the character of the natural world. This assumption is false. The large majority of science fiction works, on the contrary, treat technology as a given. Explanations, when provided, are usually pseudoscientific and, quite often, internally inconsistent. Rather, scifi authors use technology either as a tool for world-building, or in order to advance plot. Allow me to explain my reasoning using a well-known example: *Star Wars*.

Lightsabers are the most iconic element of the series. But how do they work? They can't be magnetically contained plasma; if that were the case, every lightsaber duel would end up with both combatants burned to death. They don't seem to have any obvious energy source that would be sufficient to power them. They behave inconsistently too—either cauterizing or not cauterizing wounds, sometimes cutting but other times failing to cut. Lightsaber fights look like the blades have mass, whereas

all the mass is supposed to be contained in the hilt. In-universe explanations give vague hints about crystals (alas they are more akin to crystal healing than science).

Put simply, lightsabers exist to be cool; they're not scientific.

As for the second assumption, fantasy works often *do* give detailed, internally consistent explanations for their magic systems. I will peruse two examples: my own story, the *Necromancer*, and Trudi Canavan's *Magician's Guild*. In the former book, I provided answers as to how magic existed within the world, what limitations it had, and how to discover more about it. Mages lived extended lives—one of the characters was 142—based on their 'power,' a special kind of energy that bonded to human beings and could be controlled by mages. Depending on how strongly the individual mage was bonded to this 'power', he may be able to conjure a simple trick or throw immense fireballs. But acts of magic have a cost; they tire the mage, forcing him to recover after strenuous use. I also placed focus on this physiological aspect: there was an interplay between a mages' levels of power and their bodily health.

In Canavan's work, there is a similar dynamic. Dark magicians, to take one example, could draw from other people's power in order to strengthen themselves. Of course, this required them to draw blood and form a connection with their target. These limitations served to make the magic system consistent—thus avoiding the trap of amateur fantasy, where magic can do apparently anything.

The reader may now point out that science is not (just) about *facts*; it is about *method*. It's necessary to have an internally consistent magic system, otherwise any kind of experiment would never be repeatable—but while it is *necessary*, it is not *sufficient*. Mages must also make attempts to realise how magic works using the means we recognise as science: mathematics, repeated experiments, and academic journals. They must attempt to *understand* the world around them; to have justified true belief, that is, knowledge.

And this is indeed precisely what happened in my novel. My mages were learned, bookish people—holding vast libraries of spellwork and experiments done into the nature of magic. (Like the natural world, magic happens

to be very complex.) They engaged in lively debate on the workings of telepathy or the peculiarities of dragons. Trudi Canavan created a similar world, where the main characters strived to discover how both dark magic and healing magic worked.

Science fiction is not always about science; it may seem like it, ostensibly, but scifi at times merely uses science as a facade for pseudo-scientific techno-jumbo. Fantasy is indeed fantastical; but even so, it can be fantastical in a consistent, logical way, different from our reality only in the empirical contingencies. While magic may not exist in our world, we can recognize mages as fundamentally akin to scientists: seeking answers, building on past knowledge, and trying to conceptualize complex reality into formal theoretical frameworks. Or, in less prosaic language, they try to mold the world into making sense.



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