

Getting There - Designing a Spaceship

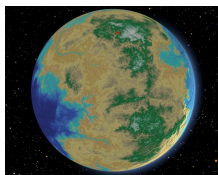
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Date : June 29, 2019



Foalen's Destiny

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What's a good sci-fi story without a spaceship?

If you read any good science fiction writers' blogs, you'll probably come across the debate regarding space travel – is faster than light (FTL) travel “science” or “fantasy”? Many hard-core, conservative writers will claim that having FTL spaceships in a story violates “science as we know it”, and therefore, the story is strictly a fantasy (e.g., not based on scientific principles). These writers like massive colony ships or small cryogenic ships, generally utilitarian in appearance, made of grey, micrometeorite-pitted metal, and traveling at sub-light speeds for decades or centuries. However, these ships also violate the principles of “science as we know it” in their own ways ... we lack the technology to build a moon-sized colony ship with sufficient gravity and support systems to keep people alive for generations, and we have yet to freeze and successfully revive a

person.

As a scientist, I am happy to note that the term “science fiction” contains the word “fiction”. While it is great to have a story as science-based as possible, in the end, it is a work of fiction, and hopefully the engaged reader realizes this. Therefore, I employ FTL ships in my stories. My main rationale for this is that I am interested in the interplay of different cultures arising on different planets within a specific region of space. Without FTL, this is essentially impossible in any sort of real time way. Science fiction stories without FTL are basically tales of isolation – people isolated in ships for generations, cultures isolated from each other as a result of the incredible time lag between communications, individuals isolated from their time when they are revived many centuries after the start of their voyage. While these themes may well interest some authors, they are not the grist that runs through my mill.

Interestingly, at the end of the day, my theories for FTL travel are just about as scientifically valid as those for colony ships and cryogenic ships. I use the following concepts:

Antigravity. Surprisingly, most hard-core sci-fi writers employ antigrav, although the scientific basis for this in the past has been limited. However, a number of research groups are now active looking into possible mechanisms for antigravity, including [quantum entanglement](#) and [antimatter](#).

Propellant-less electromagnetic drives. NASA is currently testing such a [drive](#).

Re-usable heat shielding (to allow easy and repeated re-entries into the atmosphere), for example something like [ceramic aerogels](#).

High tech photoelectric film for generation of electrical energy (to power the ship’s systems), possibly an extension of our current [thin-film solar cell](#) or [solar window](#) technology.

Light-weight batteries with high energy density. There’s lots of [research](#) going on in this field.

And lastly, and most hypothetically, “gates through n-dimensional space”, based on concepts like the [Alcubierre drive](#) and [M-theory](#) in physics.

Scientific validity aside, remember, when all is said and done, it’s fiction, not fact, that I’m writing.

The model shown at the top of this blog is of a spaceship called *Foalen’s Destiny*, which plays a significant role in my first novel. I based my design on the following criteria:

Using the technology described above, the ship takes off from a ground facility, exits the planet’s atmosphere and flies out to a point just outside the gravitational well of the planet, creates a tunnel through n-dimensional space to the destination planet, arrives just outside the gravitation well of that planet, traverses its atmosphere and lands on the surface. Very little transit time is spent in “outer space”. This is definitely not a “deep space” ship, and most of its design features address passage

through planetary atmospheres. In particular, such a ship needs to be aerodynamic and would likely have wings of some sort for atmospheric maneuverability.

Although it uses antigrav, and a box-like shuttle design could be feasible, wings also provide extra safety, as they can be used for gliding should there be engine failure.

The *Foalen's Destiny* is involved in peace-keeping activities. In this role, it must be able to out-run, out-maneuver, or out-shoot hostile ships.

The people who built the ship are humans living on a nearly Earth-normal planet, so atmospheric density and gravity will be similar what we design for on Earth. The shape and size of features on the ship will be tailored to the human anatomy. The planet also has typical Earth-like avifauna, which would have likely influenced the design of flying machines, as they have on Earth.

The ship comes from a high tech and strongly artistic society. Materials are likely to be composites, and include metals, organometallics, cerametics, and other novel substances. It is unlikely to be simply a dull grey metal box, but will likely have both color and grace in its design. Since it does not spend long periods of time in space being pitted by micrometeorites, it will be shiny rather than worn, in contrast to the more recent sci-fi trend towards depicting space vessels as heavily lived-in, industrial or pragmatic.

Ultimately, I chose a design that took some of its elements from the modern fighter jets of today, which have many of the functionalities I wanted.

The next step was figuring out how to create the image I had in my head as a Blender model. After looking at a number of models and reading many tutorials, I finally decided to use a modular kit (kind of like Lego for spaceships). In particular, there was a freely available model called the [Space Sparrow](#) which had many of the components I had envisioned.

So ... here's *Foalen's Destiny* ...



Foalen's Destiny

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