

FOREWORD

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Science fiction (sf) has always served as a test bed for the future. Long before humans set foot on the Moon, the technical challenges and social implications were thrashed out in detail in stories and novels. The ships, the spacesuits, the launch and landing sites, the hazards of the space environment, the qualities and skills required from the crew – all were presented in endless variations from the most plausible to the most fantastic tales. Furthermore, both sorts of fiction inspired generations of scientists, engineers and astronauts to live out the dream.

Interestingly, sometimes the most ridiculous fantasy can have the deepest impact. While researching the history of Mars science fiction for the Planetary Society's *Visions of Mars* DVD sf collection (now on Mars aboard the Phoenix lander) I found to my surprise that some of the most serious people had been inspired by the silliest fiction. Rocket pioneer Robert Goddard was strongly influenced by Garrett P Serviss' now-forgotten *Edison's Conquest of Mars* (1898), a completely unauthorised sequel to H G Wells' *The War of the Worlds*. It so impressed Goddard that he had an epiphany in which he saw his life's work as creating a method of interplanetary travel. Carl Sagan became Mars-enchanted by Edgar Rice Burroughs' swashbuckling John Carter of Barsoom novels. Meanwhile, for many of us, the first Martian we ever met was the Warner Brothers' cartoon character Marvin Martian. It is not the quality of the science that determines the impact of the fiction.

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The same can be said for sf's role in envisioning interstellar travel. The first starships appeared in the early twentieth century, when artists illustrating stories written for pulp magazine or newspaper comic strips invented the genre of sf art. These earliest spaceships were unencumbered by any engineering concerns. Just imagining the existence of such ships was hard enough, never mind how they looked or worked. The spaceship was a new concept; who could say how it would look?

Along with still images, from the beginning of movies there were filmmakers creating their own visions of starships. In what has become a film icon, George Melies' *A Trip to the Moon* (1902) has a scene where the Man in the Moon has his eye impacted by a vehicle from Earth. In the 1930s the sf pulps found a cinematic counterpart in Flash Gordon and other adventure serials, often based on popular comic strips. A more serious attempt was made in *Things to Come* (1936), a British film version of the H G Wells novel where a Europe destroyed by war takes a century to rebuild itself into a modern, scientific, perfect society, symbolised by the launch of their first vehicle into space. "It's the Universe, or nothing," is the bold conclusion of that great film and it can still send a shiver up your spine – and is, I suspect, the core belief of many space enthusiasts.

After World War II rockets were no longer science fiction and a new mania appeared, centered on UFOs – alleged flying saucers from other planets. Many movies imprinted their image of spaceships or flying saucers on the popular imagination: *The Thing from Another World* (1951), *The Day the Earth Stood Still* (1951), *Earth Versus the Flying Saucers* (1956) and *Forbidden Planet* (1956). When television entered the culture, spaceships appeared on that new medium as well with *Tom Corbett, Space Cadet* (1950–55) and other space adventures for children. The 1950s ended with *The Twilight Zone*, which brought science fiction to adults in prime time television, featuring many stories about spaceships of one sort or another.

In the 1960s, *2001: A Space Odyssey* and *Star Trek* set the standards for adult oriented sf in films and television and the look of their ships became the iconic images of space vehicles. The ships in *2001* were as strictly engineered as if they were real spacecraft. Writer Arthur C Clarke's incredible knowledge about

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the topic, combined with Director Stanley Kubrick's obsession for perfection in every detail, put that film into a class of its own, setting a high standard for everything since, especially the look of spaceships.

As for the original *Star Trek*, well I still have a fondness for the first Enterprise, tacky as the sets and models were compared to later incarnations of Starfleet. They did not have Kubrick's budget either. The original series was ahead of its time in many ways, including a female black officer in the crew for example. It was also ahead of itself in the graphics possible on television.

In the mid-1970s computers began to remake both media. At first, cameras could be programmed to make complicated moves repeatedly, allowing for more convincing compositing of physical models, backgrounds, and actors, with *Star Wars* (1977) being the wildly successful result. This movie was followed soon by *Close Encounters of the Third Kind* (1977), which showed how polished and intricately crafted spaceship models could be. The mothership in *Close Encounters* was beautiful as a Faberge egg – a long way from the sparking and smoking thermos bottle spaceships of Flash Gordon. For a few years, special effects in films became a hybrid of techniques, combining traditional model and cel animation with liquid-into-liquid tank and lighting effects and, increasingly, digital graphics. *The Last Starfighter* (1984) was, I believe, the first film in which the ships were completely digital, using no models at all (not counting 1982's *Tron*, which was set inside a computer). Meanwhile, the likes of *Space: 1999* (1975–77) and *Battlestar Galactica* (1978) brought this revolution to television.

In the decades that followed the need for models and painted backgrounds diminished as digital images became more complex and realistic. Significantly, *Star Trek* was reincarnated with a new level of detail and plausibility.

Star Trek: The Next Generation (1987) and the subsequent series in Roddenberry's universe – *Deep Space Nine*, *Star Trek: Voyager* and *Enterprise* were unusually self-conscious and intentional about their powerful societal role in expressing an optimistic vision of a positive future. The lavish sets and thoughtfully designed technology took the future very seriously, creating an internally consistent (if fake) future physics. Dilithium crystals may not exist in

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reality, but aboard any Starfleet vessel they worked the same way and required the same precautions. The series' producers took their invented physics seriously enough to spend a lot of time and money on the architecture of the ships, weapons, and astronomical backgrounds. Technical manuals were published and studied by fans who wanted to know how to get to the ship's bar in Ten Forward, as well as the configuration of weapons on a Romulan warbird. The intensity of the devotion of the fans – Trekkies (or Trekkers) becoming the embodiment of all sf fandom – was not lost on NASA, who took every opportunity to leverage the popularity of the series into support for the American space programme. You just could not ignore a television show so popular that it had fans learning fake alien languages (at least one opera has been written and performed entirely in Klingon, while in more than one family, Klingon is the language used within the home). Unlike the *Star Wars* universe, which was pure adventure fantasy “long, long ago and far, far away,” the *Star Trek* universe seemed like one that might actually be near and close, maybe just a century or two away.

Star Trek helped evolve a standard look for starships employing a common set of visual conventions – stars smearing during warp drive, lots of little lighted windows giving the ship its scale, a complex maze of panels and pipes, vents and valves studding the exterior surfaces (that one started in *2001: A Space Odyssey*). Ships like this flew through many movies; the number of sleek and slick starships became too many to count. Yet like the branching twigs on an evolutionary tree, they all trace back to common ancestors. A consensus interstellar future has acquired a characteristic look agreed to by nearly all fans, that shapes our concepts even in serious discussions of real starships.

At some point in the last third of the twentieth century the cinematic and video images replaced book and magazine illustration as the dominant influence on popular culture and the public imagination. If you ask anybody to think of a spaceship, it is far more likely that they will summon up the Enterprise or the Millennium Falcon rather than anything described by Robert Heinlein or Larry Niven. Both writers have masterfully described their starships far more plausibly than anything on film or television, but it is not their ships we dream of.

Carl Sagan,
on the set of
Cosmos in his
'starship of the
imagination'.



Carl Sagan's *Cosmos* television series (1980) presented a different approach to the problem of getting around quickly in this vast Universe. Early in the production of this 13 episode series, for which I was Chief Artist, there was a problem imagining the sort of vehicle in which Carl could travel to cosmic places he was describing. Executive Producer Adrian Malone absolutely wanted a place where Carl was talking from, a "spaceship of the imagination". If Carl were merely a voiceover narrator, the animation would lose the sense of the series subtitle 'A Personal Voyage'. He had to be in some sort of vehicle.

However, Carl did not want a ship of the type seen in *Star Trek* or *Star Wars*. Even if he had preferred a ship Han Solo would pilot, I would have argued against it. We were in production at KCET-TV in Hollywood at the same time as both *Star Trek: The Motion Picture* and *The Empire Strikes Back* were in production. We had seen some effects-industry previews of the work on those films and I knew we could not compete against animation budgets like Paramount's or Lucasfilm's. We needed a different look entirely, so I pulled out a painting that I had done a year earlier. Called 'Starseeds', it shows a metaphorical blend of astronomy and biology. (Carl Sagan got me started on this theme when he had commissioned me to do a painting called 'The Backbone of Night', which also ended up in *Cosmos*. I became fascinated by the poetic possibilities of combining