Newspapers In Education and the Washington State Fair present

BIG in the Future: STAR TREK AND SPACE

"Star Trek: The Exhibition" is The Washington State Fair's special exhibit featuring the science and technology behind the popular TV series, "Star Trek." *Let's explore the science of space!*

SPEED: REALITY VG. FICTION

What qualities

does a planet need in order to

support life and

be habitable?

If you've ever watched a video of a rocket launch, you'll remember seeing enormous clouds of smoke and flmes as the spacecraft lifted off. The vessels in Star Trek, on the other hand, don't have rocket engines and don't shoot out hot exhaust gases. This is because in the show's imagined future, scientists have made major breakthroughs in physics and propulsion. These advances—unknown to present science—allow a starship to "push" against something other than rocket exhaust.

Known as warp drive, these fictional engines give starships the ability to travel at many times the speed of light. With warp drive, distances that would take tens of thousands of years to cover with today's technology can be reached in just a few hours or days. A Star Trek-like propulsion system would make a lot of people very happy!

IS ANYONE OUT THERE?

When it comes to space, you'll often encounter numbers so big that they give people headaches. It's estimated that the visible universe has about 170,000,000,000 galaxies (the Milky Way being one of them) with a total of 300,000,000,000,000,000,000,000 stars between them (the sun being one of them). As it's often said, there are more stars in the universe than there are grains of sand on all the beaches in the world.

To date, only a few planets that could support life have been identified, but scientists have a way of making a guess about the total number of habitable planets in the universe, and indeed, the number of civilizations like ours that could be out there—the Drake Equation. The Drake Equation works by using factual estimates on the number of stars in a galaxy and the fraction of stars that have habitable planets, along with guesses on the fraction of habitable planets that develop life and the fraction of life that becomes intelligent.



Conservative values put the number of habitable planets in the universe at 50,000,000,000,000,000,000 (50 quintillion) while some optimistic estimates go up to 10,000,000,000,000,000,000 (10 sextillion). Based on optimistic estimates (that 15 percent of habitable planets develop life, and that 1 percent of life becomes intelligent enough to reach out to space), there could be 84,000 human-like civilizations in the Milky Way alone! Whether or not we'll one day have alien neighbors like the Vulcans, Klingons and Romulans of the Star Trek universe remains a mystery. All we can do is keep looking.

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170,000,000,000

Number of galaxies in the visible universe

Total number of stars in those galaxies

300,000,000,000,000,000,000

Number of habitable planets

GCI-FI TECHNOLOGY

From the beginning, science fiction movies, TV shows, comics and books have been stages for people to imagine far-fetched technology that didn't exist in our world. Laser weapons, cloaking devices, teleporters, time travel machines; the list is endless. While most of these technologies have remained nothing more than fictional, a number of them have made the leap to the real world. For example, Jules Verne wrote about sending a man to the moon in his 1865 novel "From the Earth to the Moon." The 1909 short story "The Machine Stops" by E. M. Forster predicted instant messaging, and David Brin's 1990 book "Earth" envisioned the Internet as it is today.

"Star Trek" also inspired a number of gadgets that are a part of our daily lives. Traces of the Personal Access Display Device (PADD) can be found in today's tablet computers, Google Earth is said to have been inspired by Spock's Tricorder and universal translators exist in the form of Google Translate and phraselators (speech-to-speech translators). But perhaps the most important innovation based on an idea from "Star Trek" is the mobile phone. The inventor of the mobile phone, Dr. Martin Cooper, got his inspiration directly from Captain Kirk's Communicator.

What other technological innovations have you seen on TV? Do you think these innovations will ever become a reality?

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"Star Trek: The Exhibition" brings visitors into the Star Trek universe and allows them to connect with iconic Star Trek moments. Fans and novices alike will enjoy a first-hand interactive experience, exploring the worlds, wisdom, science, stories, cultures, characters, fashions and fantasies of the Star Trek universe. Among the main attractions of The Exhibition is the opportunity to sit in the legendary Captain's chair, where Captains Kirk and Picard took command of the U.S.S. Enterprise; the opportunity to pose in front of a replica of the U.S.S. Enterprise; and one-of-a-kind displays, interactive kiosks and rare photo opportunities. **"Star Trek: The Exhibition**" is a paid special attraction and requires an additional ticket.





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