Elements of Science Fiction

While writing Historical Notes for the past 80 months, I have also been writing science fiction novels and am now facing several new contracts, and three unwritten novels due within the next few months. So I must finally hang up my hat as author of Historical Note.

Fittingly, my last Note presents an overview of exotic hypothetical materials proposed by classic scientific writers, extrapolated from the best scientific knowledge of their day.

From the days of the garish pulp magazines in the 1930s and 1940s, and even before, science fiction has a reasonably good track record of predicting new technologies. Some of these successes are well-known, such as the submarine, airplane, spaceflight, television, air warfare, computers, satellites and satellite communications, cloning, and robots.

Many classic science fiction stories proposed exotic new materials that were put to fascinating uses. Some of these "science fictional" materials have become reality today, such as plexiglass and high-temperature superconductors, not to mention numerous variations of "plasteel," "glasstic," and "transparisteel" substances. But some of the proposed materials are still waiting to be invented.

In 1901 H.G. Wells proposed an antigravity substance called "cavorite" in his novel, *The First Men in the Moon* (in *The Complete Science Fiction Treasury of H.G. Wells*, Avenel Books, 1934). The narrator of the story writes, "Here is a substance...no home, no factory, no fortress, no ship can dare to be without—more universally applicable even than a patent medicine! There isn't a solitary aspect, not one of its ten thousand possible uses, that will not make us rich" (p. 401).

But how does it work? The narrator explains that cavorite was "a substance that should be `opaque...to all forms of radiant energy.' `Radiant energy,' [the inventor] made me to understand, was anything like light or heat or those Roentgen rays there was so much talk about a year or so ago, or the electric waves of Marconi, or gravitation....

"Now almost all substances are opaque to some form or other of radiant energy. Glass, for example, is transparent to light, but much less so to heat, so that it is useful as a fire screen....Now all known substances are 'transparent' to gravitation. You can use screens of various sorts to cut off the light or heat or electrical influence of the sun...you can screen things by sheets of metal from Marconi's rays, but nothing will cut off the gravitational attraction of the sun or the gravitational attraction of the earth. Yet why there should be nothing is hard to say" (p. 399).

The inventor, explains the narrator, developed a way to manufacture "a complicated alloy of metals and something new—a new element I fancy—called, I believe, *helium*, which was sent to him from London in sealed stone jars. Doubt has been thrown upon this detail, but I am almost certain it was *helium* he had sent him in sealed stone jars. It was certainly something very gaseous and thin. If only I had taken notes..." (p. 399). After some playful activities with the antigravity cavorite, the adventurers build a sphere of the material and travel to the moon.

Jules Verne, whose name is often spoken in the same breath as Wells (though Verne actually wrote his most famous novels several decades earlier), was apparently upset with Wells's laissez-faire approach to science. "Where is this `cavorite?' Show it to me!" he reportedly said in disgust, "It does not exist."

Actually, Wells extrapolated his material from respectable scientific research of the day, particularly from a paper J.H. Poynting published in 1900 in *Nature* describing a series of experiments underway to discover or develop a material that could screen out gravity.

Another exotic substance waiting to be invented appears in Bob Shaw's 1966 story "Light of Other Days," which describes the material "slow glass," a transparent substance with an effective index of refraction so great that it takes light years to pass through it.

"[E]very photon of ordinary light passed through a spiral tunnel coiled outside the radius of capture of each atom in the glass....The most important effect, in the eyes of the average individual, was that light took a long time to pass through a sheet of slow glass. A new piece was always jet black because nothing had yet come through, but one could stand the glass beside, say, a woodland lake until the scene emerged, perhaps a year later. If the glass was then removed and installed in a dismal city flat, the flat would—for that year—appear to overlook the woodland lake. During the year...the water would ripple in the sunlight, silent animals would come to drink, birds would cross the sky, night would follow day, season would follow season. Until one day, a year later, the beauty held in the subatomic pipeline would be exhausted and the familiar gray cityscape would reappear" (in *Analog 6*, Doubleday, 1968).

Shaw proposed an entire industry of people who have slow-glass "farms" of scenic hillsides covered with panes of slow glass, soaking up the scenery for years. Charlatans try to pass off panes of regular glass covered with a thin veneer of slow glass "only a few weeks thick."

Most importantly, a pane of slow glass must be in phase, "A coarse discrepancy could mean that a pane intended to be five years thick might be five and a half, so that light which entered in summer emerged in winter; a fine discrepancy could mean that noon sunshine emerged at midnight. These incompatibilities had their peculiar charm—many night workers, for example, liked having their own private time zones" (pp. 212–214).

Science fiction has come up with many other substances to challenge the imaginations of materials scientists. Writers have proposed any number of impenetrable metal alloys, from "adamantium," the substance used for Captain America's shield, as comics buffs will know, to "neutronium," which is supposedly formed in a supernova collapse.

Monomolecular fibers have been used time and again, in Arthur C. Clarke's *The Fountains of Paradise*, Daniel Keys Moran's *The Long Run* and *The Last Dancer*, and my own *Lifeline* (coauthored with Doug Beason).

Twenty-five years ago in one of the first episodes of *Star Trek*, Captain Kirk outbluffs an enemy alien by claiming that the Enterprise is constructed of a material called "corbomite." Corbomite reflects and channels all incident destructive energy back to its source, thereby destroying any attacker. The enemy decides not to risk an attack. *Star Trek* also gives us "dilithium crystals" for energy storage, and the formula for "transparent aluminum" in exchange for sheets of plexigalss (in *Star Trek IV*).

These ideas have been around for decades, just waiting to be invented.

Today, it's still science fiction—but it doesn't have to be.

I have enjoyed writing Historical Notes for the past six and a half years. And for now, I am off to another galaxy....

KEVIN J. ANDERSON

Kevin J. Anderson's books include the Star Wars novels: Jedi Search, Dark Apprentice, *and* Champions of the Force; *and a recent novel about Mars*, Climbing Olympus. *He and Doug Beason have coauthored* Lifeline, The Trinity Paradox, *and* Assemblers of Infinity.

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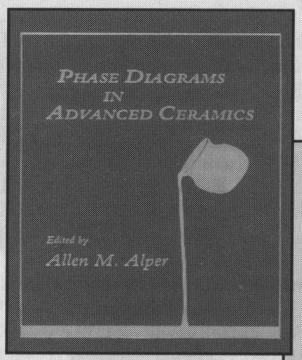

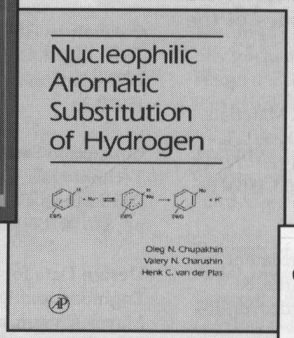

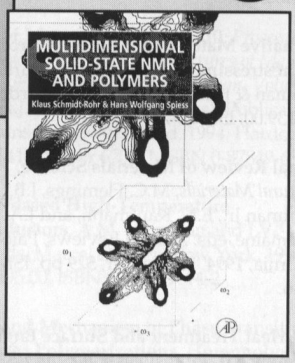

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