Imponderables

By Dale M. Gray

"Why", asked the Mad Hatter, "is a raven like a writing desk?" When Alice could not fathom the riddle, she asked the solution. None was forthcoming, but the Hatter assured Alice that if she didn't think about it, it wouldn't bother her.

Folklore tells of Alexander the Great, who upon reaching Asia Minor, beheld the Wonder of the World, the Gordian Knot. Apparently, puzzles were a going industry and the Gordian Knot was the Grand Champion of all the ancient puzzles. The Michael Jordans and Babe Ruths of the ancient puzzling world had tangled with the twisted twine and none had what it took to untie it. Alexander, after beholding the knot, deftly drew his sword and cut the twine in twain.

Imponderables such as the Hatter's query and the Gordian Knot have challenged mankind through the ages. Their resolutions often speak more of those struggling with the problem than with the problems themselves. Solutions range from ignoring the problem to resolving it through brute force. While wonderful literary devices, these solutions are not likely to appeal to those of us living in the real world. Reality demands resolution through logic, skill and hard work. A little bit of good luck thrown in is not such a bad thing either. This is the stuff of history, not literature.

We, the space community, have been facing an imponderable for forty years. How are we to move our civilization into orbit? With the political sword of Apollo, we thought we had found a solution in the late 1960s. Yet, even when the Moon was in our grasp, the political will to continue onward was withdrawn. For many, space policy in the late 1970s to early 1990s appeared to be a Mad Hatter's Tea Party when it came to a coherent solution to the problem.

However, in 1993, things began to change. Space began to act like traditional transportation frontiers. Instead of railroads, canals or wagon roads, orbital space became the pathway for the rapid transit of electronic information. Imagine, if you will, an infinite number of freight wagons full of information whizzing around the planet in ever increasing numbers and variety. Doubters that space is a transportation frontier have only to look at the stock for companies that market DISH or DirecTV.

Here we are, some 40 years after the dawning of the space age, with a multibillion dollar orbital transportation frontier. In many respects it is similar to the American West in the period between 1840 and 1863. More specifically, orbital space today resembles what was once termed the Great American Desert of the 19th Century. This "Desert" stretched from present-day Nebraska on the east to the Blue Mountains in Eastern Oregon and eastern Sierra foothills in Nevada on the west. The Oregon / California Trail provided a transportation route across what was perceived as an empty desert with few available resources. Energy, in the form of grass allowed travelers to cross the empty expanse as quickly as possible. Those in the know stated that it would be 100 years before places like Idaho would ever be settled.

This is not to say attempts at settlement weren't tried. A number of purely commercial trading posts were set up along streams or on the California / Oregon Trail. American and British fur trading companies sought beaver pelts through trade with local Indian tribes and the so-called Mountain Men. Several of these posts were situated along the Trail where they could provide some services and trade goods for western-bound families and miners. When Indian problems in the late 1850s and early 1860s caused traffic on the trail to dwindle, the posts tended to evaporate. Few had developed any permanent infrastructure or community.

In late 1860, a massacre of immigrants in Idaho (about 5 miles from the author's house) caused the US Congress to reevaluate the system of escort troops used to protect travelers on the trail. A formal recommendation was made to Congress for the construction of Fort Boise as a permanent garrison for the protection of travelers bound for Oregon, but the Civil War intervened and the plans were delayed. During the delay, the Idaho gold rush was sparked in the mountains to the north of the Oregon Trail. By 1863, several dynamic gold camps were active about a day's ride to the north and south of the Oregon Trail in southeast Idaho. While traveler safety was still a concern in Congress, plans for Fort Boise were pushed forward when national security issues were evoked. Fort Boise would assure that the gold from Idaho mines ended up in Union coffers. As a result, Fort Boise was founded July 4, 1863. The army set up camp at the junction of the Oregon Trail with the Bannock City trail to the Boise Basin mines. Three days later, the town of Boise was platted between Fort Boise and the Boise River.

From the start, Boise thrived. The pent-up need for a community along the trail focused on Boise City. The presence of a fort provided long-term security, both in terms of physical protection from assault and as a guaranteed market for local goods and services. Town and Fort benefited from shared infrastructure. Freight moving eastward on the Oregon Trail from the Columbia River to the Idaho mines found a natural distribution point at Boise. Cottage industries and farms quickly sprang up to provide that which was needed, but without the expense of transporting goods thousands of miles.

While no two frontiers are alike, the Fort Boise model of settlement bears some remarkable similarities to the present situation in orbital space. Both were / are on established transportation frontiers. Both have been long delayed by congressional and bureaucratic foot-dragging. Both were actualized by national security considerations (gotta *keep those Russian rocket scientists out of terrorist government hands*). Both entered / will enter service in frontier environments radically different from when they were first conceived (it is ironic in the first couple of years' service, Fort Boise actually spent more energy protecting the Indians from the bloodthirsty miners than vice versa). The International Space Station is being built during an orbital telecommunications gold rush. The Direct Broadcast Satellite TV frontier, GPS frontier, remote sensing frontier and satellite phone frontiers weren't even imagined when the US first considered Space Station Freedom.

So how will the International Space Station thrive on the high frontier? In many ways it is already well on its way. SpaceHab/Energia have platted the first town in space with their <u>Enterprise Module</u>. Entrepreneurs like Dennis Wingo's SkyCorp seek to create cottage industries in space. SkyCorp proposes to conduct final assembly of communications satellites on the Station to radically reduce the cost of telecommunication satellite manufacture and launch. Boeing, SpaceHab, DASA, Alenia-Spazio, and Bigelow Aerospace have signed a Memorandum of Understanding (MOA) for the construction of an inflatable "TransHab" which will serve as crew and guest quarters -- a frontier hotel.

For those who yearn to see civilization in space, consider the families that traveled the Oregon Trail in the 1860s. Civilization was far away and Congressional promises for a fort meant little in the midst of their immediate dangers. Yet the 19th Century version of a space station was created in the wilderness only three years later. Fort Boise did have a profound effect on the safety of the trail, but the unforeseen ramifications soon far outstripped any of the original considerations. Boise City was established on July 7, 1863. Within 18 months it became the capital of Idaho Territory. Streets, irrigation canals, stage lines, telegraph, railroad, and electrical lines followed. The city completed the 19th Century, not as a wilderness outpost, but as an integral part of the American civilization. For those who would lift the veil on the future fate of the International Space Station, I would recommend a visit to Idaho to soak in its vast empty spaces, observe its communication networks and see for themselves what has become of the town sparked by the founding of Fort Boise.

The real-life solution to an imponderable is never easy. The establishment of a human civilization in space is no exception. For those who wish a smooth transition from terrestrial to orbital society, seek it in literature. Real life is rife with mistakes, miscalculations, corruption and plain bad luck. This we have seen in plenty in the development of the space station. The greater the problem, the greater the ordeal to find a solution. Considering the climb to LEO is no less a change in environment than descending from the trees to the African plains, we can expect the ride to get much rougher.

We are in the midst of an epic change in human civilization. Future historians will view this age and discuss the ramifications of brain-drain on software development, Proton second-stage engine quality control, and the decline in the Russian economy as factors that effected the speed with which civilization moved upward into space. As years pass, the move to space will be put on a par with Columbus' discovery of the New World and will eventually eclipse it in the annals of significant human events. While we agonize over every new delay of the Service Module, for future school children studying their history, the construction of the International Space Station will have occurred in the blinking of an eye. We cannot stop the future from occurring; we cannot alter our past. We do have the great gift of standing in the present with the challenge of overcoming enormous obstacles, thereby changing the course of human events.

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