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## Society and aerospace technology

When the subject of funding for civil space programs is broached, the "public will" or "public mood" is usually cited as well. It is clear that when the public will for a space project is lacking, so too are the needed funds. But conducting an accurate annual national survey on the issue would likely cost as much as running some spaceborne experiments aboard the ISS.

Fortunately, the social sciences have other means at their disposal for gauging the public mood about space. Specifically, a recent analysis of 1,027 space-themed popular songs from around the world has provided a useful gauge of the public mood toward space over time, beginning with the start of the space race. The analysis was performed by Thomas Gangale, an author of this report and a member of the Astrosociology Subcommittee of the AIAA Technical Committee on Society and Aerospace Technology. The analysis reveals some surprising patterns.

Many U.S. and British songs use outer space as a metaphor rather than being specifically about human spaceflight; only a few songs celebrate particular space missions. Science fiction themes are more prevalent, especially Star Trek themes. The UFO phenomenon was captured in popular music from the very beginning (1947) and continues today. The first Sputniks inspired a flurry of rockabilly songs. Space jazz was pioneered in the mid-1950s and continued through the 1980s. Surf music also displayed an early affinity for the adventure of spaceflight. "Trek rock" has been a niche for pop groups in both Sweden and the U.S.

By contrast, Soviet songs were specifically about the heroic adventures of the cosmonauts. Even modern Russian music tends to be more grounded in the reality of human spaceflight in Earth orbit, or in the foreseeable possibilities of travel in the inner solar system, rather than in interstellar science-fiction visions set in future centuries.

It appears that the rest of the world mourns America's fading space glory much more than the U.S. itself does. Songs on the subject, particularly in the U.K., lament the passing of the Apollo years, or, as in Canada, satirize the wildly optimistic literature that baby boomers were raised on.

Peaks in the numbers of songs produced occurred in the 1960s for the U.S. and the USSR. This is not surprising, because the space race was on. But by 1971, the 10th anniversary of cosmonaut Yuri Gagarin's first flight, the top-down music culture directed by the Communist Party was dead. It appears that Soviet culture, in terms of the production of space music, was rather anemic, whereas in contemporary bottom-up Russian popular music, space themes are literally rocketing to new heights. Also on a steep ascent are songs in the aggregate from countries other than Russia and the U.S. Meanwhile, U.S. production of space-themed songs may be in decline after having reached a second peak in the first decade of this century.

In the U.S., the later peak likely reflects the various discoveries concerning Mars made in the late 1990s and early 2000s; public in-

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terest in the Hubble space telescope, space shuttle, and ISS news; and policies about returning to the Moon and sending humans to Mars. The downturn seems to track with decisions on retiring the shuttle, withdrawing from the ISS, and shutting down the Constellation

Despite the slump in space-themed songs from the former space race rivals, such music from the aggregate of other countries has demonstrated steady growth and is now in almost as sharp an ascent as that of modern Russia. What can this mean? It is likely reflective of the investment by other nations in the civil space enterprise: China has orbited taikonauts, India has mastered splashdown technology, and a supranational Europe has taken the lead in partnering with other nations on space projects.

by Marilyn Dudley-Flores and Thomas Gangale