

Tribute to Max Faget (1922-2004)
By James Oberg

Visiting my neighbor Max Faget at his home on the banks of Dickinson Bayou here in rural Galveston County, Texas, was like a trip into a space museum. But one of his favorite mementos actually allowed me a trip into Faget's mind, the source of inspiration and intuition that conceptualized and designed America's manned spacecraft from Mercury to the Space Shuttle.

It didn't look like much – just a small wooden plaque with a sheet of blue mylar plastic, and a name of a test flight, with its date. But as always with Faget, looks could be deceiving.

In the early 1960's, one of the Apollo design questions was how much heat shielding would be needed on the lee side (opposite the heavily-shielded front end) of the Apollo capsule, to protect it when it reentered the earth's atmosphere upon returning from the moon. "Based on intuition, not calculations, I said you didn't need to put anything on it," Faget told me "But the people who were doing calculations were ultraconservative. They put about an inch of ablative material on the lee side."

But when the first capsule returned from an unmanned high-speed reentry test, the lee side heat shielding wasn't even singed. In fact, the plastic dust cover was still in place.

Faget laughed: "So my intuition would have saved at least four or five pounds a square foot, carried all the way to the moon and back, absolutely useless." It was a small design feature, but Faget took pride in his "good guess". He had made thousands like it in his career.

Shortly after his retirement from NASA twenty years ago, a newspaper article hurt Faget's feelings by attempting to praise him in literary metaphors. It had called him "a cross between Tom Swift and Yoda", intending to compliment his technical genius and wisdom, but also inadvertently mocking his relatively small physical stature. Faget was stung -- but for us younger 'rocket scientists', immersed in 'Star Wars' movies, Yoda's cinematic words rung true ("You think size matters?) and we all thought the praise was respectful, well-earned and appropriate.

Besides, Faget always knew how to wring the maximum advantage out of his own mind and body, as he did out of every space vehicle he developed. In the early 1960's, on long cross-country inspection trips in an unpressurized NASA transport, he would start up a poker game as they neared the Rockies, and then watch closely the color of the nails on the hands of his opponents, other senior NASA officials. As they paled at high altitude, indicating a lowered oxygen flow, Faget (himself an experienced submarine officer from WW2 who knew about breathing) began bluffing wildly, bamboozling his diminished-capacity associates into major misjudgments. But he never succumbed to muddled thinking, neither at the card table, nor the drawing board.

One thing he did suffer was anonymity. Faget just was not the stuff that media dreams are made of. Shy and diminutive, he was possessed of whimsical intonation, an uninspiring appearance, and a predilection for bow ties. So he remained in the background all those years, invisible to the

public but indispensable to NASA, while others appeared on magazine covers and TV broadcasts.

He told me he didn't really mind, and he scoffed at the notion of being the "chief designer of American spaceships," in the Russian tradition of 'chief designer Sergey Korolyov' "This is not that kind of country," he said. "Nobody is appointed by the king to be the royal spaceship designer.

Still, as a key player in the space race, he crossed paths (at least mentally) with Russians. And in one case, without even trying to, he saved the lives of two cosmonauts. By wonderful coincidence, more than a decade later, I had the immense pleasure of arranging for them to thank him personally.

It came about through his normal duties of inventing space hardware. To pull a manned capsule off a malfunctioning booster, Faget adapted the design of a 'tractor rocket' his team had used for aerodynamics testing, and built the 'escape tower' mounted atop Mercury and Apollo vehicles (Gemini used ejection seats, but the shuttle later went back to a lanyard-mounted tractor rocket for emergency crew bailout).

It was such a good idea that the Soviet space program abandoned its original ejection seat design to install an 'escape tower' on its Soyuz manned spacecraft and on the 'Zond' capsules they built to send men to the Moon (a project they cancelled after Apollo succeeded). The Chinese, too, have installed a Faget-style 'escape tower' on their Shenzhou spaceship.

In September 1983, during the final countdown for a launch at the USSR's Baikonur Cosmodrome, a pad fire suddenly burst forth and the rocket began tilting over. Within seconds, the crew would be incinerated.

Then the escape tower fired and pulled the two cosmonauts to safety, via a severe burst of speed that broke the sound barrier in about two seconds. After an emergency parachute descent, they returned to Earth shaken, empty-bladdered, but alive.

Faget was delighted to hear about the incident, but had one complaint. "No one has ever come and thanked me," Faget told me with a chuckle. "Whatever they give, the Red Star or whatever, they've never given it to me.

Yet it came to pass, as space races metamorphosized into space partnerships, that those very same two Russians came to the NASA space center in Houston. One (Vladimir Titov) was there to prepare for a shuttle flight, and the other (Gennadiy Strekalov) to train for the first American visit to Mir. It was a 'space window of opportunity', so I called 'Hoot' Gibson, chief of the astronaut office, and proposed a ceremonial luncheon. He was delighted with the idea.

Faget got his medal – a Russian space medallion contributed by an American space lawyer named Art Dula—and shook the hands of the two men who had used his design to stay alive. Through interpreters, they exchanged tall tales well into the afternoon (I took notes – but that's another story!). It was a 'space rendezvous' unimaginable in the old 'Space Race' days., and it

seemed to me that Faget enjoyed that medal more than many of the long parade of official aerospace honors that he also had collected – and he had a heroic collection, as official obituaries will yawningly catalog.

Faget leaves the planet at a particularly exciting time in space engineering, as the privately-designed SpaceShipOne, under Burt Rutan's leadership, opens the route for commercial space travel. Faget was fascinated by that project, and actually attended the April 2003 roll-out of the vehicle at Mojave, California.

“There was a mutual admiration and respect for each other,” his daughter Nanette Cerna (herself a ‘rocket scientist’ at NASA) told the ‘Houston Chronicle’. “He was thrilled at Burt’s innovative design and very excited that Rutan was going to make it into space. He was cheering him on.”

Faget knew what it was like to compete with NASA, too. After his retirement he headed the development of several space projects, including a prototype ‘space factory’, that he thought would have been able to perform many of the functions officially reserved for the bloated and faltering ‘Space Station Freedom’ effort. Worried that Faget’s cheaper and faster way might diminish congressional support, NASA officials and their congressional allies saw to it that Faget’s private project was strangled in its crib.

The affection Faget held for Rutan’s work signified he saw in him a kindred spirit, an intuitive innovator who worked outside the world of behemoth bureaucracies. This was the kind of man Faget himself had been when he helped open the way to the moon, and later tried to find a non-government way to commercialize space.

More people with those qualities will be needed when it’s time to tackle future space frontiers. But Faget showed how it has to be done. Now it’s time for the formal honors – ceremonies on Earth, his name on craters and asteroids, perhaps some of his ashes carried into space, whatever. Whatever we can now do are all only feeble echoes of his spirit already voyaging off the planet, now and when he was alive, showing the way.