

Honesty and denial at NASA

The world's leading space agency is suffering not only from managerial dysfunction, but also from a failure to address strategic issues. NASA and its stakeholders need to face up to the challenges ahead.

The investigative board charged with finding the causes of February's explosion of the space shuttle Columbia turned in about as good a report last week as anyone could have asked. In clear, direct language, the panel, which was led by retired Navy admiral Harold Gehman, spelled out what has gone wrong — technically, politically, even sociologically — with the space-shuttle programme since its inception almost 30 years ago. The accident had several causes, but one of the board's conclusions looms larger than the rest: NASA has become "an agency trying to do too much with too little".

After the report was released, NASA administrator Sean O'Keefe said all the right, contrite words. "We get it," he assured reporters. The question is whether anyone else in Washington does, and how long the willingness to change will last. Missing from politicians' comments about the report was an acknowledgement that they, too, had been indicted, along with the shuttle-programme managers who became lax about safety.

Gehman's report accurately describes the dysfunctional relationship that has developed between the space agency and those in the White House and Congress who fund it. NASA no longer has anything like the budget or the political mandate it enjoyed in its glory days. But rather than scale back its wish list, "NASA continued to push an ambitious agenda of space science and exploration, including a costly Space Station," the report says. The agency got into the dangerous habit of promising what it could not deliver. Meanwhile, NASA's overseers in the White House and Congress, who surely suspected that the agency was stretched too thin, suppressed their own doubts, just as shuttle engineers ignored worries about falling foam.

Everyone involved in funding the space programme has been in a state of denial. And now it is time for honesty. First, admit that space travel is inherently risky; worse, that it is risky and expensive. More funding will help — in fact, it's essential — but it cannot guarantee safety. So if we want to continue sending people into space, we should expect to keep paying in both money and lives.

Money pit

Nature has argued that science alone can't justify the astronaut programme, but that a desire for adventure and an expansion of the human spirit certainly could. To be truly inspiring, though, NASA will need to venture once again beyond Earth's orbit — an expensive and technically daunting undertaking.

In the meantime, there's the International Space Station to finish. Few Americans, even space aficionados, have much interest in that project, which has a history every bit as troubling as the shuttle's. Before President Ronald Reagan approved the station in 1984, key members of his cabinet, including his secretaries of defence and treasury, opposed it as a money pit of limited utility. White House science adviser George Keyworth was among those arguing at the time for something more grand, such as a return to the Moon. But NASA administrator James Beggs and his staff calculated that the (then) \$8 billion station was all they could get away with politically, and convinced Reagan to endorse it.

Many advocates of a bold space programme would love to have that moment back. In the years since, it has often seemed that the space station, with its constant political and budgetary woes (the price tag is now \$24 billion, not counting the cost of launch and operations), is preventing rather than enabling more ambitious space exploration. Yet the United States and its partners — Europe, Russia, Japan and Canada — will finish the project they started, primarily because it would be too embarrassing to do otherwise.

What then? Gehman's panel has called for a national debate on America's goals in space. It's difficult to imagine the United States turning its back completely on human space exploration, but any ventures bold enough to be worth the risk will require substantially more investment than the country has been willing to make since the days of Apollo.

Making a difference

Among those awaiting a solution to this dilemma are the managers of NASA's science programmes, who have their own financial woes and schedule pressures — witness the recent debate over whether to extend the life of the Hubble Space Telescope after its funding runs out in 2010. Science missions are not immune to the cultural problems that plagued the shuttle programme. Managers of the two failed Mars missions of 1999, for example, were unrealistic about how much they could accomplish on a tight schedule and skimpy budget. Gehman's analysis of shuttle workers could just as well have applied to them: "No one at NASA wants to be the one to stand up and say, 'We can't make that date.'"

Virtually every science project at NASA is running perilously close to its cost and schedule margins. Yet the agency keeps proposing new multibillion-dollar initiatives, such as the Prometheus nuclear propulsion programme, which would enable ambitious missions to explore the outer Solar System, and the Beyond Einstein missions to study black holes and dark matter. If NASA presses on with human space flight but does not receive substantially more money, there is little hope that these new science programmes will survive.

Cancelling new and exciting science initiatives to pay for a half-hearted astronaut programme that intends merely to keep circling the Earth for another decade or two would be an unacceptable outcome. So the point bears repeating: the United States should either be prepared to invest more money in human space flight, in addition to NASA's current budget, or walk away from the challenge.

The window of opportunity for honest debate on this topic may soon close. Gehman's report was released in the doldrums of August, a time when few lawmakers are in Washington. Now that the verdict has been heard, the press and public will shift their attention elsewhere. Attempts at reform could easily get lost in the fine print of appropriations mark-ups and budget negotiations, to which few people outside the Washington establishment pay attention. Last week Gehman warned about the risk of "backsliding" to old habits, and issued his own call to action: The loss of the Columbia astronauts' lives "had better make a difference, or they and we will have wasted our time". ■