

Opinion: SpaceX explosion shows why we must slow down private space exploration until we rewrite law

September 13 2016, by Gbenga Oduntan



The crew of Space Shuttle mission Challenger flight 51-l tragically died after an accident. Credit: NASA

The recent [explosion of a SpaceX Falcon 9 rocket](#) during a test on a launchpad at Cape Canaveral may have opened a Pandora's box of legal problems previously only discussed with hushed voices in space law circles.

While there is an international [space law](#) that sets out a general framework for the conduct of all space activities – including those by private firms – most of it was developed decades ago, before the rise of commercial space exploration. It is in fact not entirely clear how much regulation of space activities by private companies currently exists – particularly in relation to the liability for accidents.

The ultimate blame for the Falcon 9 crash will only emerge after [full investigations](#) are complete. But if the fault does lie with SpaceX, there are reputational consequences and insurance costs for future launches for the company will likely shoot up.

Government space programmes like NASA and the European Space Agency are certainly not immune from catastrophic accidents. If NASA was a car driver, its licence likely would have been revoked on account of the number of tragic explosions. In five of the worst NASA accidents since 1967, [17 brave astronauts have lost their lives](#) and several experimental rockets, space vehicles, satellites and space shuttles have been lost. But the sharp increase in private space exploration makes it important to reconsider how the legal landscape has changed.

When space accidents do happen, the rules that govern them are contained in a confusing patchwork of agreements and treaties. If an accident occurs on Earth, the liability will depend on national rules, such as the general principle of international law that holds corporate companies responsible for damages. But the Outer Space Treaty (1962) says that a state launching a probe or satellite shall be absolutely liable to pay compensation for damage – even when an accident happens on the

surface of the Earth.

It can, however, be unclear whether the accident happened in airspace, meaning national aviation laws can apply, or in fact in [outer space](#). Thus, it is becoming increasingly important to determine the exact boundary between airspace and outer space territory. This is important to work out as lawyers will always try to exploit unclear frontiers.

Even in cases where it is clear that space law applies to an accident involving a private company, liability is still a tricky issue. According to space law, the state where the launch takes place and which registered the space object is ultimately responsible. But a private company can be registered in a different state to the launch country, creating a lot of confusion. A solution could be to say that the state registering a certain space probe should be liable. This state would then be free to compel the company to pay damages.

A rise in serious accidents?

It is only a [matter of time](#) before we see more than just launch explosions. The risk of serious space accidents will increase as the number of space objects in orbit extends into thousands. The advent of private activities will also exacerbate the problem of space debris, perhaps as private commercial use of the seas has polluted international maritime spaces. The collision of [the satellites Iridium 33 and Kosmos 2251](#) over Siberia in 2009 is a clear example of what may become a common occurrence.

Then there are the 100 to 150 tonnes of man-made space objects that re-enter Earth's atmosphere annually. Lots of these simply burn up, but some do manage to cause damage to private property. Again, it's only a matter of time before the first human life or limb is lost to this kind of incident.

Launches of rockets and payloads are fraught with danger and quite frequently go wrong. But launch accidents appear to affect different countries in different ways. The costs involved in engaging in space station activities are mind boggling and crippling to struggling economies. Increasingly, developing states rely on commercial launchers. But if a private company launches an object that subsequently causes damage in space, the poor state will be liable.

And even in those cases where the launch fails due to misfortune or the mistakes of the private launcher, such companies could still escape paying for the launch accident, as such firms often have water-tight exclusion clauses that protect them from liabilities. The bill again goes to the poor state.

This is especially likely when it is a [Western company working for a developing country](#). China on the other hand [agreed to pay](#) for a lost satellite it had launched for Nigeria. It is therefore essential that any developing state protects itself to the fullest against unsuccessful operations caused by negligent and/or accidental failures.

There are also serious issues around the safety of astronauts, who [have the legal right](#) to a safe existence when in outer space. But it is unclear whether this law does – or should – extend to private astronauts. Also, a launching state currently must be notified regarding incidents involving astronauts on international missions – and it is required to assist and contribute substantially to search and rescue operations. Can a private company really supply the enormous sums or other resources that may be needed? Will the home state of the [private company](#) be willing to pay? Again, the law isn't clear.

With the increase in private participation in space experimentation and perhaps even mineral mining, the provisions governing civil liability over mishaps arising from the operations of a space station are likely to

become one of the most contested areas of space law. What if a module or component part fails to function on a [space station](#)? In the absence of multilateral rules on this point, a patchwork of legal rules is gradually maintained through MOUs (Memorandum of Understanding) and other national laws such as the US Commercial Space Launchings Act (CSLA) of 1978. How will private companies fit into these as they possibly become partners?

Liberalism and the private entrepreneurial spirit do have their place in outer space. But there must be carefully designed limits. The treaties and legal regime of space law has not been adequately amended to account for the rise of private space exploration. For humanity's sake, private [space](#) exploration may have to proceed more slowly until these important issues are sorted.

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