One giant leap for DIY

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Putting up a shelf might be as bold an expression of masculinity as many men manage these days but it is not as far from, say, walking on the moon as might at first be imagined. That cordless power-tool, for example, is an off-shoot of a device designed for the Apollo lunar missions to collect rock samples 10ft below the moon's surface.

In 1968 Black and Decker worked with US space agency Nasa using an early computer to create a self-contained "permanent magnet motor drive" that used as little power as possible. By 1979 the do-it-yourself device company had worked up a commercial version and, using the same technology, also created the hand-held vacuum cleaner you use to hoover up the chunks of plaster you have just managed to pull from the wall.

These are not the only space programme innovations to have found their way into more earthbound products, many of which owe their existence to a little known but crucial piece of US legislation 30 years old next year – the Bayh-Dole Act, which finally cut through red tape to allow a government-funded organisation to open up its technology patents to commercial exploitation.

Nasa alone reckons that more than 30,000 of its ideas have found a non-space-related use, making space the most fertile industry for spin-offs by far. Its constant quest for low-mass, low-power solutions – and its willingness to solve problems that are too costly for other industries to tackle – have put it at the cutting edge and are often cited as a counter-argument to those who claim space exploration is too expensive.

Smoke detectors were created in 1970 for Skylab, America's first space station, for example. Freeze-dried food was a Nasa development. And, as in the home, so out of it. Cat (computed axial tomography) scans are an enhancement of the technology first designed to take images of the lunar surface, while Nasa's Jet Propulsion Laboratory has given rise to technology that is now used in surgery, fighting forest fires and detecting masterpieces hidden under re-used canvasses.

About your person there is likely to be a product that has resulted from a space-based "technology transfer". The shock absorbency in advanced sports shoes is a descendant of that developed for astronauts' boots. Both the polarisation and scratch-resistancy of sunglasses are developed from a coating used to protect the surfaces of spacecraft from space debris. Similarly, the need to find a continuous and remote power source for geo-orbital satellites gave rise not only to solar panels but, in turn, the now ubiquitous digital camera. Whereas the former turns light into electrons, the latter effectively uses thousands of tiny solar cells to give those electrons a pixel value.

"Probably the single biggest spin-off was, when you think about its impact, the advancement in the development of integrated circuitry," says Doug Millard, senior curator of space technology at London's Science Museum, which is running a series of moon landing anniversary events. "Generally we're not conscious of just how much of the technology we use has its origins in the space programme nor, when we are, the trials, tribulations and huge effort that led to it."

Small wonder that Nasa – partly in a bid to restore public interest in manned space exploration – publishes "Spin Off", its own annual list of the top 50 Nasa developments to find a commercial use. And although the exceptional nature of the Apollo programme probably resulted in a disproportionately high number of benefits, the ideas still keep coming – and from other space agencies too.

The stabilising mechanism originally developed for the European Space Agency's Rosetta comet chaser spacecraft has, for example, been used in racing skis developed by Rossignol. ESA has also created molybdenum disulphide electro-coating to minimise friction at high speeds, a coating expected to soon find its way on to more fuel-efficient cars. And robot sensors developed by the Canadian Space Agency for the International Space Station have undergone trials with a view to creating car bumpers that will respond according to the object with which they are in impact, remaining rigid if they hit a wall and crumpling if they hit a person.