the film as a Trojan Horse to trick an unsuspecting public into engaging with science. The fictional secret to life, the full film revealed, was unearthed with the help of Rosetta — a real ESA mission that this week plans to land a probe on a real comet.

The goal of the mission is more modest than in the film: it hopes to find clues as to whether ancient comets could have delivered Earth's oceans or even the organic molecules that sparked life. Although this is a fascinating puzzle, it is unlikely to be the feature of the mission that people remember. The real drama is the high-stakes attempt to land a probe on the 4-kilometre-diameter comet — 67P/Churyumov–Gerasimenko — which is travelling at more than 60,000 kilometres per hour some 500 million kilometres from Earth. The lander was due to be released, and its fate learned, soon after *Nature* went to press.

The lander, Philae, is intended to provide a ground truth with which to cross-check measurements from the Rosetta orbiter. But it is also designed to go beyond the orbiter's instruments, using an on-board laboratory to analyse samples from 20 centimetres beneath the comet's surface (including materials that would not make it to the dusty tail) and by studying its mechanical properties and interior.

Missions have flown to comets before. Whereas ESA's Giotto and NASA's Stardust provided snapshots, sampling the tail of comets as they raced past at high speed, Rosetta has stalked its prey at close range. Landing the Philae probe was always going to be the riskiest part of the mission. NASA's Deep Impact mission deliberately crash-landed a probe on the surface of a comet to unearth pristine dust for its parent craft to study, but this soft landing is a first.

Unlike asteroids, comets are active bodies that send out streams of water, gas and dust. Rosetta must navigate the harsh environment with sufficient delicacy and precision to launch the lander into a 1-square-kilometre patch on the comet's surface, some 20 kilometres away. Philae must land with a gentle bump, travelling at just 1 metre per second. The slow descent is crucial because the comet's gravitational pull is several hundred thousand times weaker than that on Earth. Even a safe landing is not the final act; the craft must deploy harpoons and ice screws to tie itself to the comet's unforgiving surface.

Experienced ESA flight managers say that this is the most ambitious mission they have ever flown. In terms of complexity, it is more like *Apollo 11*'s landing of humans on the Moon than a Mars adventure. And it is being done with 20-year-old, space-hardy technology, the processing power of which is more like that of a pocket calculator than anything recognizable on a desktop today. Two decades in the planning (and a decade in transit), the Rosetta mission was developed after NASA cancelled its own Comet Rendezvous Asteroid Flyby mission. The Europeans built on NASA's plans, but instead of a probe, went for the (perhaps more risky) soft-landing option.

Rosetta was always going to be flying into the unknown. All that was known about the comet was its size and orbit around the Sun. Only when it arrived, and discovered 67P to be a bizarre, rugged, rubber-duck-shaped comet rather than the potato the mission scientists were expecting, did the team begin to work out where best to set down the lander.

"ESA flight managers say that this is the most ambitious mission they have ever flown."

Rosetta is also a mission of endurance. For a decade, the craft has been chasing its comet through the Solar System, including the cold of space beyond the asteroid belt, for which it was designed to survive temperatures as low as −180 °C.

There are lots of ways the mission could (did?) fail, all of which are illustrated in a graphic on page 172. The final manoeuvre ahead of separation, which sets the lander up with the speed and trajectory for its unpowered descent, must go off without a hitch. The craft and lander must separate in perfect synchrony. And then there is luck. Even if Rosetta performs perfectly and mission scientists do everything right — as has been the case so far — if Philae were to land on a cliff, ridge or boulder the probe would topple, and it could be game over.

ESA scientists are not just covering their backs when they say that the mission will be a success whether or not Philae lands safely. Whatever happens to the lander, Rosetta will continue orbiting the comet, the first spacecraft to take a ringside seat as a comet changes in its approach to the Sun. Landing may be the high-drama part of the mission, but around 80% of the science output is expected to come from Rosetta.

Philae's fate might dictate Rosetta's public legacy, but all scientists should celebrate the mission's attempt — whether in homage to its triumph or memorial to its loss — for the engineering and technical expertise it took to execute.

In attempting to capture the public's imagination by stealth, *Ambition* was somewhat out of character for ESA or, indeed, any public research body. But the film — which must have cost a large chunk of the mission's public-relations budget — was probably unnecessary. The feat alone is spectacle enough. ■

ANNOUNCEMENT

Launch of the Nature Index

This week, Nature Publishing Group introduces the Nature Index. The platform is a database of the contributions made by the world's research institutions to articles published in 68 leading scientific journals (see natureindex.com for a freely accessible 12-month data set). The journals were chosen by an independent panel of researchers drawn from across the natural sciences (see natureindex.com/expert-advisers), with further validation from a large online survey of active scientists. The index offers various options for counting and attributing contributions.

The launch is in the spirit of a beta-test — readers can analyse and interpret the data for themselves, and assess the Nature Index's strengths and weaknesses. The methodology behind the index is explained in the accompanying Nature supplement (page S52), as are the caveats that need to be considered when analysing and interpreting the data.

The journals were selected in 2011. Their outputs have been tracked in subsequent years, and the database will initially be updated monthly. Some journals that might now be strong contenders for inclusion, but were only newly established at that time (including one of the Nature research journals, *Nature Climate Change*), were not selected by the panel. Subject to the feedback we receive, we expect to review the list of journals next year.

We anticipate diverse opinions on many aspects of the Nature Index. Constructive suggestions for improvement are particularly welcome. The supplement includes tables that summarize patterns of research output in the Nature Index for institutions and countries, but these tables are not themselves the Index — rather, they are just some of the possible ways of displaying patterns in a snapshot of data encompassing the most recent complete calendar year.

Used carefully, with proper consideration of the strengths and limits of the underlying data, we believe that the Nature Index can contribute to an understanding of significant scientific outputs at the institutional, country and regional levels. We invite feedback, which should be posted at natureindex.com. ■