



Star man

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How and why has 'sci-fi' artist Julian Priest sent a satellite into space?

At 10.01 pm on Saturday 17 November 2018, Julian Priest and 20 friends and family members fixed their eyes on a live video stream projected onto the wall at Wellington's Thomas King Observatory. They were watching the Cygnus NG-10 cargo spacecraft blast off from Virginia, USA, on a NASA mission to take supplies to the International Space Station. The spacecraft was launched successfully. 'We let my confetti cannon off,' Julian says, smiling. Why spray confetti? Because the spacecraft had some hitchhikers, including Julian's mini-satellite The Weight of Information, known as TWOi (pronounced Tui). It's the size of a large postage stamp.

Julian, a softly-spoken, mild-mannered man, is the first-ever 'Thomas King Observatory Resident'. A small, white rectangle with a mini-dome at one end, the observatory was built in Wellington Botanic Garden in 1912 as the city's first public observatory (after the death of Thomas King, New Zealand's 'Astronomical Observer' from 1887 to 1911). However, it fell into disuse after 1941, when the Carter Observatory was built mere metres away, and in recent years served as a storeroom for Museums Wellington's 'Space Place' centre. Julian, who did some satellite observations in the mini-observatory in 2017, later helped clear out the junk and do some renovations. Museums Wellington then let Julian use the observatory from July 2018 until March 2019 to finish his long-running 'space-art' project.

In 2011, Julian heard that US space-science student Zac Manchester had designed and built a tiny, inexpensive kind of CHIPSat satellite. Nicknamed Sprite, the 'world's tiniest spacecraft' has solar cells to convert light into electricity, a radio transceiver (receiver and transmitter), and a micro-controller with a memory and sensors. Zac's Kickstarter crowdfunding campaign raised \$75,000 to build a KickSat satellite that could deploy (or kick, if you like) Sprites into space. Julian pledged \$1500. 'That bought a developer kit, so I could program my CHIPSat to do what I wanted. I'd always wanted to get something into space – and as I can't send myself, this is the next best thing. The initiative democratises space by bundling together launches to dramatically lower costs.'

In 2014, NASA donated time and launch costs to the KickSat project through its Educational Launch of Nanosatellites program. Imagine this: attached to a cargo spacecraft was a deployer (which resembles a jukebox) that housed KickSat-1 (the size of a loaf of bread) which, in turn, housed the Sprites. 'It's a piggyback on a piggyback on a piggyback.' However, after KickSat-1 was deployed in orbit, an electrical malfunction meant it didn't deploy the Sprites and burned up in the atmosphere over the Sahara.

Zac built another KickSat, KickSat-2, which Julian watched being launched. Three days later, at 1.31am on 20 November, Julian watched again as the spacecraft docked at the

International Space Station, where TWOi has since been ‘sleeping’ on the still-attached ‘jukebox.’

In late February or early March, the Cygnus – filled with trash by space-station crew – will be sent back towards Earth to burn up as far from people as possible. Standard procedure when cargo craft aren’t reused, this avoids contributing to ‘space junk’ which can collide with satellites.

Before the spacecraft burns up, it will deploy KickSat2, which two days later will deploy approximately 100 Sprites into low orbit as a ‘cloud of tiny spacecraft,’ each transmitting signals to the person who sent it – in most cases, their name. TWOi then begins its nine-day descent to Earth, before vaporising at 27,000 kilometres per hour.

Julian’s ‘chip in space’ is part of his larger art installation *The Weight of Information 2.0*, which encompasses the entire observatory. Under the dome is Julian’s ‘budget robot/mission control’. After TWOi deploys, the robot’s large antennae will swing toward TWOi’s position in orbit. Meanwhile, TWOi will collect and transmit metadata (essentially, data about data) which will pop up on Julian’s computer screen, projected onto a wall. (Another screen plays the launch video on repeat.) When its memory is full, TWOi resets it to zero – 8000 times per second. ‘This is science fiction not physics. I’m imagining that information not gravity is pulling TWOi down to earth. He’s a tragic hero in a death spiral, trying to forget things to become lighter.’

‘This project is about control and sovereignty of information, privacy and the right to be forgotten. In 2009 I made an artwork, *Terms of Endearment*, about how much money big companies make out of our personal data. For that, I signed out of my social-media accounts and never signed in

again. Can you really delete information when the internet works by copying?’

Drop by the observatory during TWOi’s nine-day descent (julianpriest.org/twoi will provide exact dates) for ‘Meet2Delete’ sessions, anytime between 11am and 6pm. You can securely delete paperwork (student-loan invoices, perhaps) on Julian’s paper-shredder, before a confetti cannon blows the shreds into the dome. Alternatively, bring your laptop or phone and delete digital data (failed manuscripts, perhaps), logging the metadata for later deletion. Otherwise, post an Instagram video of your deletion with hashtags #Meet2Delete and #Delete2Ascend (delete the story later) – or log information on Julian’s website for later deletion. It all becomes part of the installation.

Julian, who studied physics and philosophy at university, spent a decade trying to influence the development of an internet operated by and in the interest of its users. In 1997 he co-founded Consume.net in London, which built community networks using free wireless internet (WiFi) when broadband availability was limited – inspiring similar grassroots projects globally. In 2007 he moved to New Zealand with collage-artist wife Sophie Klerk and their three children (now teenagers). Most years, the interdisciplinary artist also teaches a Victoria University mobile-media course about creating designs featuring compact mobile technology.

While Julian largely self-funded TWOi, Creative NZ provided some ‘seed money’, Wellington City Council’s Public Art Fund paid for the installation, and Museums Wellington provided the space. More artists may be hosted at the observatory – perhaps even more space artists. ■