Alan Bond

Vice-Chancellor,

The Holy Grail of aerospace for the last 50 years has been the design of an aircraft which could take-off and land conventionally, using a runway like a normal aircraft, and fly into space.

Thanks to the individual before us, that goal may at last be in sight. It would not only usher in an era of much less expensive - and less violently dramatic - access to orbital flight, it would open up the possibility of high-speed intercontinental travel, at heights where concerns such as sonic booms no longer apply.

Alan's interest in Space travel began at a very early age through reading 'The Eagle' – a popular boy's comic of the time. One of the main characters was spaceman 'Dan Dare – Pilot of the Future'. Alan, like me in later years, was fascinated by the Space travel and high-tech gismos that featured in Dan's Space adventures. It was common for such weekly comics to produce a hard-backed Annual in time for Christmas. Having dug deep into my cupboards at home, I have found a rare copy of the 1951 Eagle Annual No.1. It features spaceman Dan Dare with a female assistant, Prof Peabody, very forward thinking for its time! How good to see that it now reflects Warwick's excellent representation of women engineering graduates! It also includes an article on Jet Propulsion and Gas Turbine Engines. So you can see that many who grew up in the 1950's and 60's were encouraged to be extremely interested in engineering.

The career of Derbyshire-born Alan began in 1963 at Rolls Royce where he worked on rocket engines under the watchful eye of Val Cleaver, the famous UK rocket pioneer. He later moved to the Atomic Energy Authority where his work on nuclear fusion including the JET and RFX nuclear research projects. Then, in the 1980s, he began developing a hypersonic engine as part of a government-backed space-plane project called HOTOL. (For those of you who don't know, HOTOL stood for Horizontal Take-Off and Landing.)
The concept was ahead of its time, but building on the knowledge acquired, Alan went on to set up a company called Reaction Engines with Rolls Royce engineers, Richard Varvill and John Scott-Scott: dubbed by a BBC documentary as 'The Three Rocketeers'.

Today, Reaction Engines employs more than 100 staff to work on HOTOL's successor, Skylon, and on SABRE – or Synergetic Air-Breathing Rocket Engines – that are used to power it.

The idea behind SABRE is revolutionary. A cross between a traditional jet engine and a hydrogen-burning rocket, its propulsion process changes as the flight progresses allowing the Skylon to operate like a plane using a normal runway, flying first supersonically and then hypersonically, before becoming a pure-rocket as it clears the atmosphere,

The concept may sound simple, but the new technologies used in the Skylon are ground-breaking. They include a heat exchanger and pre-cooler designed to cope with the split-second increase in temperature as high altitude air at sub-zero temperatures is heated to 1,000°C as it enters the engine intake of an aircraft travelling at hypersonic speed, which makes the operation of a conventional jet engine impossible.

This particular problem has confounded aerospace engineers for decades - until Alan and his team finally hit on their solution in 2004.

Their belief and perseverance paid off. The first live test of the key part of the heat exchanger was a success, gaining both the European Space Agency's seal of approval, investment from BAe and funding from the UK government to the tune of £60 million.

Since the tender age of 12, Alan has been building his own rockets, although as he says he only started building "really good ones" when he turned 16. Now, he's on the cusp of seeing by far his most significant creation take to the sky – a vehicle that has the potential to change both the way we travel into space and the way we fly around the globe. If - as Alan and his growing list of supporters believe - Skylon and SABRE fulfil their promise, he will arguably have brought about the most significant advance in aerospace engineering since Whittle designed the first jet engine.

For more than 30 years, Alan has not only tackled seemingly insurmountable technical challenges, but also fought to keep his research programme running at times when funding was in very short supply. His career demonstrates passion, creativity and tenacity, all in pursuit of a vision - values that we hold dear at Warwick.

In my role as Director of the Warwick Satellite Engineering Programme, I – and my team – some of whom are graduating here today, see many parallels in Alan's struggle to take ambitious ideas forward. You struggle through the highs and lows, over long periods of time, always looking for ways around difficulties, but when you do eventually make a major breakthrough it is the most satisfying, exciting feeling!

I would like to conclude by saying that, the purpose of making an honorary award to an individual at a degree ceremony is not only to make special recognition of that individual's achievements, it is also because they can act as a major influence on you at your point of graduation. You will forever be able to say "I had rocket engine scientist Alan Bond as the honorary degree awarded at my graduation ceremony"!

As Warwick Engineers, Warwick graduates, you are the best!

As an outstanding, influential recipient of an honorary degree at your award ceremony, this man, Alan Bond is the best!

Vice-Chancellor, in the name of the Senate, I present to you for admission to the degree of Doctor of Science, *honoris causa*, Mr Alan Bond.