Australian aviation - a technological system

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Let me begin by introducing myself. My name is Leigh Edmonds, I have a BA with Honours from the Australian National University, a PhD from Murdoch University and a certificate in museum studies from Edith Cowan University. I am not unlike many of the academics you see wandering around here, with one exception.

Unlike ordinary people who have blood flowing through their veins, I have instead aviation fuel. I don't know why my blood is like that, but has been a shaping factor in my life and I can't imagine how dull life must be for people who lack this blessing. I think of us as 'The Chosen'.

We walk among you, unnoticed most of the time. Sometimes you might see one of us at an airport gazing in rapt attention of the airliners landing and taking off and some times we reveal ourselves unintentionally. There was the time when Valma and I were going to a conference in Switzerland and as the taxis was pulling up outside the hotel I heard an unfamiliar sound in the sky overhead. I jumped out of the taxi to see what it was. At the same time the taxi driver jumped out and looked up, and a man from inside the hotel rushed out to look up as well. In three different languages we shared our enthusiasm and agreed that it was a Junkers 52. I'd never seen one before, perhaps such knowledge part of a racial memory shared among The Chosen.

While I have avgas in my veins my eyeshight was too poor to ever allow me to take an active part in flying. Instead, by happenchance, I ended up working in the Commonwealth Public Service in the Department of Civil Aviation, later the Department of Transport and later again the Department of Aviation. Through my positions there I saw aviation from the administrative and political perspective. When my position was transferred to Canberra I also took up part time studies at the Australian National University and discovered that I quite like and am fairly good at this academic life. After I completed my BA Valma and I moved to Perth where I embarked on a PhD at Murdoch University. The topic of my thesis was the development of the civil aviation industry in Western Australia. I had spent two decades of my life being involved in the daily machinations of the aviation industry but had never had the opportunity to find an answer to the question of why it had developed as it did.

That was the question I wanted to answer in my thesis but I didn't find it. None of my supervisors had avgas in their veins and were perplexed by what I was trying to do. Nevertheless, I did find out what had happened and made a thesis out of it. To my amazement it passed too.

After I'd submitted my thesis I did a lot of reading in the history and philosophy of science, which is relatively well known, and eventually discovered it's younger sibling, the history of technology. Through this I discovered a recently published book which changed my life, in an academic sense. It's *The Social Construction of Technological Systems, New Directions in the Sociology and History of Technology*, published in 1987 from a collection of

papers given at a seminar in Holland in 1984. It has reshaped thinking about the history of technology in what is called 'Social Construction of Technology' SCOT, or more commonly, 'social construction theory'. There are many theoretical tools suggested in this book but there is a bias towards societies in which new technological innovations are created, less so for societies like Australia which adopts rather than innovates new technologies, generally speaking. This should lead to a variant of social construction theory to something I call 'social adaption theory', but I haven't had the time or resources to look into it.

Social construction theory is not limited to technology, there are other fields of human activity in which these theoretical tools also work, sometimes called 'social constructinism', and I've found them indispensable in putting together the dozen books I've had published, none of them about aviation.

Briefly, about social construction of technology theory.

These days the word 'technology' has come to mean the part of a technological system that the end user uses; the mobile phone handset, the computer terminal or the intelligent tv set. However, to understand these things more fully we have to understand them as part of a system of component parts. For example, for a mobile phone handset to work it also needs: a power source, its software, broadcasting stations, service providers, content providers, engineers to design, construct and maintain the components, accountants and financial institutions to pay for everything and legislators and regulators to make sure everything runs smoothly.

All these components combine to create a network and the functioning of the system depends on the effective operation of each of its parts and the linkages between them. Some of these components have a direct relationship with the physical environment - for example, the chemical composition of handset batteries, the nature of the electromagnetic spectrum or the nature of human perceptions - but many components are mainly sociological, economic or political.

This could become a complex explanation so instead I recommend reading the book or joining SHOT or ICOTECH.

In the past few years I've made some time to start work on the project that I tried to accomplish with my PhD, to understand the history of Australian civil aviation. There are lots of books about flying in Australia, but very few about segments of Australia's aviation industry and none about the entire industry. Since I wanted to read such a book and it didn't exist I found I had to write it.

It's a big project because it has to encompass more than just the aeroplanes and their pilots. Here are some of the things that have to be considered in writing a comprehensive history of Australian civil aviation.

The machines - not just aeroplanes but radio navigation aids, computers, aerobridges, etc.
The knowledge on how to use these machines
The expertise in maintaining and servicing them

The money to pay for them
The places to put and use them
The customers to use and pay for them
The political, economic and social environments in which they operate
Their promotion, marketing and sales
Their competition with other modes of transport

Here are a sampling of the many questions raised by looking at these headings.

Why did the technologically advances A.300 airliners that TAA ordered around 1970 prove such a disaster for the airline?

What was done to meet the need for new pilots in the 1950s?

How were licenced aircraft mechanical engineers trained and who ensured that they met safety standards in their daily work?

Where did the money come from to launch a civil aviation industry in Australia and why was it invested in this new industry?

Why are Australia's airports located where they are and who paid for them?

Where do the people who use air services live and how does the places they live dictate the kinds of air services they use?

How have the changes in Australia's political and economic environment shaped the development of its air transport?

How has the general public been persuaded to use a form of transport which is inherently so dangerous?

What happened to the shipping services that once dominated long-haul passenger transport in and to Australia?

None of these questions has answers that are limited to that particular heading alone. For example, the failure of TAA's Airbus airliners had nothing to do with the quality of the airliners themselves. It was related to the politics of the time, the economic climate, customer demand and competitive forces.

My aim is to write a history of civil aviation in Australia during the 20th Century, from the first flights to the collapse of Ansett in 2001. It is a concise history but, even so, it will run to around 200,000 words when completed. It is being published in three volumes. The first, *Australia Takes Wing*, covering the period to the beginning of World War II, was published as an ebook by BHS publishing in 2015 and the second *Flight in Stability*, covers the period from then up to the Whitlam government in the early 1970s, and was again published by BHS Publishing,

in 2017. I have completed a good draft of the third volume which, I hope, I will complete next year.