

**STS Across Borders Exhibit**  
**Deakin STS**  
**David Wade Chambers**  
**First Deakin Director of the STS Program**

*This Q&A with David Wade Chambers was produced by Chambers specifically for the STS Across Borders Exhibit. David Wade Chambers was a key figure in the establishment of an STS Unit at Deakin University, Australia, in the 1980s and 1990s. In this document, Wade responds to several questions — prepared by Thao Phan — about his research background, his teaching practices, and his time at Deakin University.*

**STS encompasses so many fields and so many approaches. What does STS mean to you? When did you actually think of yourself as an STS scholar?**

My personal history in the field began in 1958, well before STS had emerged as a separate cross-disciplinary branch of knowledge. However, even at that time a number of universities had programs that might be considered as sub-disciplines of the larger field that is today known as Science and Technology Studies. Indeed, my own academic history, detailed below, illustrates the emergence of these component branches as well as the steady formation of STS as a central, overarching attempt to understand science and technology by drawing on all of the academic specialities throughout the humanities and social science as well as the arts and cultural studies. This new academic landscape began to develop quickly in the immediate post-war period.

## **HISTORY OF SCIENCE**

For example, my undergraduate History major at the University of Oklahoma (BA 1960) was directly focused on the History of Science, and I worked closely with Duane H.D. Roller, Curator of the DeGolyer Collection in the History of Science and Technology, which had been founded at the OU Library in 1956. DeGolyer's initial interest in STS had been stimulated by reading James B. Conant's book "On Understanding Science" which convinced him that modern science could only be understood through a study of its history.

<https://libraries.ou.edu/content/first-50-years-history-science-collections>

In 1960 I entered the Doctoral program in History of Science at Harvard University. The Harvard Department, established in 1940, was the first such program in the US, yet at the undergraduate level it had already significantly broadened its scope, offering a popular course in Science and Society. It was also proud to be the only field of concentration at the university that officially credited courses throughout the sciences, social sciences and humanities.

My dissertation topic focused on one of the major scientific institutions in the 18<sup>th</sup> century Americas. The history of science has continued as my major research interest throughout my career, having published over twenty refereed articles focused on Science in Colonial Context (1780-1900)

## **MUSEUM STUDIES**

While completing my doctorate, I was employed at the Harvard Collection of Historical Scientific Instruments, where I curated an exhibition (in Harvard's Widener Library) entitled

“Instrument and Imagination,” ranging freely across the influences of instruments and technologies on the literary and visual imagination.

Later in the sixties I spent a post-doctoral year at the Smithsonian’s Museum of History and Technology (as it was then known). My work there ranged from identifying ancient indigenous weights and measures in the collection, to writing a social and philosophical exposition of the Foucault Pendulum, to examining the ‘social relations’ of railroad technologies. The focus on Museum Studies as a strain of STS continued throughout my career. While at Deakin I worked as an international consultant to museums in seven countries focusing mainly on the role of visual thinking in creative endeavours across cultures, across millennia and across many academic disciplines. The picture below was taken at the opening celebrations of the Smithsonian Museum of the American Indian: my family standing with Buffy Ste Marie.(PiapotCree). I also served as a consultant to the [Cradleboard Teaching Project](#), a curriculum devoted to better serving Native American educational needs founded by the well known indigenous folksinger.



## INDIGENOUS KNOWLEDGE AND CULTURAL STUDIES

From my first contact with the STS field, I was committed to the idea that Indigenous Knowledge was much more than superstition and mythology. In an attempt to understand the astronomy of the ancient Maya, I spent two months studying archaeological sites in Honduras, Mexico and Guatemala. See photo below of the two thousand year old Copan observatory (Honduras). In 1964, working with Willi Hartner (of Goethe University, Frankfurt) and Tatiana Proskouriakoff (of Harvard’s Peabody Museum) I published an article in the History of Science Journal Isis that summarised Maya astronomical knowledge of the so-called Metonic Cycle. This work later led to my conducting an informal seminar in 1965 at Yale with Derek J. de Solla Price on indigenous astronomies.



Upon arriving at Deakin in 1976, the area of Cultural Studies of Science was to become a central focus of my teaching. I renewed both research and teaching interests in Indigenous Studies working closely with the Institute for Koorie Education (Deakin) and with Helen Watson Verran (with an indigenous team at Yirrkala) on the book *Singing the Land, Signing the Land*

## SINGING THE LAND, SIGNING THE LAND

In 1987, a team of three people – David Wade Chambers, David Turnbull and Helen Watson Verran – began a systematic review of cross-cultural content found in teaching materials in the History, Philosophy and Social Studies of Science. In this book, one of several publications resulting from that collaborative scholarship, Watson Verran (with the Yolgnu community at Yirrkala) and Chambers examine and compare Indigenous and European ways of understanding nature in Australia. This website is a transcription of the book.

*Begin reading...*



My most recent publication in the field is an entry on “Indigenous American Knowledge Systems” with Laurelyn Whitt (Mississippi Choctaw) in the [Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures](#).

After my retirement at Deakin in 2000, I raised around half a million dollars in grants to fund an online teaching program at the Institute of American Indian Arts and Culture (IAIA) in Santa Fe, New Mexico. Between 2000 and 2012 I served as the Director of the IAIA program entitled “Native Eyes: Indigenous Perspectives on Knowledge and Culture”. This initiative funded by NASA (National Aeronautics and Space Administration), NEH (National Endowment for the Humanities), Keck Foundation, Kellogg Foundation, and the American Indian Higher Education Consortium. The eight Native Eyes undergraduate courses drew on much material that was first developed at Deakin.

## **HISTORY OF TECHNOLOGY**

My PhD dissertation looked at the social structure and the social and cultural context of the 18<sup>th</sup> century School of Mines in Mexico City. In 1992 I was invited to address the conference celebrating the 200th anniversary of the Real Seminario de Minería. (See photo below.)



And my first full professional teaching/research appointment was in the History of Technology at Southern Methodist University. This came about in part through the research strength of the transportation and other technology collections of the SMU libraries

At Deakin, technology in history and culture were found throughout the 15 STS textbooks which I authored and edited. Sometimes these were narrow scholarly texts but also included more innovative departures such as the inclusion of 25 ‘train poems’ from the 19<sup>th</sup> and early 20<sup>th</sup> centuries.

## **SCIENCE EDUCATION**

Although the Deakin teaching program never included courses for science education specialists, many of our undergraduate students were aimed toward careers in science teaching. This enabled

a major student-based participatory research project to be set up which proved to be one of the most influential initiatives undertaken during the program's tenure at Deakin. In the early sixties, I had developed the Draw-a-Scientist-Test which looked at classic scientific stereotypes and when they first appeared. For the next twenty years, education students enrolled in STS classes were invited to deploy the test during their 'practice teaching' sessions. While at Deakin over 5,000 test results were examined and interpreted, resulting in the publication in 1983 in the journal *Science Education* of "Stereotypic Images of the Scientist". The paper focused on such variables as gender, race, and discipline with gender being the single most important population factor. In the 50 years since the test was developed, it has been administered hundreds of times in more than 80 countries. As a result the original paper was cited over 1000 times. In March, 2018 the popular US journal *Atlantic Monthly* published an article summarising the influence of this body of research.

[https://en.wikipedia.org/wiki/Draw-a-Scientist\\_Test](https://en.wikipedia.org/wiki/Draw-a-Scientist_Test)

## SOCIAL STUDIES OF SCIENCE

My second professional appointment in 1969 was at Concordia and McGill universities in Montreal in an interdisciplinary department that included such fields as Humanities of Science, Social Studies of Science, Environmental Studies, and a large undergraduate program known as Collaborative Studies in Science and Human Affairs, which incorporated a broad spectrum within the STS field including Science and Public Policy and ethical issues relating to science and technology. These courses were all established during my tenure as Chairman of the Interdisciplinary Centre at Concordia.

### SCIENCE

## What We Learn From 50 Years of Kids Drawing Scientists

Children are more likely to draw women than in the past—but they become skewed toward sketching men as they get older.

ED YONG MAR 20, 2018



A child's drawing of a scientist, from a Draw-a-Scientist study (VASILIA CHRISTIDOU)

Between 1966 and 1977, the social scientist David Chambers asked 4,807 elementary-school children, mostly from Canada and the United States, to draw a scientist. Their illustrations regularly featured white coats, eyeglasses, lab equipment, and books. Often, the depicted scientists exclaimed things like "I made a discovery!" or simply "Wow!" In one memorable case, a third-grader drew a laboratory with a sign that read: "SIKRIT STUFF FOR SIKRIT"

Ad closed b

Report t

Why this

In 1973 I set up a course at the University of Melbourne entitled Science and Society that was still being taught in 2017. In 1991 I taught a course at the University of California at San Diego Literature Department entitled Creative Non-fiction Writing for Science and Technology.

However, my most significant work in establishing STS teaching was made as a charter member of the Deakin University Faculty. LeI was appointed in 1976 by Max Charlesworth to establish an interdisciplinary program in the History and Philosophy of Science. When the undergraduate major (now called Social Studies of Science) was established in 1979, it greatly expanded the planned HPS focus. The graduate program called MA in Science and Technology Studies got underway in the early 90s based on printed course materials.

**You were at the centre of a particular STS formation at Deakin. Can you tell us a bit about the originating contexts and the stories you see as important to understanding the emergence of this formation? What was your role and what kinds of programs, courses and initiatives did you help to develop?**

### **BA Program: Social Studies of Science**

Deakin's innovative textbooks (undergraduate and post-graduate), both in-print and on-line, were given favourable scholarly reviews by a number of refereed international journals. For example, in the major journal Technology and Culture, George Bindon wrote:

“Deakin University in Geelong, a satellite industrial town outside Melbourne, is on the periphery of the periphery. But in the development of teaching materials in the Science, Technology and Society field, it must be viewed as the center. ... With Fred Jevons as vice chancellor, there was an early recognition of the special contribution STS studies could make, and a course team was created under the chairmanship of David Wade Chambers, a pioneer in educational innovations in this area. ... These are beautiful volumes.”

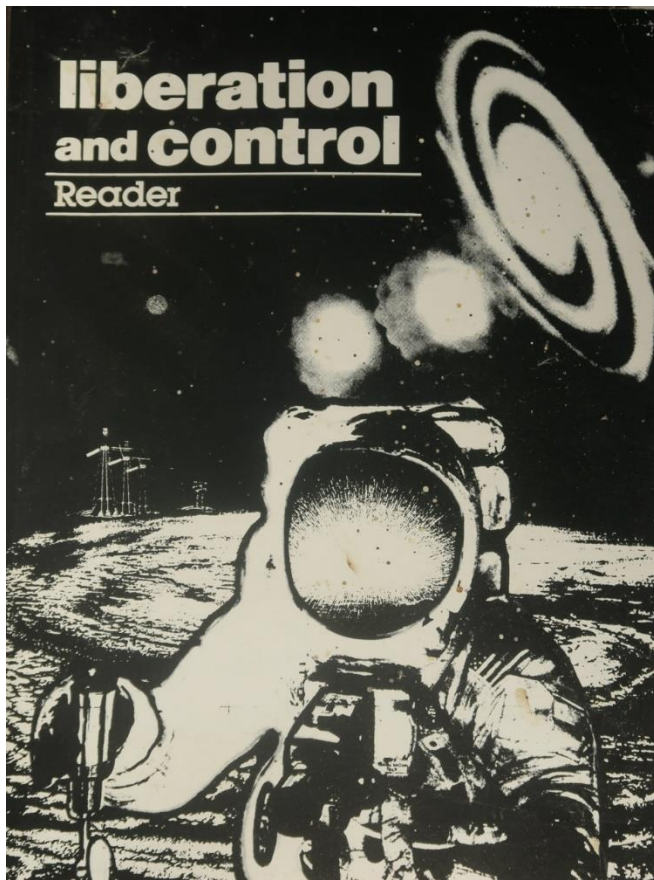
It was perhaps no surprise that the *Imagining Nature* textbooks (See below.) won the Australian National Book Award for the best instructional textbooks of 1982.

Many of the actual Deakin STS textbooks were adopted for use at a number of Higher Education institutions around the world including the University of British Columbia, Brandon University (Manitoba), McGill University (Quebec), University of Wollongong, University of Melbourne, University of New South Wales, Charles Darwin University and the Institute of American Indian Art.

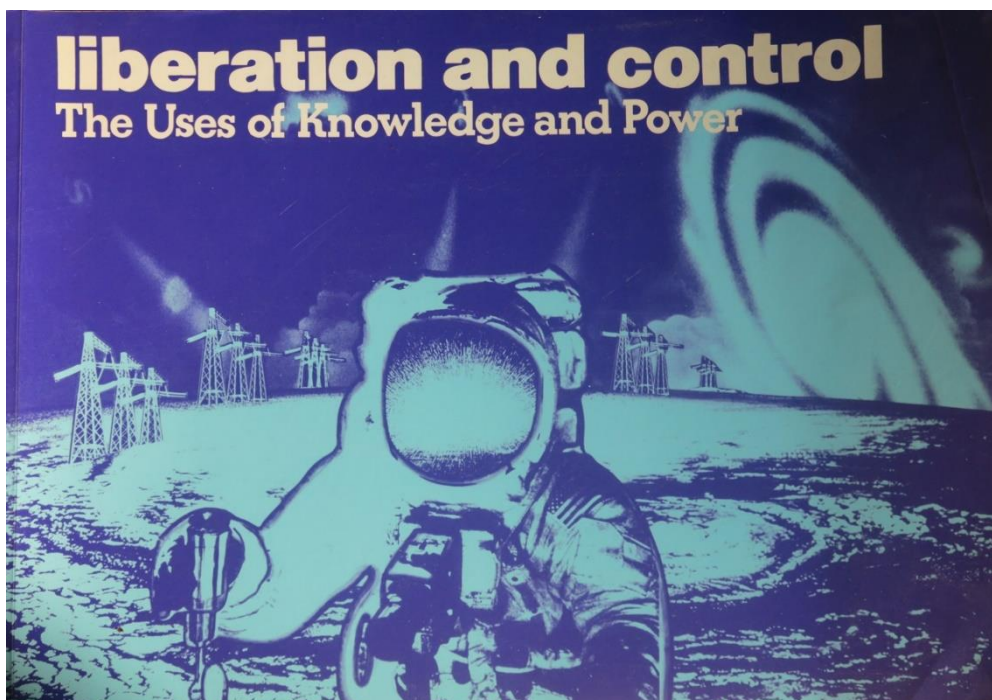
The undergraduate major was offered both on-campus and off-campus (Distance Education) in printed format.

**First Year Course: Knowledge and Power** made up of seven separate textbooks with additional extracted readings. These textbooks are as follows:

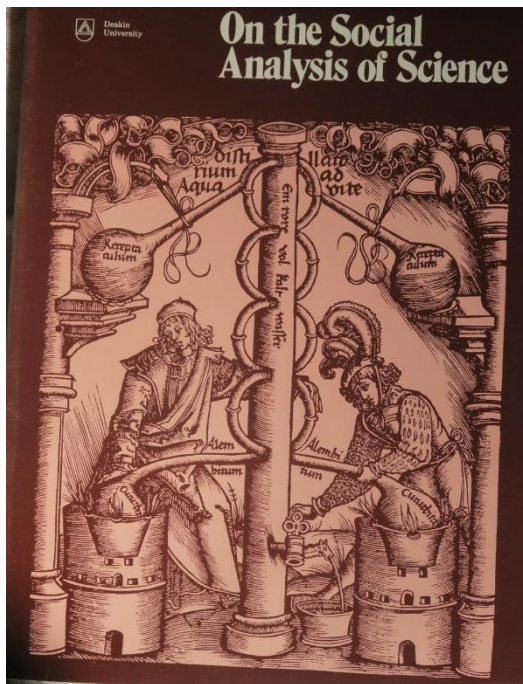
## Liberation and Control



These two books form the central axis of the course Knowledge and Power. They are focused mainly on issues such as the meaning of progress in the modern world and the assessment of social and environmental risk, with case studies on asbestos, global warming and uranium mining in Australia. Prepared by Chris Ryan, David Wade Chambers, Richard Gillespie, and Jim Falk.



## On the Social Analysis of Science



Prepared by David Wade Chambers. This text examines the very different visions of scientific community as put forward by Bacon and Descartes, with material on the social role of the expert, the professionalization of science, and other issues in the social history of science.

## Worm in the Bud



Prepared by David Wade Chambers. After considering the controversy over Rachel Carson and her book *Silent Spring*, this text raises questions about specialisation, the role of social interests in science, and the resolution of technical controversy.

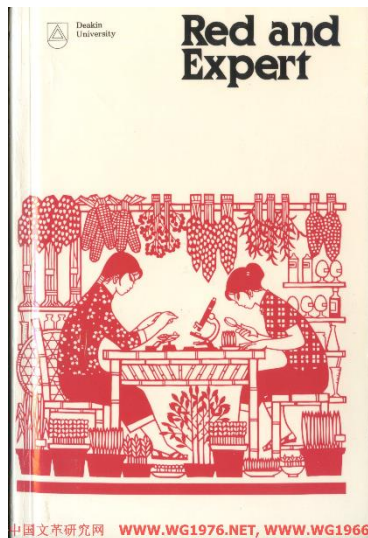


## Winner Take All

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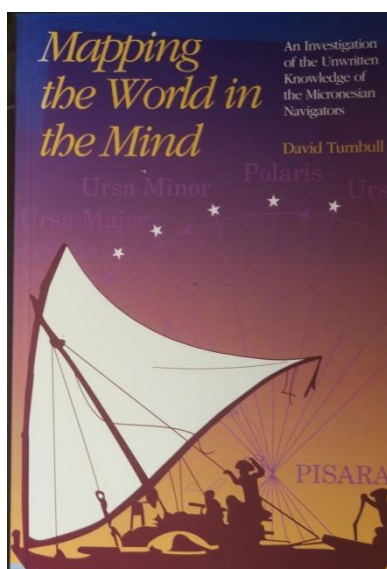
Prepared by Fred Jevons and Terry Stokes. Considers the Watson and Crick episode and the practice of science.

## Red and Expert



Prepared by David Wade Chambers. Clarifies the social understanding of science and modern expertise in the People's Republic of China during the Cultural Revolution (1966-1975). Note: Chambers spent 5 months in the PRC in 1974.

## Mapping the World in the Mind



Prepared by David Turnbull. An examination of the unwritten knowledge of the Micronesian navigators

**Second Year Course: Nature and Human Nature: Made up of seven separate text books with additional reading extracts. (Note Covers not available.)**

**First Semester**

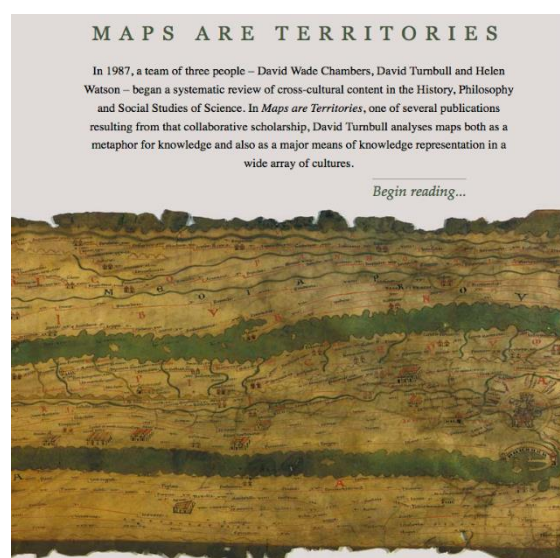
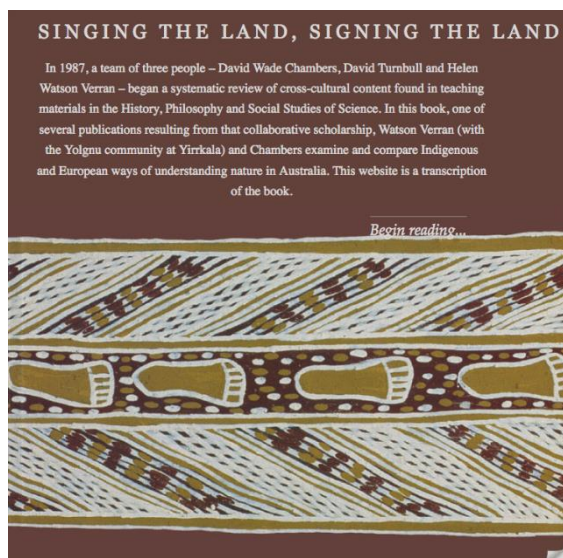
- Nature and Social Power, Lyndsay Farrall
- Racism in America, Allan Johnston
- Science at Work, Richard Gillespie
- Darwinism and Social Darwinism, Rosaleen Love
- Night of the Dolphin, Gavan Daws
- Phrenology and the First Science of Man, David Turnbull

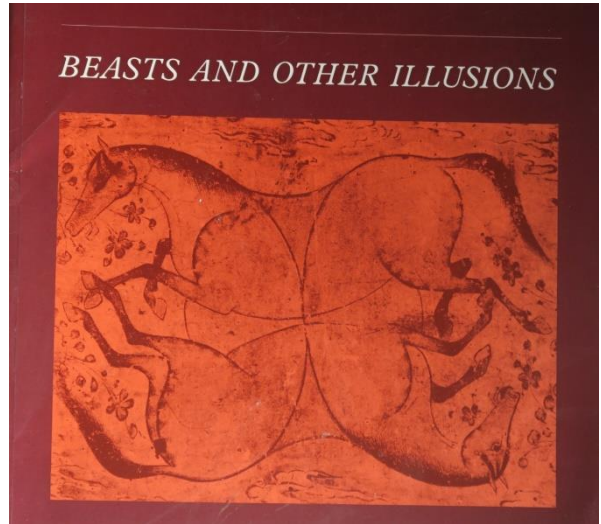
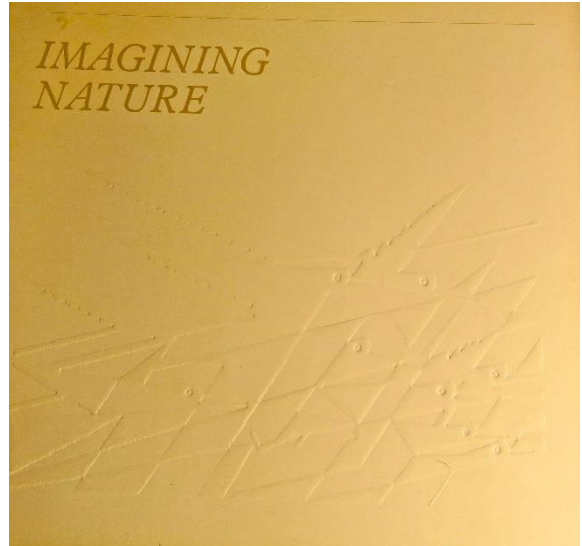
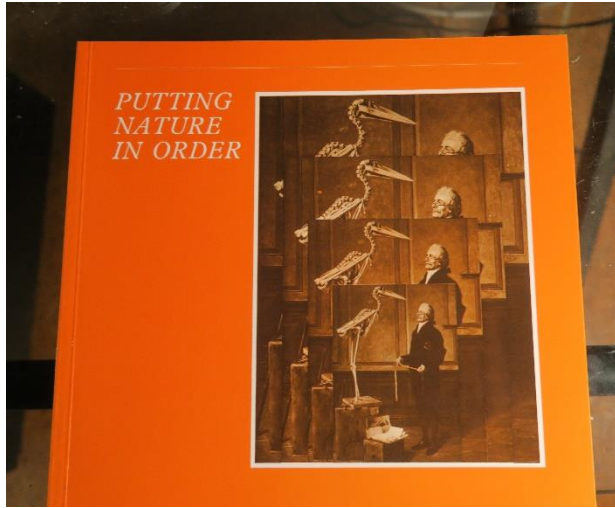
**Second Semester**

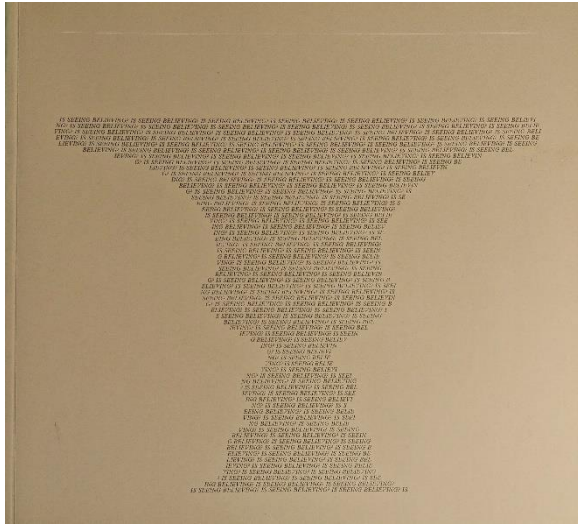
- Imagining Nature, DW Chambers
- Imagining Landscapes, DW Chambers
- Putting Nature in Order, DW Chambers
- Beasts and Other Illusions, DW Chambers
- Is Seeing Believing, DW Chambers
- Maps Are Territories, David Turnbull
- Singing the Land, Signing the Land, Helen Verran (with Yolgnu community at Yirrkala) and DW Chambers

Note the Second Semester books, winner of the 1982 Andrew Fabinyi Award for the best Australian textbook, are pictured below. In order to experience the technical elegance and exceptional online functionality of this series of Deakin-published texts, it is helpful to click on the two links.

<http://singing.indigenouknowledge.org/>  
<http://territories.indigenouknowledge.org/>

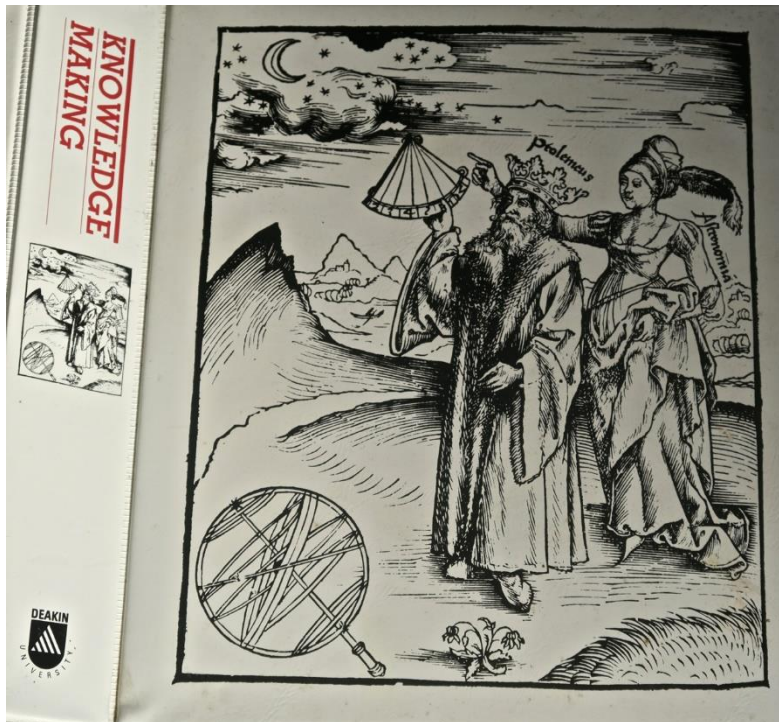






### Third Year Course: Science in Culture: made up of four study guides with reading extracts.

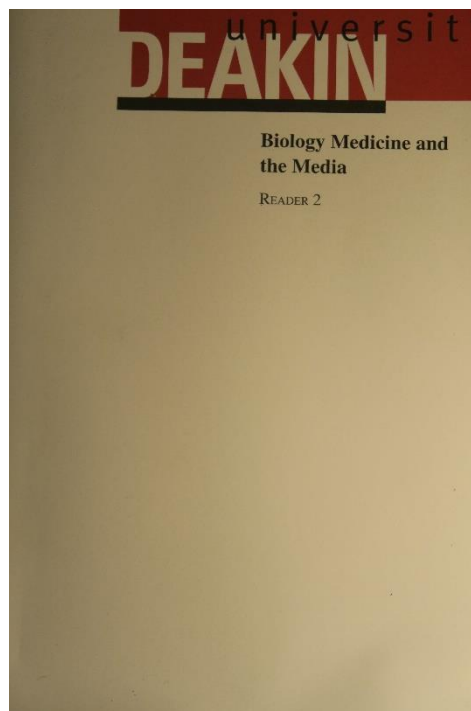
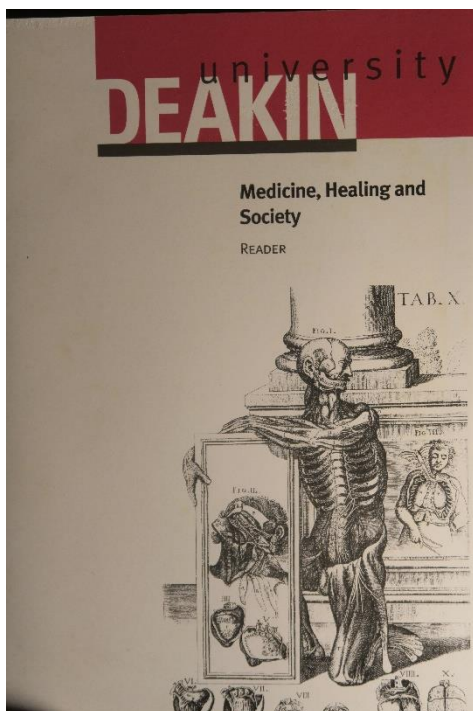
#### Knowledge Making



## Knowledge Using



## Medicine, Healing and Society



Science in Society (Note covers not available.)

## MA in Science and Technology Studies

In 1995-6 we set up the Deakin coursework MA in Science and Technology Studies, a program that was recognised by the journal New Scientist as perhaps the world's first fully online post-

graduate degree. The project was partially funded by the Victorian Education Foundation, which allowed us to hire a full time professional IT person, Andre Causov, who had completed his undergraduate degree at Deakin.

It is important to remember that this development of a teaching website was being accomplished without the help of any teaching software. Indeed, it was completed at precisely the same time that Moodle, Blackboard, and First Class were themselves in preparation.

In 1996 the MA was officially launched. For example, two notices (below) were announced in the New Scientist based on an interview by a scientist journalist.

**NEW SCIENTIST LIVE 2018**

Tickets selling fast: book your place now!

# NewScientist

News Technology Space Physics Health Environment Mind | Travel Live Jobs

Home | News



SCIENCE 26 October 1996

## bytes : Deakin puts course on the line

The Science and Technology Studies programme at Deakin University in Geelong is putting its money where its mouth is and using technology to deliver its message. In the next academic year it plans to offer a complete MA course entirely by means of the World Wide Web, one of the first in the world.

The MA package will be available to students with access to the Web enrolled from anywhere in the world, says course coordinator **Wade Chambers**. In its first year the programme will include study guides, an electronic newsletter, student and staff and student communication via e-mail, a chat facility, links to resources at Web sites all over the world and training in the new skill of Internet-based research. Assessment of projects will be transmitted by the Internet, leading to a fast turn-around. By 1998 the course is expected to incorporate a virtual field trip to a working laboratory. Further information is available from [wade@deakin.edu.au](mailto:wade@deakin.edu.au)

The description below was published in the New Scientist and written by the highly respected journalist David Dickson (1947-2013), founding director of SciDev.Net.



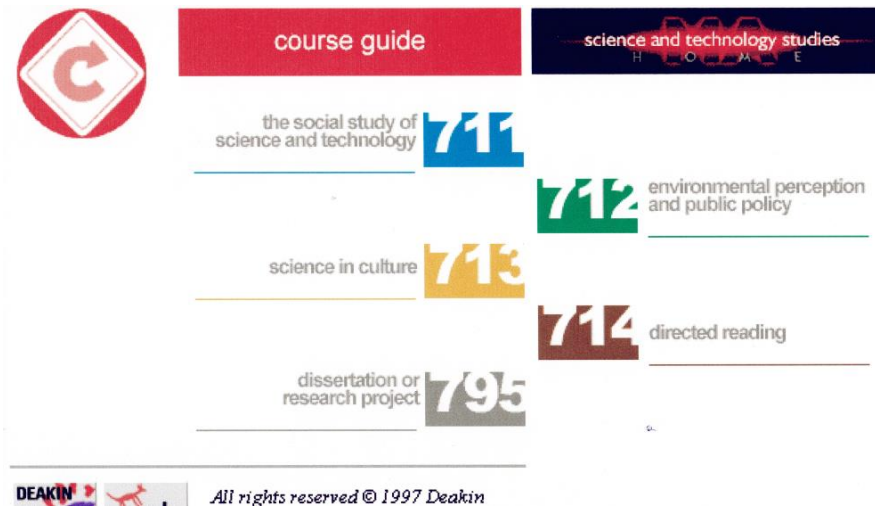
### Deakin University in Australia: An Example of a Fully Developed On-line Degree Program

<http://arts.deakin.edu.au/masts/>

Deakin University offers a unique, fully online **Master of Arts in Science and Technology Studies MA(STS)**. Deakin has an international reputation as Australia's premier off-campus university. This MA degree program, available to students around the world, is designed to be of interest both to students with backgrounds in the arts and those with science backgrounds. It states its goals in a refreshingly open manner, offering both to stretch the thinking of the participants and to help them get through the "technofear" of attempting such learning in a new environment. "Any successful course of study ought to change the way one sees and experiences the world. If you undertake our MA course, you should hope for nothing less than that."

The program is described as "Investigating the major issues of science and technology demands in reference to many academic disciplines, especially history, philosophy and sociology of science. This program offers students an opportunity to conduct such investigation, within a professional training structure of directed reading and disciplined writing. Using the very latest innovations in Web interactivity and presentation, the MA(STS) gives students a complete 'structured learning environment', allowing streamlined library and web research, and online communication between students, staff and administrators."

The actual MA degree work was made up of four carefully designed online courses in the first year followed by a short dissertation, research project, or film in the second or concluding year. The study materials included selected texts from the BA study guides as well as distinctive work plans depending on the student's professional intentions.



The image shows a course guide for 'science and technology studies' at Deakin University. It features a red circular logo with a white 'C' on the left. The main title 'science and technology studies' is in a dark blue box with 'HOME' written below it. The guide lists four courses: 'the social study of science and technology' (711), 'environmental perception and public policy' (712), 'science in culture' (713), and 'directed reading' (714). A 'dissertation or research project' (795) is listed at the bottom. The Deakin University logo and 'All rights reserved © 1997 Deakin' are at the bottom left.

course guide

science and technology studies  
H O M E

the social study of science and technology 711

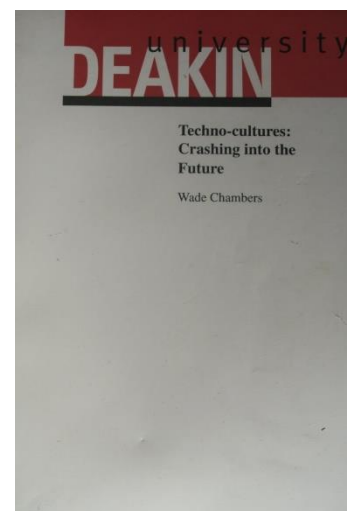
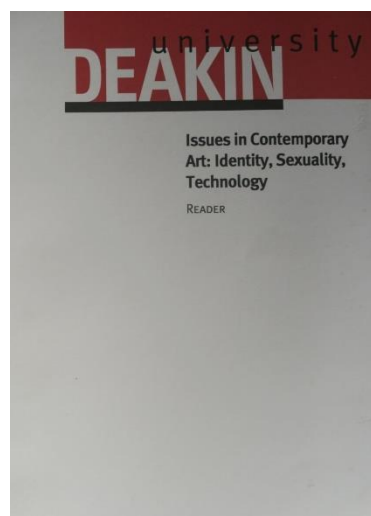
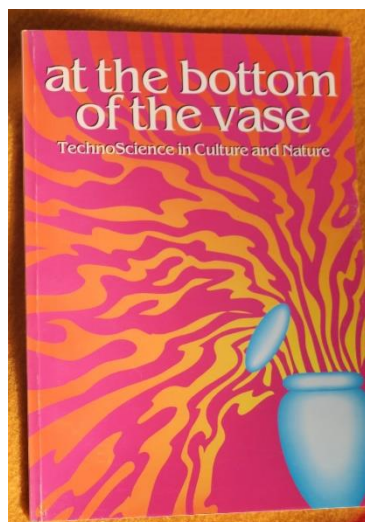
environmental perception and public policy 712

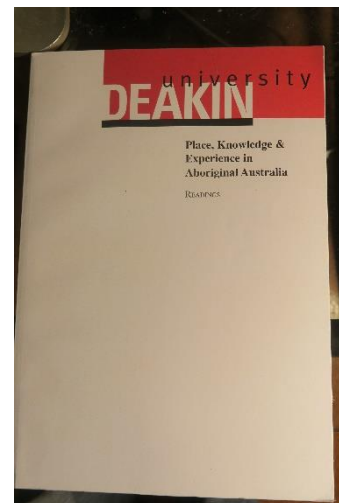
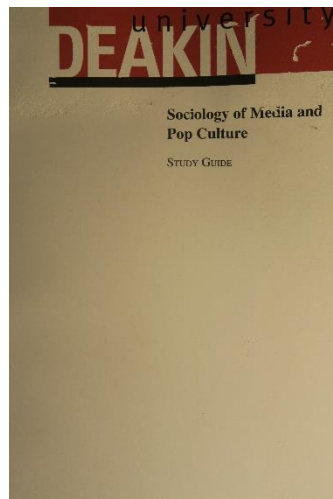
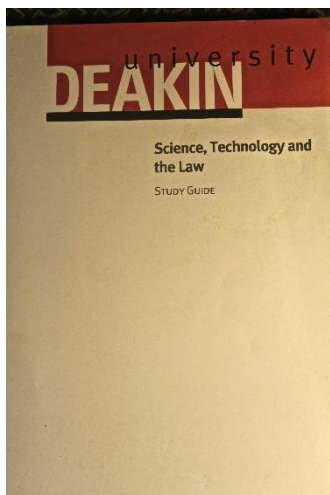
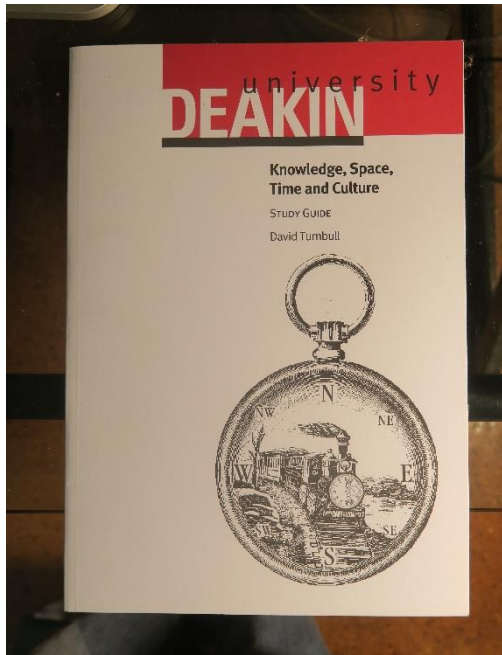
science in culture 713

directed reading 714

dissertation or research project 795

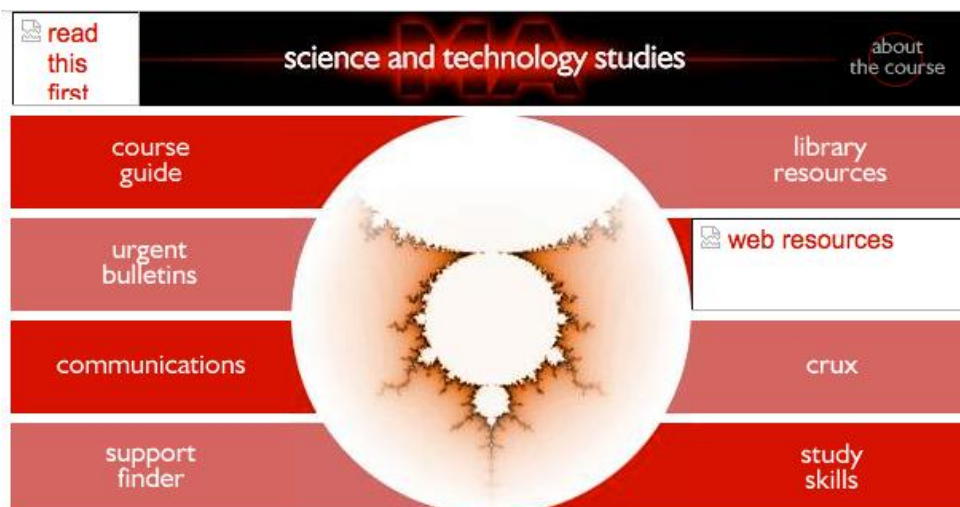
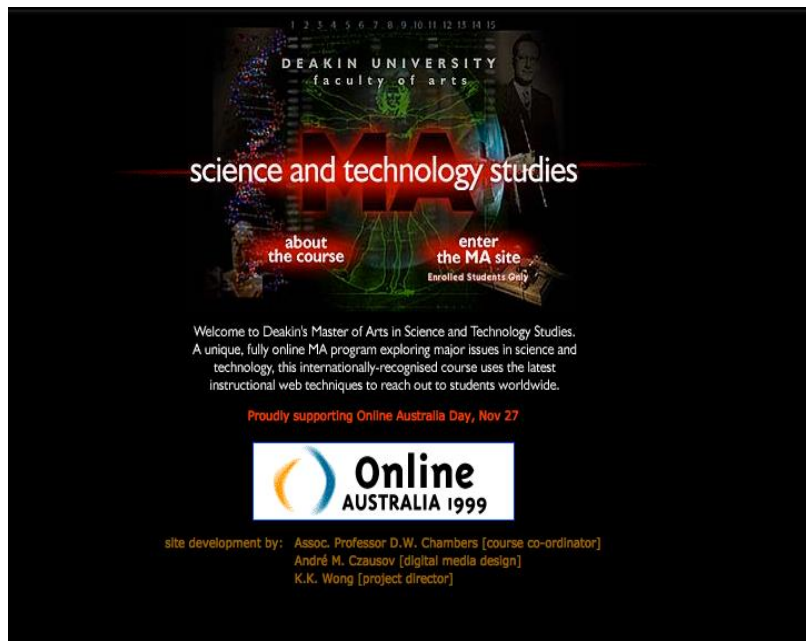
DEAKIN All rights reserved © 1997 Deakin







Shortly after the STS degree was closed in 2000, all online materials were taken off line and most were unrecoverable. The screen grabs shown below are all that remains on the Way Back Machine.



## plan of study

AST 711 provides an Introduction to the study of the nature and dynamics of science and technology in their social context. The unit draws on many disciplines, and deals with current theoretical paradigms as well as a wide range of social and economic problems. **Assessment** is based on project work chosen using the project selector at right — 711 offers a choice of over one hundred projects.



711 Core Study Guide

click icon to read study guide

## core study guide

The [711 Guide](#) uses case studies to examine key issues. Work through the readings provided, and use the progressive Q&A features to develop your knowledge. Learning is aided by a number of [interactive exercises](#) called InterActivities which provide immediate feedback on student responses and also suggest further reading.

## 711 project selector

Missing Plug-in



search



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This page is under development but with weekly

upgrades we expect it to be completed by early October. If you have suggestions of particularly useful sites, please notify the MA Coordinator at [wade@deakin.edu.au](mailto:wade@deakin.edu.au)

Click on the topics below if you want further advice:

- [Hints on how to navigate the Web for the inexperienced](#)
- [Discussion of Web research techniques](#)
- [Discussion of the problems of Web documentation and referencing](#)

### Search Engines

#### Sci & Tech Studies

#### The Media

#### The Environment

#### Biotechnology

#### Gender Issues

#### Publications

#### Activism

#### Opinions

#### Ethics

#### Indigenous Issues

#### Education

#### Health

#### Miscellaneous

### Latest Course HotLinks

select a web site:

These links include some of the best sites in the STS area. For students who are especially keen to undertake projects requiring on-line research, this page will probably become the Grand Central Station of the course. The resource categories in the middle column provide several dozen links to web sites. And these sites link to other sites the better for to sight 'em. And to these sites link other sites and so ad infinitum.

In the four years of the existence of the MA (STS), fifteen students completed the degree and a few more completed individual courses. The students were mostly professionals already working in such fields as print and radio journalism, science, anthropology, history, public policy, tourism, high school teaching, public health, law, museums and IT. In the year 2000, without warning, the university withdrew both degree programmes.

The reason for this decision to close the programme is still not entirely clear. All of the student feedback about the curriculum had been extremely positive. Furthermore, the administration acknowledged that the department had achieved an international academic reputation and had not exceeded budgetary expectations. Apparently, however, the university's priorities had changed. The leadership wished to move into areas such as law and medicine.

Within a year all faculty members had been given retirement or had been moved into other departments at the university.

### **List of STS scholars who wrote Deakin text materials for use in Social Studies of Science (BA) and Science and Technology Studies (MA)**

Randall Albury (NSW)  
Pam Atkins (Swinburne)  
Ditta Bartels (Murdoch)  
Barry Butcher (Deakin)  
Andre Causov (Deakin)  
Caroline Clark (Melbourne)  
David Wade Chambers (Deakin)  
Max Charlesworth (Deakin)  
Gavan Daws (ANU)  
David Dickson (UK New Scientist)  
Jim Falk (Wollongong)  
Lyndsay Farrall (Deakin)  
Peter Fenner (Deakin)  
Richard Gillespie (Museum of Victoria)  
Miranda Hughes (Melbourne)  
Lesley Instone (Futures Commission)  
Struan Jacobs (Deakin)  
Fred Jevons (Deakin)  
Allan Johnston (Deakin)  
Rosaleen Love (RMIT)  
Anthony O'Donnell (Melbourne)  
Brian Martin (Wollongong)  
John Matthews (Ministerial Advisor)  
Everett Mendelsohn (US Harvard)  
Jock McCullough (Deakin)  
Kingsley Palmer (ANU)  
Ian Reid (Deakin)  
Eveleen Richards (Wollongong)  
Chris Ryan (RMIT)  
John Schuster (NSW)  
Steven Shapin (UK Edinburgh)  
Terry Stokes (Deakin)  
David Turnbull (Deakin)

Ian Warren (Deakin)  
Helen Watson Verran (Deakin)  
Ian Weeks (Deakin)

**Are there any published materials (journal articles, books etc), news articles, pictures, or other artefacts that relate to this period that you can point to as an important influence or outcome of the culture here?**

In addition to the articles and links listed above, several other journal articles describe the Deakin STS initiative in more detail. These are listed below.

<https://link.springer.com/article/10.1023%2FA%3A1008788327608>

*Science and Education* 8: 632–644, 1999.

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### Seeing a World in a Grain of Sand: Science Teaching in Multicultural Context

DAVID WADE CHAMBERS

*Science and Technology Studies, Deakin University, Geelong, Australia*

**ABSTRACT.** This paper briefly describes two unusual curriculum plans: the Imagining Nature Project at Deakin University in Geelong, Victoria, Australia<sup>1</sup> and the Native Eyes Project at the Institute of American Indian Art in Santa Fe, New Mexico<sup>2</sup>. Among other things, both projects entail the teaching of science and technology studies to non-science majors of highly diverse cultural origin. Both projects also incorporate innovative strategies designed to make science and technology more credible and relevant to indigenous people.

*To see a world in a grain of sand  
And a heaven in a wildflower  
Hold infinity in the palm of your hand  
And eternity in an hour.*

William Blake, 'Auguries of Innocence'

If the feeling behind Blake's words is applied to science teaching, then the best place to teach may be on a beach or in the countryside. This story, about the role of science in the arts curriculum, starts twenty years ago with the founding of a new university in an Australian sheep paddock not far from the country's best known surfing beach. We soon learned that teaching, wherever it may take place, is more effective when its aims and methods take account of the needs, interests, and social background of the students.

From its establishment in 1977, Deakin University's student body was culturally diverse, reflecting Australia's high post-war immigration policies. It also included a contingent of Aboriginal Australians from the university's Koori teacher education program. Furthermore, more than half the Arts students were 'off-campus' and 'mature-age', generating special teaching imperatives. Both this heterogeneity and the particular requirements of the interdisciplinary curriculum were to prove important in how we structured the teaching program.

From the beginning, all Arts subjects were taught by interdisciplinary course teams. One of these, called Knowledge and Power, was charged with examining scientific and technological knowledge with an eye to its cultural and historical dimensions. Three staff members were trained historians of science, but because the Course Team also included academics from many disciplines in both the arts and the sciences,<sup>3</sup> we decided that the program should follow the broader approaches of Science and Technology Studies. Furthermore, we agreed that the program would be integrated around a focus on the production, legitimation, transmission

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This paper describes the content, approach and rationale of the courses in social studies of science at Deakin University. It sets these courses in their national and intellectual contexts, and describes the publications that have been devised to support them.

[https://www.academia.edu/2385581/Teaching\\_from\\_Three\\_Knowledge\\_Spaces?auto=download](https://www.academia.edu/2385581/Teaching_from_Three_Knowledge_Spaces?auto=download)

This paper describes the teaching program at the Tribal College, Institute of American Indian Arts and Culture, in Santa Fe, NM, USA. Much of the theory that underlies this teaching

philosophy was first developed collectively at Deakin University STS, and is put into practice in the courses and textbooks described above.

### **What kinds of scholarship characterised the early STS phase here? Who were its key figures?**

The principal research workers in Deakin STS in the eighties and nineties are listed below.

**Dr. David Wade Chambers** maintained three major research projects: 1) Nature and Role of Indigenous Knowledge Systems; 2) Scientific Practice in Colonial Context; and 3) the Draw a Scientist Test, exploring the stereotypical image in children: issues of gender, race, and discipline.

**Dr. David Turnbull's** overarching research interest focuses on the ways in which knowledge and space are co-produced. He approaches this from a number of disparate but intersecting trajectories: 1. The comparison of knowledge practices across knowledge traditions including western science. 2. Narratives of prehistory, comparative explanations of how humans moved and developed complex polities. 3. Theories of complexity and the commons; how to work with and sustain multiplicity.

**Dr. Helen Watson Verran** is best known for her book, *Science and an African Logic*, for which she received the [Ludwik Fleck Prize](#) in 2003. More recently her work has focussed on Yolngu Aboriginal Australians' understandings of the world, their use of technology, and their knowledge systems. While at Deakin her book *Singing the Land, Signing the Land* (with DW Chambers) was considered an important contribution to understanding the nature and value of Indigenous Knowledge Systems in the modern context.

**Dr. Barry Butcher's** research has concentrated on the reception and impact of Darwinism in Australia.