

AUSTRALIAN BIOGRAPHY

A series that profiles some of the most extraordinary Australians of our time



Charles Birch

1918 - 2009
Scientist and Theologian

This program is an episode of **Australian Biography** Series 5 produced under the National Interest Program of Film Australia. This well-established series profiles some of the most extraordinary Australians of our time. Many have had a major impact on the nation's cultural, political and social life. All are remarkable and inspiring people who have reached a stage in their lives where they can look back and reflect. Through revealing in-depth interviews, they share their stories—of beginnings and challenges, landmarks and turning points. In so doing, they provide us with an invaluable archival record and a unique perspective on the roads we, as a country, have travelled.

Australian Biography: Charles Birch

Director/Producer Frank Heimans

Executive Producer Sharon Connolly

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Study guide prepared by Roger Stitson © NFSA

Also in Series 5: Zelda D'Aprano, Miriam Hyde, Ruby Langford Ginibi,
Mungo MacCallum, Dame Margaret Scott, Tom Uren.

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SYNOPSIS

Charles Birch has never shied away from tackling the big questions. As one of the world's leading geneticists, he has had a hand in discoveries that have revolutionised our thinking. At the same time, he has applied his ever-questioning intellect to one of the oldest questions of all—the search for God.

As a boy in his native Melbourne, Birch took an early interest in the workings of the insect world and it was logical that he should go on to become an entomologist. At the Waite Institute in Adelaide he sought an explanation for the grasshopper plagues ravaging South Australia in the late 1930s—and received an early lesson in pragmatism when the farmers rejected his elegant solution because it did not suit them.

The work gave him an interest in population ecology, a science he felt would allow him to follow his ideal of doing something to help his fellow men. At the same time, discussion with a close friend led to his search for a philosophy that could embrace both science and God, a quest that culminated in his belief in what he calls 'an ecological model of God'.

He went on to explore the inter-reaction of humanity with the environment, studying genetics at Chicago University then later at Oxford. In 1948 he returned to Australia to become senior lecturer in biology at Sydney University where, as Challis Professor of Biology, he was involved in laying the foundations for the new science of ecology—in the course of which he became a close friend of environmentalist Paul Ehrlich.

During the Vietnam War, Birch took part in the anti-war campaigns and helped dissident students in their battles against conscription, which he strongly opposed.

Meanwhile, he had written the landmark textbook, **Confronting the Future**. In 1990 he was awarded the prestigious Templeton Prize for Religion.

CURRICULUM LINKS

This program will have interest and relevance for teachers and students at secondary and tertiary levels. Curriculum links include Science, English, History, HSIE/SOSE, Health, Study of Religion and Human Relations.

VOCABULARY

Write a definition for each of the following words and use each one in a meaningful sentence.

- entomology
- ecology
- environment
- evangelical
- genetics
- theology
- supernatural
- interventionist
- philosophy
- conscription

AFTER WATCHING

What do you recall from viewing the program?

- What is Charles Birch's view about the relative importance of genetic inheritance and environment on his life?

- What is the title of the book, given to Charles by his mother, that had a major influence on him when young? Who was the author of the book? What career choice did he make as a result of reading this book?
- Describe Charles's adolescent problems at school, and explain whether the school recognised and dealt with these problems.
- Describe Charles's initial research in entomology, and its importance to the South Australian rural environment, when he went to the Waite Institute in Adelaide.
- What was the name of the religious group Charles joined in Adelaide, and what was its importance to him as a scientist?
- Name three non-scientific values, or 'virtues', that Charles, as a scientist, regarded as important in understanding the universe around him.
- Which university did Charles continue his research at after leaving the Waite Institute? Name the important science textbook being published by that university at the time.
- Summarise Charles's view about the importance and relevance of the study of ecology to the world.
- What other scientific field, beyond the study of insects (entomology), did Charles realise it was necessary to pursue, and for what purpose?
- Why did Charles find studying at Oxford University, in England, 'awful'?
- What was the title of the book Charles co-wrote with Professor Andrewartha?
- Describe the work Charles did when he visited the Amazon in Brazil.
- What was the title of the anti-Vietnam War protest group that Charles formed, and what was the group's purpose?
- In Charles's view, what has science done for theology? Why does he reject the concept of a 'supernatural God', a god that can intervene from the outside with 'miracles'?
- Describe Charles's 'ecological model of God'.
- Why does Charles believe that the God of today is in some ways different from the God at the time of the 'big bang', when the universe first came into being?
- List three of the 'popular books' Charles has written.
- What are the three critical aspects that affect the environment? From Charles's definition, present these three aspects in one interrelated mathematical equation.
- What are the main questions posed in Charles's book, **On Purpose**?
- Where does Charles find happiness in his life?

LIFE CHOICES AND OUTCOMES

Charles Birch tell us in the program that from an early age he was encouraged by his mother to take an interest in studies of the natural world—the world of plants and animals.

- As a group, discuss in class the extent of your knowledge and interest in the world of plants and animals during your childhood and teenage years, and whether this has affected your view of life, and your own place and role in the world. For example, have you

tried to grow flowers, have you attempted to breed fish or birds, and if so, what was the outcome? Have you ever been a collector of insects? What have you learnt from keeping and looking after a family pet, or from encountering or even befriending a wild animal? What are your experiences, if any, of entering a natural environment such as a wildlife park, or of scuba diving in the sea, or even of camping in the bush? Each of you may wish to give a short talk or demonstration to the class about any of these aspects.

- Prepare a set of wall posters displaying information about nature appreciation organisations either in your local region or state, their membership and activities. (Note that some amateur groups also work with trained scientists to help track and record the population numbers, wellbeing and movements of clusters of endangered species such as rare frogs.)
- Write a short story from the point of view of a wild animal in a natural environment affected by human activity. This may involve air or water pollution, salination, clearing the land for crops, or even such activities as whaling.
- We are told that Charles, when young, was 'tremendously influenced' by a book written by Scottish scientist John Burdon Sanderson Haldane (1892-1964). Working in pairs, research and prepare an illustrated popular magazine biography on the life, work, thoughts, writings and legacy of J.B.S. Haldane.
- Charles regards the environment in which he grew up (which we may loosely refer to as **nurture**), rather than his 'genetic inheritance' (or **nature**), as being more important in determining who he became in later life. Research and write an informative essay-style article on the basic elements of the **nature versus nurture** debate, and whether it has been, or is likely to be, satisfactorily resolved.
- The most extreme form of the nature versus nurture debate is the image of the feral child. As a group, prepare a radio or television documentary about famous historical and fictional feral children. A true-life example you may look at is the enigma, or mystery, of Kaspar Hauser, while a fictional example may be the Tarzan stories written by Edgar Rice Burroughs. You may also wish to include mock interviews, selected readings from books, edited scenes or stills from movies, and fictionalised re-enactments.
- Discuss the plot, setting, character, theme, style and genre possibilities in class then write your own nature/nurture short story or radio play. Stories of twins separated at birth may be an example. The main characters may be recognisably human, animal or even cyborg, depending on the kind of story you wish to write. An alternative would be to work in pairs or small groups to plot and prepare a storyboard for a short film.

ADOLESCENCE AND SCHOOL

From what we are told in the program, Charles's school years were emotionally difficult for him—as they are for many teenagers—particularly in his adolescent discovery of sexuality.

- Discuss in class the concept of 'adolescence'. Is it merely a 20th century invention, caused by a change in lifestyles and urban affluence, or has it always been with us throughout history in all parts of the world? In what ways is adolescence different from, and similar to, childhood and adulthood?
- Debate in class, or present as an argumentative-style written article, whether schools—qualified educators—have a duty to teach sex education (perhaps as units within Health and Human Relations

studies), or whether it is entirely a private issue for parents to discuss with their children. As in Charles's case, are members of the religious clergy adequately prepared, qualified or competent to teach sex education to teenagers, and should such considerations as morality and immorality, and the concepts of 'sin', 'guilt' and 'evil' enter the realm of sex education?

- Write a short story specifically about the problems and issues of adolescence. The story may be in any genre, point of view and style of your choosing: contemporary drama, comedy, fantasy, horror etc.

RESEARCH FOR HUMANITY

After completing his schooling, Charles regarded his university studies in science—entomology, ecology and genetics—in an 'evangelical' way, as a means to bring 'light to the darkness of the world', and to 'help humanity'.

- Discuss the ways in which science research may have both positive and negative affects on the human and natural environments generally. For example, is it possible that scientific research for military purposes has ever been of benefit to us? Are such issues as genetic modification, cloning, and the mapping of DNA of genuine use to humankind and the world? Are there ethical considerations related to laboratory testing on animals, even when the outcome of such research may eventually reduce human disease and save lives?
- Write a science fiction, drama or thriller short story about a scientist who begins to doubt the ethical or moral worth of his or her research. How will the story develop and resolve itself? Alternatively, work in small groups to plot the story as a radio play, and either record it for your school's intranet, or, with other members of the class playing roles and carrying out production duties such as the presentation of sound effects, carry out a script reading in class.
- As a full class project, research the history of insect plagues in Australia, looking at when, where and why they have occurred, whether they have been induced by human activity such as extensive land clearance since colonisation, chemical treatment (such as crop dusting) and excessive drainage of natural water systems such as lakes and rivers. What measures have scientists undertaken over the decades to prevent plagues, and what is the success rate of these measures? What effect does insect plague have on farmers and their livestock, and what kind of monetary value can be put on it? Has there been resistance by farmers to changing their daily/seasonal work habits to adapt to new ways based on scientific research, and if so, why? What does the future hold in terms of research and prevention of plague? Does government fund such research adequately? Present the project in a multimedia display of posters, video, computer graphics and text, and oral reports to the class.
- The class is to split into small groups, with each group to research one region of the globe for its ecological problems—endangered species (including animal diseases, the hunting of animals for monetary profit), the effects of global warming, industrial pollution etc. Using maps, statistics, photographs, and drawing information from published sources such as interviews and reports, present your findings either as a website or a collection of large display posters.
- What is population ecology? In pairs, produce an article about the history of its development as a field of study relevant to all of us, for a magazine catering to teenagers.

- Research and write an informative-style article about the life and work of ecologist Paul Ehrlich, author of **The Population Bomb**. Include a discussion on the sustained attack upon him by business interests, and whether it has credibility, and your overall assessment of Ehrlich's beliefs, his research, and their importance to an understanding of world environmental issues. (Note: do not confuse with the scientist, also named Paul Ehrlich, 1854-1915.)
- Imagine you were provided with the budget to produce a one-minute promotional video about the importance of ecological issues to the general population, to be screened on TV during peak-evening viewing time. Working in pairs or small groups, prepare a script, detailing all visuals (including on-screen captions, descriptions of camera shots and camera movements), voice-over, on-camera speech, sound effects and, if required, background music. Prepare a storyboard to accompany the script. An alternative to this may be to produce and record, with the help of other students, a one-minute audio presentation for the school intranet.
- Write a rhyming poem about ecology and its relationship to human and natural environments. Place it on an illustrated display poster. (You may wish to use the poem, or part of it, for the TV/audio promotion activity, above.)
- Write a review of any movie dealing with humankind's abuse or lack of understanding of the natural environment and its living species, and the consequences of this. There are many examples, ranging from Cold War-era 1950s American science fiction, to the Japanese **Godzilla** films, to the various film versions of **King Kong**.

PERSONAL AND PUBLIC POLITICS

While working in the United States in the 1960s, Charles observed the rise of the student anti-conscription campaign protesting against America's involvement in the Vietnam War, and later became involved in similar activities after he returned to Australia.

- Research and write an article about the history of military conscription in Australia from World War One onwards, and the various anti-conscription movements that consequently were organised. You may deal briefly with World Wars One and Two, and concentrate mainly on the Vietnam War, looking at the conscription debate of the era, the introduction, implementation and requirements of military conscription, who was affected by them, and the short- and long-term effects on those young men who were conscripted. What were the events that brought military conscription to an end in Australia?
- Debate in class whether military conscription should be an ongoing part of the Australian way of life today and into the future (i.e. whether it should be introduced, and what the consequences of this could be). In preparation, you may want to examine the situation in other countries of the world where military conscription has been a long-standing national requirement, and the reasons for this.
- Using Charles Birch's comments in the program as a starting point, plus any further research you have done, write a dramatic short story about one or more people involved in the anti-conscription movement during the Vietnam War. You may wish to tell the story from the viewpoint of a conscription resister, sometimes referred to critically as a 'draft dodger'.
- As most Australian daily newspapers of the time were at first supportive of the war and of conscription, you should follow the above story with your own version of a newspaper editorial

attacking the anti-conscription movement for its 'illegal', even 'un-Australian' activities.

- The class may wish to compile a collection of popular anti-Vietnam War songs of the 1960s and 70s, and to present them as a radio or video program, with additional, researched background commentary.

PHILOSOPHIC PERSPECTIVES

Charles Birch believes that 'the world as revealed by science' and 'the world as revealed by religion' should not be regarded as incompatible. That is, in part, that there can be a 'relationship' between the theory of evolution and the concept of a universe created by a god.

- From an historical viewpoint, research and then discuss in class whether scientific developments and ideas in the 19th century have affected or even changed religious beliefs throughout the industrialised western world.
- Charles maintains that in some ways we are the same people today as we were yesterday, but in other ways we are different. He maintains that this may also apply to God. Write a piece of fiction that draws upon any aspect of these concepts. You may want to discuss the range of story, plot, theme, setting and character possibilities in class first.
- Discuss, then in small groups, devise a stage play as a simple fable, based on Charles's concept: 'I was living not just for myself, but for something bigger than myself'. To write such a story, it may be necessary to include other characters so that comparisons and contrasts may be drawn in world view, behaviour and motivation.

REFERENCES AND FURTHER RESOURCES

Please note this listing is not exhaustive.

Books

- Charles Birch, **Science and Soul**, UNSW Press, Sydney, 2007
- Charles Birch, **Confronting the Future: Australia and the World—The Next Hundred Years**, Penguin Books, Ringwood, Victoria, revised 1993
- Charles Birch, **On Purpose**, NSW University Press, Kensington, NSW, 1990
- Charles Darwin, **The Illustrated Origin of Species: Abridged and Introduced by Richard E. Leakey**, Oxford University Press, Melbourne, 1979
- Paul Ehrlich, **The Population Bomb**, Ballantine Books, New York, 1968
- J.B.S. Haldane, **Possible Worlds, and Other Papers**, Books For Libraries Press, Freeport, New York, 1928, 1971
- Rick Imes, **The Practical Entomologist**, Aurum Press, London, 1992
- Greg Langley, **A Decade of Dissent: Vietnam and the Conflict on the Australian Homefront**, Allen and Unwin, North Sydney, NSW, 1992
- Richard P. Reading and Brian Miller (eds), **Endangered Animals: A Reference Guide to Conflicting Issues**, Greenwood Press, Westport, Connecticut, 2000

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Adolescence:

<http://en.wikipedia.org/wiki/Adolescence>

www.hindu.com/thehindu/quest/200412/stories/2004121100080400.htm

Charles Birch: <http://www.abc.net.au/radionational/programs/religionreport/charles-birch---science-and-soul/3289558>

Conservation and natural environment in australia:

www.acfonline.org.au

www.conservationvolunteers.com.au

Paul Ehrlich:

www.emagazine.com (various-use search)

Entomology-interview with a scientist:

<https://www.science.org.au/learning/general-audience/history/interviews-australian-scientists>

genetics:

www.ornl.gov/sci/techresources/Human_Genome/genetics.shtml

<http://learn.genetics.utah.edu/>

J.B.s. haldane:

http://en.wikipedia.org/wiki/J._B._S._Haldane

nature vs nurture; feral children:

http://en.wikipedia.org/wiki/Nature_versus_nurture

http://en.wikipedia.org/wiki/Feral_children

population ecology:

https://en.wikipedia.org/wiki/Population_ecology

<http://www.ecology.com/>

religion and ecology:

<http://environment.harvard.edu/courses/search/hds-2798-introduction-religion-and-ecology>

science research in australia:

www.csiro.au (search for 'ecology', 'entomology' etc)

Vietnam War, conscription and the protest movement:

www.onlineopinion.com.au/view.asp?article=315

http://en.wikipedia.org/wiki/Conscription_in_Australia



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