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# Technology options for aged care in Japan

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# **TECHNOLOGY OPTIONS FOR AGED CARE IN JAPAN**

A thesis submitted in fulfilment of the  
Requirements for the award of the degree  
Doctor of Philosophy  
from  
University of Wollongong

by

**NORIKO DETHLEFS**

B. Ec. M.A. *Syd*

**Science, Technology and Society Program**

**January 2002**

## ***DEDICATION***

This thesis is dedicated to my parents, my husband and my children who have all supported and encouraged me throughout the challenging process of writing this thesis.

## *Thesis Certification*

### **CERTIFICATION**

I, Noriko Dethlefs, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Science, Technology and Society Program, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Noriko Dethlefs

3 January, 2002

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## **ABSTRACT**

Demographic changes after the Second World War have resulted in the Japanese people having the world's highest life expectancy. This, coupled with the declining birth rate, has caused a rapid growth in the proportion of aged people in the population and a declining proportion of the population in the workforce to support the non-working population. At the same time, post-War changes in social conditioning and family structures are diminishing the availability and reliability of family members to act as care-givers to the aged.

Historical evidence suggests that the Japanese people, and in particular the government, are open to finding technological solutions to address their social and economic problems. One method of dealing with the scarce resources for aged care in Japan is to develop and utilise technology that assists the elderly to maintain as much independence for as long as possible and to assist care-givers by easing their workload.

This thesis examines three technology options that can be used to help aged care in Japan today. Option One uses only standard technology from other countries; Option Two calls for investment primarily in high-level technology development, exemplified by robotics technology; Option Three concentrates on developing and using smaller-scale technology such as barrier-free technology for aged care. Details of the development of robotics and barrier-free technologies and the assumptions underlying their

development for aged care are examined.

The thesis discusses ways in which these options affect various stakeholders—the government, researchers, professional care-givers, family care-givers and recipients of the care. This framework for assessing technology for aged care—spelling out options, unearthing assumptions underlying the options and surveying effects—is a useful and convenient tool for policy makers and other interested parties.

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## ***List of special names, abbreviations, and exchange rate***

1. Romanisation of Japanese: The modified Hepburn system has been used except for proper nouns. Authors, city names are in the Anglicised form used by writers.
2. An approximate exchange rate between Japanese yen and US dollar of 110 Japanese yen to US \$1 has been applied unless otherwise noted. The average of the annual average rate (yen per US\$1) between 1995 and 1999 is 113.7yen to US\$1. The average of the end-of-the-year rates for 1998 and 1999 is 108.5yen to US\$1. These figures are supplied by the Bank of Japan (Foreign Press Center: 2000, 50, *Asahi Shinbun Japan Almanac2001*, 2000, 111).
3. Ministerial names: From January 6, 2001 the Ministry of International Trade and Industry (MITI) has become the Ministry of Economy, Trade and Industry and the Ministry of Health and Welfare was changed to the Ministry of Health, Labour and Welfare. The names used in the thesis are those before these changes occurred.
4. Abbreviation of Ministry of Health and Welfare (MHW); New Energy and Industrial Technology Development Organization (NEDO); Universal Design (UD); The Technology Research Association of Medical and Welfare Apparatus (TRAMWA);

## ***PUBLICATIONS IN SUPPORT OF THE THESIS***

Dethlefs, N., 'Issues in the development of robotics technology for aged care in Japan', *Australasian Journal on Ageing*, vol. 18, no. 3, November, 1999, pp 18-22.

Dethlefs, N., 'Perspectives in Aged Care in Japan: The Role of Technology', *Japanese Studies: communities, cultures, critiques, Volume two: Identity politics and critiques in contemporary Japan*, Monash Asia Institute, 2000, pp 69-82.

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