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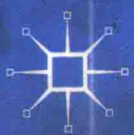
ROBOTS AND COMMUNICATION

Eleanor Sandry



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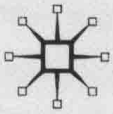
palgrave
macmillan

DOI: 10.1057/9781137468376.0001



First published 2015 by
PALGRAVE MACMILLAN

Palgrave Macmillan in the UK is an imprint of Macmillan Publishers Limited, registered in England, company number 785998, of Houndmills, Basingstoke, Hampshire RG21 6XS.

Palgrave Macmillan in the US is a division of St Martin's Press LLC, 175 Fifth Avenue, New York, NY 10010.

Palgrave Macmillan is the global academic imprint of the above companies and has companies and representatives throughout the world.

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ISBN: 978-1-137-46838-3 EPUB
ISBN: 978-1-137-46837-6 PDF
ISBN: 978-1-137-46836-9 Hardback

A catalogue record for this book is available from the British Library.

A catalog record for this book is available from the Library of Congress.

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DOI: 10.1057/9781137468376

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To Dave (a nonrobotic human) and Jemma (a nonrobotic dog)

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Acknowledgements

Writing this book would not have been possible without the help of many people. For the first few years my PhD supervisors, Chantal Bourgault du Coudray and Tanya Dalziell, were the people I relied upon the most for their immensely valuable suggestions and encouragement. The examiners of my thesis also provided helpful comments and ideas for further consideration. More recently it has been my colleagues at Curtin University who inspired many of the additional thoughts and writing that have been added in the past year or so. The feedback from the anonymous reviewer of my book proposal was also invaluable.

A great deal of the research represented within this book was funded by an Australian Postgraduate Award, in association with a top-up scholarship provided by the University of Western Australia. In 2013, I benefited from a six-month CCI Research Fellowship in the Centre for Culture and Technology at Curtin, working with John Hartley, and more recently the Department of Internet Studies and the School of Media, Culture and Creative Arts have done all that they could to ensure I had the time to complete this book.

Finally, and by no means least, I would like to thank my family and friends who have had to put up with me, and with the robots, for a very long time. Although I have dedicated this book to the ones who have had to share living space with me throughout the writing process, I

DOI: 10.1057/9781137468376.0003

would also like to give special thanks to my mum, who lives at a distance. She not only read the whole of my PhD thesis in its final draft to look for errors and nonsensical passages (thus feeding her comments into this book as well), but has also been happy to discuss ideas about robots with me ever since.

DOI: 10.1057/9781137468376.0003

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Contents

List of Figures ix

Acknowledgements x

Introduction 1
What is a robot? 3
What is communication? 4
Structure and scope 8

Part I From Data to Dogs

1 Designing Robots to Communicate with Humans 12
Science fiction origins 13
Humanoid robots in real life 14
Emotional robots 16
Communicating with Data 18
Avoiding the 'uncanny valley' 22
Communicating with Kismet 23
Critiquing the pursuit of sameness 28

2 Human-Animal Communication 31
Animal communication in fiction 32
Communicating with Clever Hans 34
Recognising individual animals 36
Communicating about relationships 39
Companion species and communicating about what's 'out there' 39

DOI: 10.1057/9781137468376.0001

Learning to value anthropomorphism 41
From human-animal communication to understanding robots 43

Part II Communicating with Non-Humanoid Robots

3 Encountering Otherness 46
The Autonomous Light Air Vessels 47
Levinasian encounters 50
Formalising the idea of communication as more than language 54
Making space for others and their differences 55
The ALAVs in version 2.0 58

4 Stories and Dances 62
The Fish-Bird project 63
Interruptions in being and in saying 64
Dialogues and dynamic systems 68
Employing both discrete state and dynamic systems models 70

5 Collaboration and Trust 74
AUR the robotic desk lamp 76
Collaborating with AUR 77
Acting theory as an alternative perspective 80
Expression and 'face' 83
Trust, respect and interruption in dynamic interactions 85

Part III Rethinking Robots and Communication

6 Humans, Animals and Machines 89
The value of blurred yet meaningful boundaries 90
Recognising the difference of humanoid robots 92
Non-humanoid robots and difference 96
Activity and agency within a particular context 97

7 Communication, Individuals and Systems 100
Rehearsal or training and fluency 101
Reconsidering Kismet as part of an interaction system 102

DOI: 10.1057/9781137468376.0001

Long-term interactions with nonautonomous robots 103
Moving closer to home with robotic floor cleaners 107
Asymmetry, responsibility and reciprocity 110

Conclusion 113

Bibliography 116

Index 125

DOI: 10.1057/9781137468376.0001

List of Figures

1.1 Kismet 24
3.1 The ALAVs (version 1.0) 48
4.1 The Fish-Bird project 64
5.1 AUR 76
7.1 Packbot with soldier 105

DOI: 10.1057/9781137468376.0002

Introduction

Abstract: *In order to prepare the reader for an analysis of human interactions with a wide variety of forms of robot, the introduction first explores what constitutes a robot. It then goes on to outline the different traditions of communication theory that are employed in the book's analysis. Finally, it explains the structure and scope of the book.*

Sandry, Eleanor. *Robots and Communication*. Basingstoke: Palgrave Macmillan, 2015. DOI: 10.1057/9781137468376.0004.

This book considers human-robot interactions as models of communication with the aim of re-evaluating the presence of otherness in communicative encounters. Its focus is therefore on finding ways to *value* the differences between communicators as opposed to regarding them as *problems* that must be overcome. This re-evaluation is difficult to achieve because, from its etymological roots to its metaphorical articulation in everyday language, communication is often linked with the accurate transmission of information and/or the construction and re-construction of shared social understandings (Reddy, 1979; Lakoff, 1980; Chang, 1996; Peters, 1999). From these perspectives, successful communication is positioned as a bridge between self and other, founded on their commonalities and seeking to develop those commonalities further.

In terms of reconsidering the value of difference, robots are intriguing communicators because they appear in such a variety of forms. Robots are sometimes created to be as humanlike as possible, but on other occasions are 'overtly other' in design. Within the continuum between these two extremes some robots are animal-like, while others resemble everyday objects that move and respond to people and their surroundings in unexpected ways. Therefore, at one end of the spectrum human interactions with humanoid robots illustrate the effects of accepting that commonality is key to effective communication, as well as exposing some of the limitations of this perspective. Towards the 'other' end of the spectrum, human interactions with robots that are not humanlike (or even animal-like) demonstrate the possibilities of communication that values difference, while nonetheless supporting effective collaborations between humans and machines. It is difficult to know how best to refer to the 'overtly other' end of the spectrum of design as a group, since broadly these robots cannot be defined simply as machinelike or object-like; they might not resemble anything familiar at all. Represented in this book are blimp-like, wheelchair-like, lamp-like and tank-like robots, along with one that is shaped like a shallow box (the iRobot Braava). For the purposes of this book I have therefore decided to refer to this disparate group of robots as 'non-humanoid', as a shorthand for 'not overtly humanlike or animal-like', because much of the book focuses on considering the possibilities of communication between humans and nonhuman others.

The decision to examine communication between humans and many different types of robot, from humanoid to non-humanoid, was inspired by John Durham Peters' suggestion that '[b]y exploring our strangest partners' it is possible 'to illuminate the strangeness that occurs in the

DOI: 10.1057/9781137468376.0004

most familiar settings' (1999, p. 231). An exploration of the interactions between humans and robots, and the interplay of familiarity and strangeness within those interactions, supports this book's argument that difference can be of value in communication, and collaboration, with all kinds of others.

Before moving on to provide an overview of the book's parts and chapters, it is worth discussing briefly the origins and varied present-day uses of the term 'robot', as well as offering an overview of the categories of communication theory that are employed in its analyses of human-robot interactions.

What is a robot?

The word 'robot' was first used in 1920 in Karel Capek's play *R. U. R. (Rossum's Universal Robots)*, although Karel credited his brother Joseph as the originator of the term (Capek, 1933). The robots in *R. U. R.* are not metal machines, the construction that typifies many recent robots in fiction, as well as those in real life; instead, Rossum's robots are 'artificial people', constructed from organic components (Capek, 1920/2006, p. 7). While their internal structure is far simpler than that of a human, externally they look very much like the human factory workers they have been designed to replace (Capek, 1920/2006, p. 9). The term robot has, therefore, been associated with humanlike form from the very beginning, and the figure of the robot, which became more closely associated with human-shaped machines as opposed to organic artificial people, has become an icon for many science fiction writers, screen writers and film-makers.

In real-world contexts, the word robot is now used to describe a huge range of different forms of machine, some of which are radio-controlled, while others are partially or completely autonomous in their movements and actions. In fact, the use of the term has become so broad that it is difficult to define exactly what is meant when a machine is described as a robot. It is also very difficult to clarify, in any universally accepted way, what attributes or abilities differentiate a robot from any other machine.

In general, a robot might be best regarded as a machine that appears to have some level of agency, and therefore seems to sense and respond to its surroundings. This is the case for all of the robots discussed in this book. However, given that this is a book about communication and

DOI: 10.1057/9781137468376.0004

robots, it should not be surprising that my particular interest is in robots that people regard as communicating with them in some way. Contrary to what might be assumed, a robot does not need to have a high level of autonomy to be regarded as a communicative partner. This is made particularly clear in Chapter 7, during the discussion of the relations between soldiers and Explosive Ordnance Disposal (EOD) robots that are currently almost always under the direct control of a human operator.

Stories about robots and developments in robotics are now reported on a regular basis, not only in technology-focused news media, but also in mainstream television and news publications. Even having a robot in the home is no longer just a technological fantasy for some people, although robotic vacuum cleaners are still a long way from the humanoid robotic helpers described in some science fiction. Robots are becoming more visible in workplaces as well and are sent into dangerous situations such as war, rescue or exploration. The use of robotic technologies is also increasingly directed towards providing care robots in hospitals and for assisted home living. In addition, robots have been introduced into educational environments and are encountered in public spaces, where they may be part of interactive art installations, or may act as informative museum and exhibition guides. As robots become more commonplace, the question of how people and robots can communicate with one another becomes increasingly important, whether robots simply encounter people in shared spaces, are required to work with them in teams or are positioned as their rescuers, carers or companions.

In order to explore the possibilities of human interactions with robots – from familiar to radically other – this book employs a range of communication theories to offer different perspectives on what happens when humans and robots meet and communicate, whether in scientific laboratories, art installations or science fiction. This exploration of human-robot interactions also circles back and provides new ways to think about communication in theory and in practice, offering some useful ways to rethink the presence of otherness in communicative processes and systems.

What is communication?

In discussing communication, this book draws upon the seven traditions of communication theory identified by Robert T. Craig (1999): rhetorical,

DOI: 10.1057/9781137468376.0004