

# Contents

## **Introduction: Editors' Introduction to Interacting with Presence**

Why "Interacting with Presence"? — 1

Structure of This Book — 2

An Introduction to Presence: Section 1 — 3

From the Body to the Technology to the Brain: Section 2 — 4

Experiencing the Others through a Technology: Section 3 — 5

Using Presence to Increase Wellbeing: Section 4 — 5

Individual Differences in Presence: Section 5 — 6

In Summary — 7

## **1 Extending the Self through the Tools and the Others: a General Framework for Presence and Social Presence in Mediated Interactions**

1.1 Introduction to Chapter 1 — 10

1.2 From Space to Action — 11

1.3 From Action to Presence — 13

1.4 From Presence to Social Presence — 17

1.5 The Evolutionary Role of Presence and Social Presence — 19

1.5.1 The Three Levels of Presence — 21

1.5.2 The Three Levels of Social Presence — 23

1.6 From Theory to Practice: the Development of Better Interactive Technologies — 24

1.7 Conclusion to Chapter 1 — 28

References — 29

## **2 Altered, Expanded and Distributed Embodiment: the Three Stages of Interactive Presence**

2.1 Introduction to Chapter 2: Presence and Three Categories of Embodiment — 32

2.2 Altered Embodiment: Changing Senses, Changing the World — 34

2.3 Expanded Embodiment: Embodiment without a Body? — 36

2.4 Distributed Embodiment: That's Me Over There! — 38

2.5 Our Future Embodiment(s): Challenges and Possibilities — 40

2.6 Conclusion to Chapter 2 — 42

References — 43

## **3 Measuring Presence in the Simulating Brain**

3.1 Introduction to Chapter 3 — 46

3.2 Background — 46

3.3 The Simulating Brain — 47

3.4	Presence in the Simulating Brain —	<b>48</b>
3.5	Measuring What, How? —	<b>50</b>
3.6	Previous Studies —	<b>52</b>
3.7	Conclusion to Chapter 3 —	<b>55</b>
	References —	<b>55</b>
<b>4</b>	<b>A Framework for Interactivity and Presence in Novel Bodies</b>	
4.1	Introduction to Chapter 4 —	<b>57</b>
4.1.1	Extending Human Morphology In Novel Ways —	<b>60</b>
4.2	Body Schema and Extending the Body Functionality with Tools —	<b>61</b>
4.2.1	Tool Use —	<b>61</b>
4.3	Body Image and the Transfer of Body Ownership to Novel Bodies —	<b>63</b>
4.3.1	Body Transfer and Body Ownership —	<b>63</b>
4.4	Embodied Cognition and Virtual Environments —	<b>65</b>
4.5	Conclusion to Chapter 4 —	<b>66</b>
	References —	<b>67</b>
<b>5</b>	<b>Presence and Hyperpresence: Implications for Community Awareness</b>	
5.1	Introduction to Chapter 5 —	<b>70</b>
5.2	Hyperpresence in Local Communities —	<b>71</b>
5.3	Hyperpresence in Mobile Technologies —	<b>74</b>
5.4	Hyperpresence in Online Virtual Communities —	<b>77</b>
5.5	Conclusion to Chapter 5 —	<b>80</b>
	References —	<b>81</b>
<b>6</b>	<b>Measuring Social Presence in Team-Based Digital Games</b>	
6.1	Introduction to Chapter 6 —	<b>83</b>
6.1.1	Measuring Social Presence —	<b>84</b>
6.2	Overview of the Questionnaire Development —	<b>87</b>
6.2.1	Statistical Criteria —	<b>89</b>
6.2.2	Data —	<b>89</b>
6.3	Trial 1: Chivalry —	<b>90</b>
6.4	Trial 2: Natural Selection 2 —	<b>91</b>
6.5	PCA —	<b>92</b>
6.5.1	Data Gathering —	<b>93</b>
6.5.2	Analysis —	<b>93</b>
6.6	Conclusion to Chapter 6 —	<b>96</b>
	References —	<b>96</b>
	Appendix —	<b>99</b>

<b>7</b>	<b>Recreating Leisure: How Immersive Environments Can Promote Wellbeing</b>
7.1	Introduction to Chapter 7 — <b>102</b>
7.2	Innovative Research and Industry Applications — <b>104</b>
7.2.1	Related Research Projects at Other Centres — <b>105</b>
7.2.2	Related Gaming Applications — <b>106</b>
7.3	Clinical Background — <b>106</b>
7.3.1	About Technology-enhanced Multimodal Meditation (TEMM) and Light and Sound Meditation (LSM) — <b>106</b>
7.4	TEMM Clinical Study — <b>108</b>
7.4.1	Study Design — <b>109</b>
7.4.2	Findings: Data Analysis and Results — <b>111</b>
7.4.3	Qualitative Subject Feedback — <b>112</b>
7.5	Discussion — <b>112</b>
7.5.1	Clinical Study Review: Key Insights — <b>112</b>
7.5.2	Neurophysiology and Neurochemical Aspects to Consider — <b>113</b>
7.5.3	Physiological Findings and Clinical Outcomes — <b>115</b>
7.5.4	Socioeconomic and Societal Benefits — <b>115</b>
7.5.5	Holistic Aspects of TEMM Therapy — <b>116</b>
7.5.6	Personalized Medicine Aspects to TEMM and Immersive Wellbeing Environments — <b>117</b>
7.6	Conclusion to Chapter 7 — <b>119</b>
	References — <b>120</b>
<b>8</b>	<b>Therapeutic Presence in Mediated Psychotherapy: the Uncanny Stranger in the Room</b>
8.1	Introduction to Chapter 8 — <b>123</b>
8.2	Therapeutic Presence — <b>126</b>
8.3	Mediated Therapeutic Presence — <b>129</b>
8.4	Conclusion to Chapter 8 — <b>133</b>
	References — <b>135</b>
<b>9</b>	<b>Coping with Stress and Anxiety: the Role of Presence in Technology Mediated Environments</b>
9.1	Introduction to Chapter 9 — <b>139</b>
9.2	Presence as a Link Among Different Approaches — <b>141</b>
9.3	From the Ubiquitous to the Interreality Approach — <b>142</b>
9.4	Advances in Presence Measurement — <b>144</b>
9.5	Conclusion to Chapter 9 — <b>146</b>
	References — <b>148</b>

**10 Does Gender Matter? Exploring Experiences of Physical and Social Presence in Men and Women**

- 10.1 Introduction to Chapter 10 — **152**
- 10.1.1 Sex or Gender? — **153**
- 10.1.2 Presence Equals Presence? — **153**
- 10.2 Physical Presence — **154**
- 10.2.1 Background — **154**
- 10.2.2 Physical Presence in a Stressful vs. a Non-stressful VE — **156**
- 10.2.3 Discussion — **156**
- 10.3 Social Presence — **158**
- 10.3.1 Background — **158**
- 10.3.2 Social Presence in a Collaborative VE — **159**
- 10.3.3 Discussion — **159**
- 10.4 Conclusion to Chapter 10 — **160**
- References — **161**

**11 The Experience of Presence in Persuasive Virtual Environments**

- 11.1 Introduction to Chapter 11 — **164**
- 11.2 Defining Presence in the Context of Persuasion — **165**
- 11.3 Theoretical Frameworks for Examining Presence in Persuasive Environments — **167**
- 11.3.1 Media Richness — **167**
- 11.3.2 Computers as Social Actors — **168**
- 11.3.3 Model of Social Influence in Virtual Environments — **168**
- 11.4 Contexts for Virtual Persuasion — **169**
- 11.4.1 Health — **169**
- 11.4.2 Advertising and E-commerce — **170**
- 11.4.3 Education — **171**
- 11.4.4 Organizations and Work Collaboration — **171**
- 11.5 Implications for Design — **171**
- 11.6 Conclusion to Chapter 11 — **173**
- References — **173**

**Bios — 179**

**Index — 186**