

Contents

<i>Preface</i>	v
<i>Foreword</i>	vii
<i>Acknowledgments</i>	xiii
<i>List of Figures</i>	xxi
1. Introduction: From quantum mechanics to mystery of consciousness	1
1.1 Questions to be answered	2
1.2 Two spheres of knowledge	3
1.3 Super-intuition: Where do right solutions come from? . .	5
1.3.1 Super-intuition in life and in science	5
1.3.2 Parallel alternatives (parallel worlds): what does this mean	7
1.3.3 Consciousness and quantum mechanics	8
1.4 Principle of life is not derived from but is added to science	11
1.5 Graphic presentation of the relation between the two spheres	13
1.6 Toward theory of consciousness	15
1.6.1 Mystical features of consciousness are compatible with quantum mechanics	15
1.6.2 Quantum mechanics is incomplete without consciousness	17
1.6.3 Theory of consciousness from quantum mechanics	20

Miracles produced by consciousness (psychic experience) 25

- 2. Miracles and mysticism in spiritual experience of mankind 27
 - 2.1 Historical background 27
 - 2.1.1 Religion 28
 - 2.1.2 Oriental philosophies 28
 - 2.1.3 Esoterica 29
 - 2.2 Psychic and parapsychology 30
 - 2.2.1 Edgar Cayce 30
 - 2.2.2 Health by the autosuggestion 31
 - 2.2.3 Telepathy, clairvoyance etc. 33
 - 2.3 Miracles in science: Scientific insights 34

Parallel worlds and consciousness 37

- 3. Quantum reality as parallel classical worlds (for physicists) 39
 - 3.1 Introduction 40
 - 3.1.1 Consciousness and quantum mechanics: From Pauli and Jung to contemporary authors 40
 - 3.2 An observer’s consciousness and quantum paradoxes . . . 41
 - 3.2.1 Special features of quantum measurements 41
 - 3.2.2 Paradoxicality of quantum mechanics 41
 - 3.2.3 Wigner friend paradox 43
 - 3.3 Reduction and decoherence in a measurement 46
 - 3.3.1 Reduction 46
 - 3.3.2 Entanglement 46
 - 3.3.3 Decoherence 47
 - 3.4 Quantum correlations and quantum reality 48
 - 3.4.1 EPR effect and Bell’s inequalities 49
 - 3.4.2 Quantum games 55
 - 3.4.3 Quantum reality from various viewpoints 59
 - 3.5 Measurement problem: stages of investigation 62
 - 3.5.1 Formulation of the problem 62
 - 3.5.2 Enthusiasm and optimism 63
 - 3.5.3 Marginalization 63

- 3.5.4 Everett’s “Many-Worlds” interpretation 64
- 3.6 “Many-Worlds” interpretation and separation of alternatives 66
 - 3.6.1 Relative states 66
 - 3.6.2 Separation of the alternatives by consciousness . . 67
 - 3.6.3 Discussion of the Everett’s concept 69
- 3.7 Conclusion: Subjective aspect in quantum mechanics . . . 72

- 4. Consciousness in parallel worlds 75
 - 4.1 Parallel worlds (classical alternatives) as quantum reality 76
 - 4.2 Consciousness: classical vision of quantum reality 78
 - 4.2.1 Consciousness as separation of classical alternatives 78
 - 4.2.2 Consciousness is common for physics and psychology 79
 - 4.3 At the edge of consciousness 81
 - 4.3.1 EEC: Consciousness is the separation of alternatives 82
 - 4.3.2 Subjective probabilities and probabilistic miracles 87
 - 4.3.3 More precise formulations and examples 92
 - 4.3.4 Relation to religion and oriental philosophies . . . 95
 - 4.4 The need for the new methodology 96
 - 4.4.1 Inclusion of subjective 97
 - 4.4.2 Only subjective is important 99
 - 4.5 Quantum correlations and telepathy in EEC 100
 - 4.6 Conclusion 102
 - 4.6.1 The problem of the century 103
 - 4.6.2 Solution through the Everett’s concept 103
 - 4.6.3 Main points of EEC 104

- 5. Consciousness and life in parallel worlds: Details for
physicists 107
 - 5.1 Representation of alternative scenarios by path
corridors 107
 - 5.1.1 Continuous measurements and corridors of paths . 108
 - 5.1.2 Evolution of a continuously measured system . . . 109
 - 5.2 Why alternatives are classical: prerequisite to the
existence of life 110
 - 5.2.1 Classicality of alternatives corresponds to the
experience 111
 - 5.2.2 Classicality of the alternatives from EEC 111

- 5.2.3 Modelling of “quantum concept of life” on quantum computers 113
- 6. “Three great problems in physics” according to Vitaly Ginzburg 115
 - 6.1 Introduction 116
 - 6.2 ‘Ginzburg’s problems’ 117
 - 6.3 Relations among “the three great problems” 120
 - 6.4 Copenhagen interpretation: state reduction 122
 - 6.5 Measurement as an interaction: entanglement and decoherence 124
 - 6.6 Everett’s (‘many-worlds’) interpretation: no reduction . . 128
 - 6.7 Extended Everett Concept (EEC): definition of consciousness 131
 - 6.7.1 Identity of consciousness and alternative separation 131
 - 6.7.2 Consequences of the identification 132
 - 6.8 Extended Everett Concept (EEC): relations between “three problems” 135
 - 6.9 Conclusion 138

Parallel Scenarios and Sphere of Life 141

- 7. Evolution of life: goal instead of cause (for physicists) 143
 - 7.1 Introduction 144
 - 7.1.1 Main ideas of Extended Everett’s Concept 144
 - 7.1.2 Scenarios favorable for life 145
 - 7.2 Life as the postcorrection in the criterion of survival . . . 147
 - 7.2.1 Notion of postcorrection 147
 - 7.2.2 Simplest example of postcorrection 148
 - 7.2.3 Interpretation in terms of “life sphere” 149
 - 7.2.4 Postcorrection in terms of EEC 150
 - 7.2.5 Other issues to be accounted 151
 - 7.3 Collective strategy of survival 152
 - 7.4 Various criteria for postcorrection 154
 - 7.4.1 Postcorrection providing super-intuition 157
 - 7.5 Conclusion 160

8.	Life in terms of alternative scenarios instead of parallel worlds	165
8.1	Alternative worlds and alternative scenarios	165
8.2	Evolution governed by goals	166
8.3	“Principle of life”	167
8.4	Life principle as the generalization of the antropic principle	167
8.4.1	Providence, karma, God	168
8.4.2	The answers of super-consciousness depend on the conscious life criteria	169

Speculations or further development of the concept **171**

9.	Escaping global crisis and life after death	173
9.1	Global crisis and eluding it (hell and paradise)	173
9.1.1	The global crisis: technical aspect	174
9.1.2	Corrupted consciousness as an origin of the crisis	175
9.1.3	Change of consciousness for preventing the catastrophe	175
9.1.4	Resolution of the crisis: paradise and hell at Earth	176
9.1.5	Life sphere: making the concept more precise . . .	177
9.1.6	The Fall and the tree of knowledge	178
9.2	Soul and life after death of body	178
9.2.1	Soul before and after death of the body	179
9.2.2	Estimate of life criteria and judgment on the spent life	180
9.2.3	Estimate of life criteria - more details	181
9.3	Karma and reincarnations	183

Summing up the results **185**

10.	Main points of the Quantum Concept of Life (QCL)	187
10.1	Logical scheme of the quantum concept of life	187
10.1.1	Quantum reality	187
10.1.2	Quantum Concept of Consciousness (QCC)	189
10.1.3	Quantum Concept of Life (QCL)	190

- 10.1.4 Quantum Concept of Life (QCL) in terms of scenarios (sphere of life and the principle of life) 190
- 10.1.5 The extended scientific methodology must include the subjective 191
- 10.2 Consequences 191
 - 10.2.1 Super-intuition 191
 - 10.2.2 Miracles 205
- 10.3 Discussion 211
 - 10.3.1 Consciousness and the laws of natural sciences 211
 - 10.3.2 Quantum computer: model for consciousness (for physicists) 212
- 11. Conclusion: Science, philosophy and religion meet together in theory of consciousness 215
 - 11.1 Why QCC is necessary, or how to learn to believe? 215
 - 11.2 Science and mystics 218
 - 11.2.1 Why physicists do not believe in the miracles 218
 - 11.2.2 ‘Soft’ embedding of life into the objective world 220
 - 11.2.3 Quantum paradoxes are compensated by mystical features of consciousness 221
 - 11.2.4 Buddhism 223
 - 11.3 Science and religion are compatible 224
 - 11.3.1 Basic aspects of various confessions 225
 - 11.3.2 Science and religion need each other 225
 - 11.4 Philosophical viewpoint 226
 - 11.4.1 Wigner 226
 - 11.4.2 Objective and subjective 228
 - 11.4.3 Material and ideal 230
 - 11.5 From quantum mechanics to consciousness 231
 - 11.5.1 Pauli and Jung 231
 - 11.5.2 Penrose 233
 - 11.5.3 Why Quantum Concept of Consciousness was successful 235
 - 11.6 Second Quantum Revolution 238
- Bibliography* 241
- Index* 245

List of Figures

1.1	Two spheres of knowledge have common point, special for each of them.	13
1.2	Left picture: Quantum mechanics (left) has defects, or paradoxes; spiritual knowledge (right) includes mystical features. Right picture: if both spheres of knowledge are joined, the paradoxes of quantum mechanics explain the mystical features of spiritual knowledge.	14
1.3	Schrödinger’s cat in quantum superposition. “Quantum reality” suggests coexisting the parallel worlds (alternative classical realities) such that the cat is alive in one of the worlds and it is dead in another world.	18
4.1	Two classical realities (Everett’s worlds) separated by consciousness	78
4.2	Two observers have different preferences and influences the subjective probabilities of the two parallel worlds directing more if their “replicas” into the worlds they prefer.	91
4.3	Logical chain from quantum mechanics to consciousness	104
6.1	Description of the quantum measurement on a higher level reveals a richer structure of relations between the three great problems.	120
6.2	Reduction postulate: when a quantum system is measured, its initial state changes in such a way that a single component of the superposition survives, the one that corresponds to the measurement result.	122

6.3 The reduction postulate means that a measurement of a quantum system leads to an irreversible change in its state, i.e., a quantum measurement leads to irreversibility (creates the time arrow). 123

6.4 Due to the linearity of quantum mechanics, the state reduction is impossible. During a measurement there occurs only ‘entanglement’, or quantum correlation, between the measured system and the instrument, leading to the decoherence of the measured system. 126

6.5 Everett’s interpretation: reduction (disappearance of all alternatives but one) does not happen but consciousness separates classical alternatives by perceiving them separately. 129

6.6 According to Everett’s interpretation, irreversibility appears in a quantum measurement due to the *awareness* of a measurement result. 130

6.7 If consciousness and separation of the alternatives are identified, then dimmed consciousness (in particular, in the state of sleep or trance) means an incomplete separation of alternatives, in which consciousness looks into ‘other alternatives’ and can single out the most favorable ones among them. 133

6.8 In the framework of the extended Everett concept, the relationships between “the three great problems” become deeper. . . . 137

6.9 Identification of consciousness with the separation of alternatives generates the new notion of quantum consciousness, which is a general subject of study and, hence, the bridge between the natural sciences and humanities, between matter and spirit. . . 138

7.1 Various criteria for postcorrection: state of the word *s* is determined by the state of the environment *e* and the state of the body *b*. The regions *L* and *D* correspond to survival and death. Horizontal lines separate the regions corresponding to different levels of the quality of life. Any subregion on the plane determines a criterion according to which the postcorrection may be performed (but is not necessarily performed). 156

10.1 Logical chain from quantum mechanics to theory of life 188

11.1 Quantum mechanics (right) contrary to classical physics (left) has two features treated as logical defects: coexisting of classical realities and stochasticity of observations. 222

11.2 Spiritual knowledge (right) has two mystical features: super-intuition and probabilistic miracles, that are not recognized in the “classical” understanding of the spiritual abilities (left) . . . 223

11.3 Quantum mechanics and spiritual knowledge united into a closed logical structure: the “defects” of quantum mechanics explain the mystical features of consciousness 223