Contents

Preface ix Acknowledgments xiii

Part One. Past Uses of the Projective Model

Chapter 1. The Origins of Four-Dimensional Geometry 3
Chapter 2. Fantasies of Four-Dimensional Space 19
Chapter 3. The Fourth Dimension in Painting 28
Chapter 4. The Truth 41

Entr'acte

Chapter 5. A Very Short Course in Projective Geometry 53

Part Two. Present Uses of the Projective Model

Chapter 6. Patterns, Crystals, and Projections 61
Chapter 7. Twistors and Projections 72
Chapter 8. Entanglement, Quantum Geometry, and Projective Reality 83
Chapter 9. Category Theory, Higher-Dimensional Algebra, and the Dimension Ladder 93
Chapter 10. The Computer Revolution in Four-Dimensional Geometry 105
Chapter 11. Conclusion: Art, Math, and Technical Drawing 114

Appendix 119 Notes 121 Bibliography 125 Index 129

Illustrations follow page 58