Contents

Preface vii
1. Scientific Thinking 1
3. The Erlangen Program 11
4. Mathematics and Ideologies 17
5. The Unity of Mathematics 23
6. A Glimpse into Algebraic Geometry and Arithmetic 29
7. A Trip to Nancy with Alexander Grothendieck 34
8. Structures 41
9. The Computer and the Brain 46
10. Mathematical Texts 52
11. Honors 57
12. Infinity: The Smoke Screen of the Gods 63
13. Foundations 68
14. Structures and Concept Creation 73
15. Turing's Apple 78
16. Mathematical Invention: Psychology and Aesthetics 85
17. The Circle Theorem and an Infinite-Dimensional Labyrinth 91
18. Mistake! 97
19. The Smile of Mona Lisa 103
20. Tinkering and the Construction of Mathematical Theories 108
21. The Strategy of Mathematical Invention 113
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Mathematical Physics and Emergent Behavior</td>
<td>119</td>
</tr>
<tr>
<td>23. The Beauty of Mathematics</td>
<td>127</td>
</tr>
<tr>
<td>Notes</td>
<td>131</td>
</tr>
<tr>
<td>Index</td>
<td>157</td>
</tr>
</tbody>
</table>