

<i>Installations and Methods</i>	1	9 Further Artistic Applications	59
1 The Computer and Aesthetic Processes	1	Dynamic Pictures	59
2 The Analogue Computer	1	Cinematography	59
3 The Digital Computer	1	Animation	59
4 Structure of the Computer	2	Video	60
Microcomputers	3	Sculpture	62
5 Hardware	3	Dance	64
Memory	3	Music	64
Input Devices	4	Literature	66
Output Devices	6	Multi-Media	68
Graphic Output	7	The Computer and the Environment	68
Mechanical Output Devices	7		
Electronic Output Devices	11	<i>History of Computer Art</i>	93
Printing Devices	20	1 The Move to Computer Graphics	93
6 Software	22	Technological Progress	93
Organization of Digital Computer Processes	22	Calculation Graphics	94
Programming Languages	23	Alienated Science	95
Graphical Programming	24	2 The Beginning of Computer Graphics	95
Computer Graphics in Interactive Operation	25	3 International Exhibitions	105
Graphics Systems	27	4 Publications on Computer Art	107
Mathematical Operations/Random Processes	28	5 The Expansive Period	110
7 Computer Graphics in Practice	44	6 Recent Activities	118
Graphic Data Processing	44	7 Computer Sculpture	127
Word Processing Systems	45	8 Computer Film	129
Business Graphics	45	9 Computer Texts	133
CAD/CAM	45	10 Computer Music	138
Process Supervision	49	11 Theater, Dance, Multi-Media	140
Simulation	49	12 Computer Architecture	141
Animation	50		
Picture Processing	50		
Pattern Recognition	53		
8 Representational Pictures in Computer Graphics	53		
Picture Processing in Computer Art	55		
New Tasks of Picture Processing	56		

13 Applied Computer Art	142
Design	144
Games and Entertainment	148
Animation	148
Visualization in the Classroom	151
Art Theory	152

Theoretical Foundations of Computer Art 153

1 Computer Art and Art Criticism	153
2 Exact Aesthetics	154
Statistical Methods	154

The School of Max Bense	155
Information Aesthetics	155
Cybernetic Art Theory	156
Practical Consequences	157
3 Experimental Aesthetics	157
4 The Random as Generative Impulse	161

The Future of Computer Art 163

<i>Bibliography</i>	169
<i>Name Index</i>	175
<i>Subject Index</i>	177