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Nota di contenuto	CONTENTS; Volume III; Chapter 1. Isles of Eden; 1. Recap of Main Results from Parts I to VI; 1.1. Local rules and Boolean cubes; 1.2. Threshold of complexity; 1.3. Only 88 local rules are independent; 1.4. Robust characterization of 70 independent local rules; 1.4.1. Steady-state behavior 1: Period-1 attractors or period-1 isles of Eden; 1.4.2. Steady-state behavior 2: Period-2 attractors or period-2 isles of Eden; 1.4.3. Steady-state behavior 3: Period-3 attractors; 1.4.4. Steady-state behavior 4: Bernoulli -shift attractors or isles of Eden 1.4.5. There are ten complex Bernoulli and eight hyper Bernoulli shift rules2. Basin Tree Diagrams of Ten Complex Bernoulli Shift Rules; 2.1. Basin of attraction and basin trees; 2.2. Garden of Eden; 2.3. Isle of Eden; 2.4. Gallery of basin tree diagrams; 2.4.1. Highlights from Rule 18; 2.4.2. Highlights from Rule 22; 2.4.3. Highlights from Rule 54; 2.4.4. Highlights from Rule 73; 2.4.5. Highlights from Rule 90; 2.4.6. Highlights from Rule 105; 2.4.7. Highlights from Rule 122; 2.4.8.

Highlights from Rule 126; 2.4.9. Highlights from Rule 146; 2.4.10. Highlights from Rule 150
3. Global Analysis of Local Rule 903.1. Ru1e 90 has no Isle of Eden; 3.2. Period of Rule 90 grows with L; 3.3. Global state-transition formula for rule 90; 3.4. Periodicity constraints of rule 90; 4. Global Analysis of Local Rules 150 and 105; 4.1. Rules 150 and 105 are composed of Isles of Eden if L is not divisible by 3; 4.2. Global state-transition formula for Rules 150 and 105; 4.3. Rules 150 and 105 are globally quasi-equivalent; 5. Concluding Remarks; Chapter 2. More Isles of Eden; 1. The Beginning of the End; 2. Basin Tree Diagrams of Eight Hyper Bernoulli Shift Rules
2.1. Highlights from rule 262.2. Highlights from rule 30; 2.3. Highlights from rule 41; 2.4. Highlights from rule 45; 2.5. Highlights from rule 60; 2.6. Highlights from rule 106; 2.7. Highlights from rule 110; 2.8. Highlights from rule 154; 3. Global Analysis of Local Rule 60; 3.1. Rule 60 has no Isles of Eden; 3.2. Period of rule 60 grows with L; 3.3. Global state-transition formula for rule 60; 3.4. Periodicity constraints of rule 60; 4. Global Analysis of Local Rule 154 and 45; 5. Dense Isles-of-Eden Property; 5.1. Notations and de.nitions; 5.2. Four basic lemmas
5.3. Locating points with multiple preimages5.4. Constructing the Isles of Eden digraph; 5.5. The full Isles of Eden digraph; 5.6. Nondegenerate cycles and Isles of Eden; 5.7. Effect of global equivalence transformations on Isles of Eden digraphs; 5.8. Dense Isles of Eden from rule 45 and rule 154; 5.8.1. Another Proof for Theorem 5.2; 5.8.2. Isles-of-Eden density criterion for rule 154; 5.8.3. Another Proof for Theorem 5.3; 5.9. Dense Isles of Eden from rule 105 and rule 150; 5.10. Gallery of Isles of Eden digraphs of eight representative local rules; 6. Concluding Remarks
Errata for Volume I

Sommario/riassunto

Volume III continues the author's quest for developing a pedagogical, self-contained, yet rigorous analytical theory of 1-D cellular automata via a nonlinear dynamics perspective. Using carefully conceived and illuminating color graphics, the global dynamical behaviors of the 50 (out of 256) local rules that have not yet been covered in Volumes I and II are exposed via their stunningly revealing basin tree diagrams. The Bernoulli -shift dynamics discovered in Volume II is generalized to hold for all 50 (or 18 globally equivalent) local rules via complex and hyper Bernoulli wave dynamics. E

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