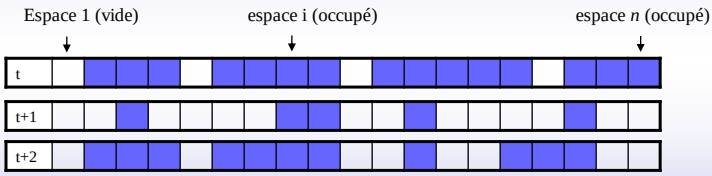
La frontière du chaos

- Travaux de Christopher Langton
- Interprétation
- Exemples halieutiques

Travaux de Christopher Langton

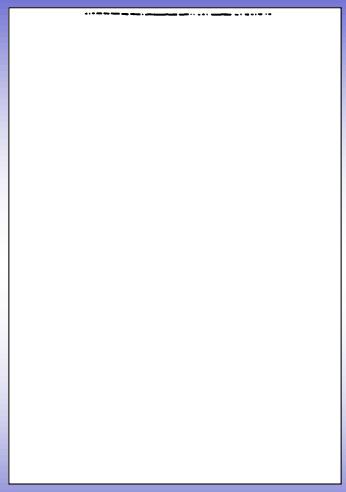
1. Automate cellulaire:
   n voisins à t -> vivant ou mort à t+1
2. Modèle trans-générationnel à une dimension:



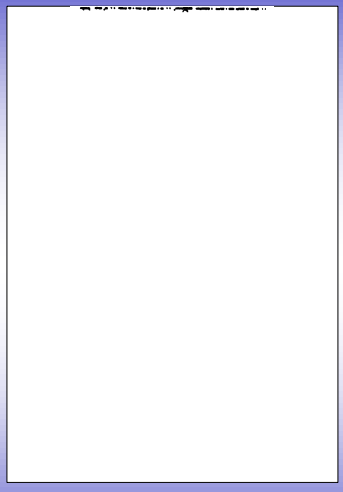
3. Règles de vie paramétrées par λ (contraintes-liberté)

Langton C.G. 1990. Computation at the edge of chaos: phase transition and emergent computation. *Physica D 42(1990), 12-37*

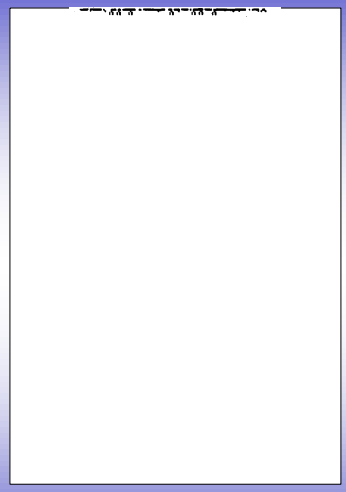
$\lambda = 0{,}00$



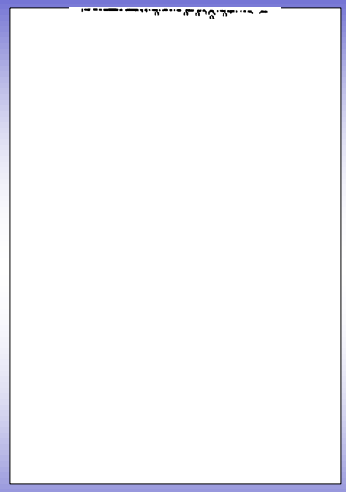
$\lambda = 0{,}05$



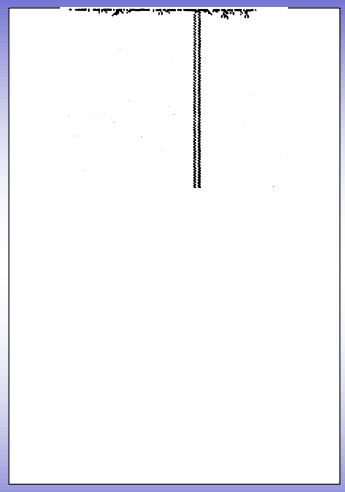
$\lambda = 0{,}10$



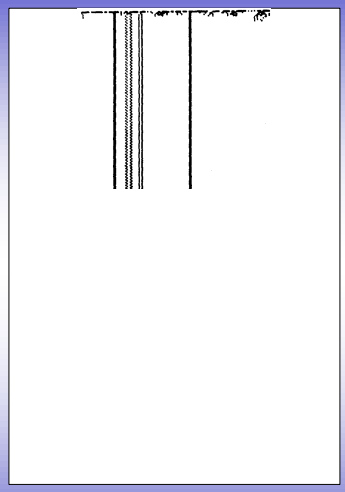
$\lambda = 0{,}15$



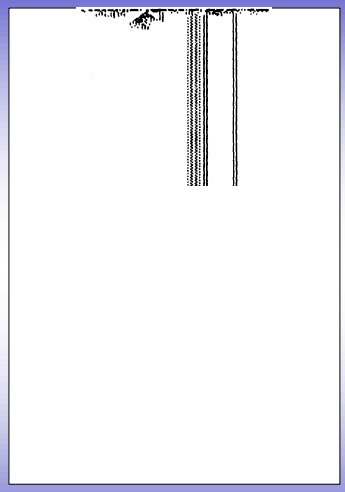
$\lambda = 0{,}20$



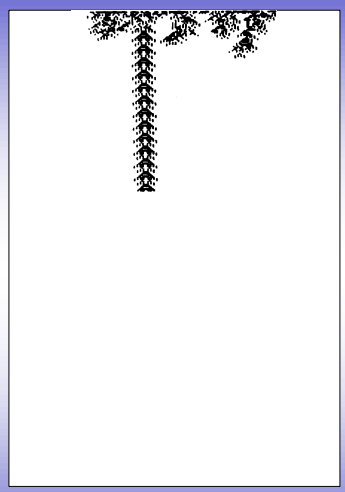
$\lambda = 0{,}25$



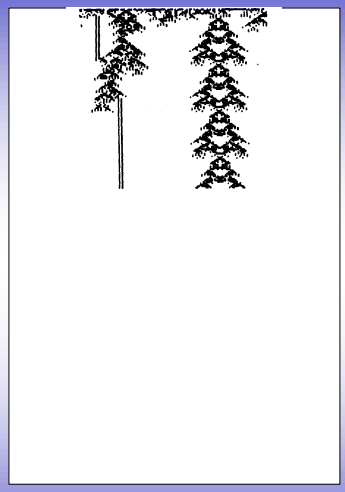
$\lambda = 0{,}30$



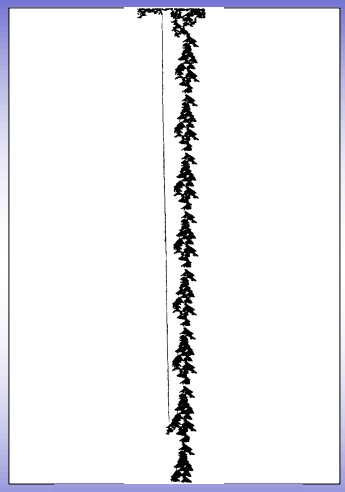
$\lambda = 0{,}35$



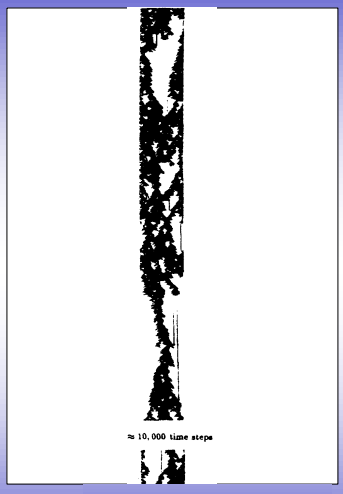
$\lambda = 0{,}40$



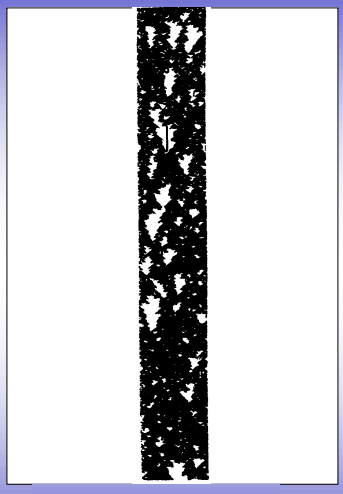
$\lambda = 0{,}45$



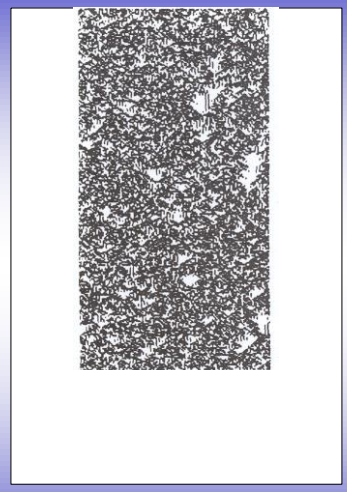
$\lambda = 0{,}50$



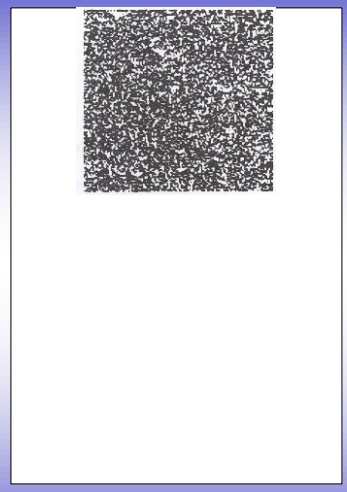
$\lambda = 0{,}55$



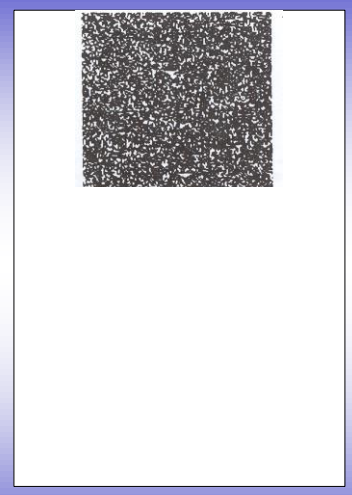
$\lambda = 0{,}60$



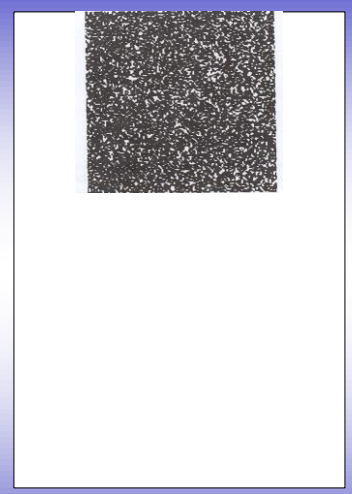
$\lambda = 0{,}65$



$\lambda = 0{,}70$

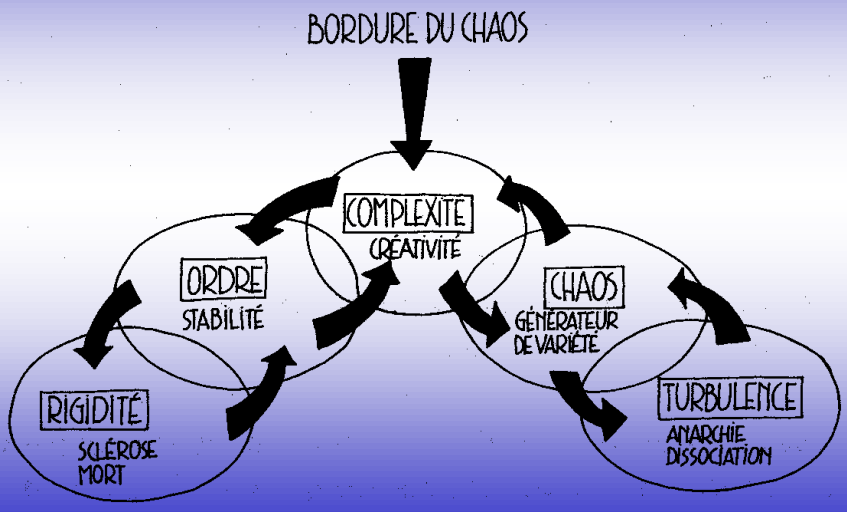


$\lambda = 0{,}75$



Interprétation de la frontière du chaos

(De Rosnay, 1995)



Exemples en halieutique

- <u>Développement spatial de flottilles</u> (Allen et McGlade, 1986)

  viabilité à 95% de cartésiens – 5% de stochastes

- <u>Stratégies évolutives des espèces marines</u> (Cury, 1994, Lepage et Cury, 1997)

  viabilité à 99% d'obstinés – 1% d'opportunistes.

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