



[SodaConstructor Online Lego For Grown-Ups](#)

the need for a hierarchy. These behaviors define how each creature behaves in relation to its neighbors:



**Separation:**  
Desire to avoid crowding local flockmates



**Alignment:**  
Desire toward the average heading of local flockmates



**Cohesion:**  
Desire to move toward the average position of local flockmates

The flocking rules provide an evocative example of emergence, the phenomenon of a global behavior originating from the interactions of simple, local behaviors. The flocking behavior of the group is not overtly programmed, but emerges through the interaction of each software unit based on the simple rules. The Pond example on page 497 is an implementation of Boids.

The autonomous agent simulations presented here were at the cutting edge of research over twenty years ago. They have since become some of the most popular examples for presenting the ideas of agency and emergence. The ideas from research in autonomous agents has been extended into many disciplines within art and science including sculpture, game design, and robotics.

**Exercises**

1. Increase the size of the grid for Wolfram's one-dimensional CA. There are 256 possible rule sets for this one program and only 13 are presented in this unit. Try some of the other options. Which do you find the most interesting? Can the diverse results be put into categories?
2. Increase the size of the grid for Conway's Game of Life. Can you find other stable, periodic, or moving configurations?
3. Extend the termite code to have more than one termite moving chips of wood.

**Notes**

1. Alfred Chagnon and Edmund Dene, *Automatic: A Historical and Technological Study*, translated by Alan Bond (Editions de Griffon, 1988)
2. Martin Gardner, "Mathematical Games: The Fantastic Combinatorics of John Conway's New Solitaire Game 'Life,'" *Scientific American* 213 (October 1976), pp. 120 - 123
3. Gary Williams Flake, *The Computational Beauty of Nature* (MIT Press, 1998), p. 461

[SodaConstructor Online Lego For Grown-Ups](#)



---

d39ea97ac7

[Voice search becomes voice action: A key talking point at SMX London](#)

[Windows 10 V1809: Update KB4490481 causes blue screens](#)

[APProprate Behaviour is complete!](#)

[How to set up a Raspberry Pi module with default settings](#)

[Bandicam Crack 4.4 With Keygen Free](#)

[Marble Wallpapers \(Android\)](#)

[Disconver more about Singapore Provider Formation](#)

[Dream Pop EZkeys MiDi MAC](#)

[A Plague Tale: Innocence review](#)

[USI les miserables concert feb 2 2013](#)