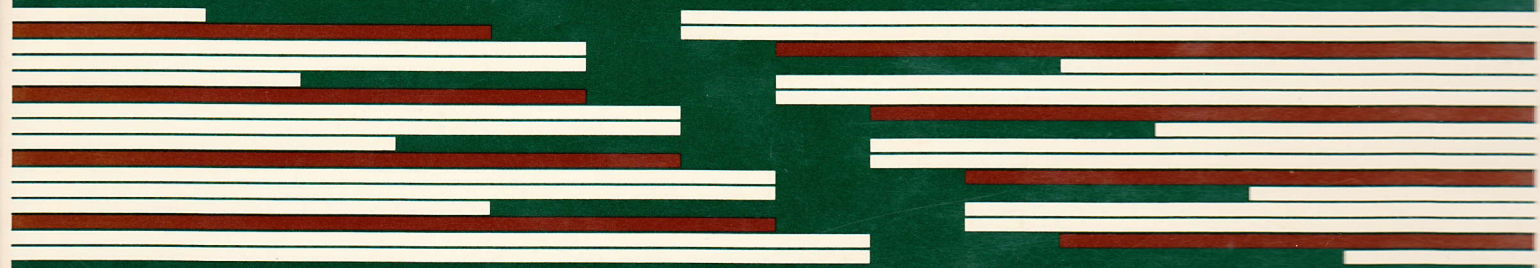


# MICROSOFT<sup>TM</sup> MOUSE

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# **Microsoft<sup>®</sup> Mouse**

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**for the IBM<sup>®</sup> Personal Computer**

**Installation and Operation Manual**

**Microsoft Corporation**

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# Chapter 3

## How to Use the Mouse

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In this chapter, you will learn the basic techniques of using the mouse, and practice these techniques using two demonstration programs, Piano and The Game of Life.

## Basic Techniques

The Microsoft Mouse takes just a few minutes to learn. If you have never used a mouse, the following sections will help you get acquainted. If you have used a mouse before, these sections will indicate differences between the Microsoft Mouse and other mouse devices.

### Mouse Anatomy

Before using the Microsoft Mouse, it is a good idea to examine its working parts. Using Figure 3.1, locate the left and right buttons. The buttons permit you to make selections when presented with choices by a program. When you press and release a button, the mouse passes this information to the program.

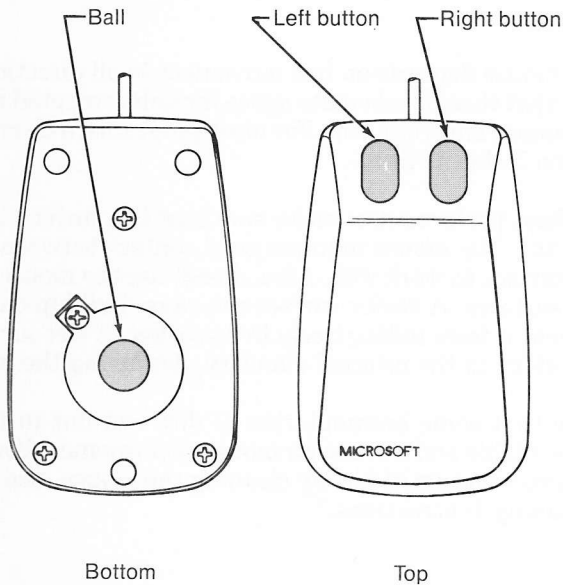


Figure 3.1 Mouse Ball and Buttons



A button's function depends on how the current program has defined it. Just like the programmable keys on a keyboard, the function of a button can change from program to program.

Again using Figure 3.1, turn the mouse upside down and locate the ball. The ball controls the movement of the cursor on the screen. When you hold the mouse top side up and slide it across a hard, flat surface, the ball rolls within its socket. The mouse translates this rolling into directional data and passes it to the mouse software to move the cursor on the screen.

The Microsoft Mouse is enclosed in a tough and durable plastic case. Although it can survive a fall from a desk top, take care to safeguard against falls and other accidents that might shorten its operating life.

### Mouse Surface Requirements

Use the mouse on any hard, flat surface, such as a desk. We recommend placing the mouse right beside the keyboard since most programs that use the Microsoft Mouse combine both the mouse and the keyboard for input. But any configuration which is comfortable for you and any surface which is hard and flat is fine.

The mouse depends on free movement in all directions, so make sure that there is adequate space for uninterrupted movement of the mouse and your arm. For most programs, a clear space of ten by ten inches is fine.

For best performance, make sure that the surface is free of dirt and lint. The mouse requires good contact between the ball and the surface to work well. Also, do not use the mouse on sticky or wet surfaces. A sticky surface can cause buildup on the ball and prevent it from rolling freely in its socket. A wet surface can lead to a short in the internal circuitry, damaging the mouse.

Note that some accumulation of dirt and lint in the mouse is unavoidable and can impair mouse performance. You can remove an accumulation of dirt by cleaning the mouse. See Appendix A, "Cleaning Instructions."

## Holding the Mouse

The Microsoft Mouse is designed to be easily held in either the right or the left hand. To hold the mouse:

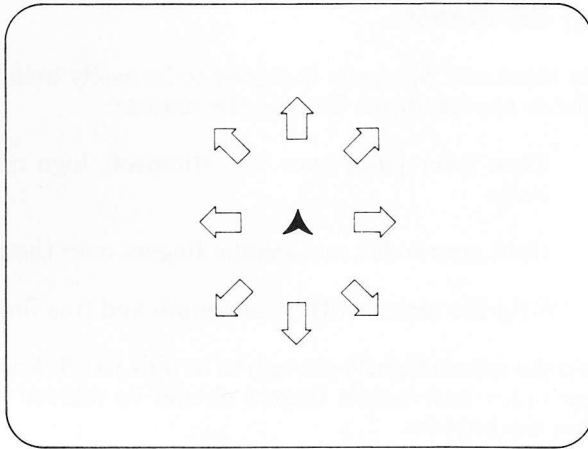
1. Place your palm over the Microsoft logo on the mouse body.
2. Hold your index and middle fingers over the buttons.
3. Grip the mouse with your thumb and free fingers.

Grip the mouse tightly enough to be able to lift it off the surface. Your index and middle fingers should be relaxed but ready to press the buttons.

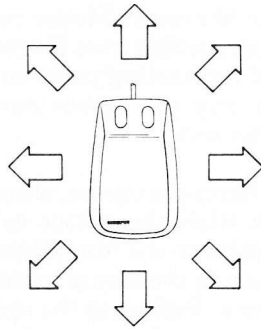
## Moving the Mouse/Controlling the Cursor

The Microsoft Mouse controls the motion of the cursor when a program that uses the mouse is running. The shape of the cursor and its starting point on the screen depend on the program, but the way the cursor moves on the screen is the same for all programs.

To move the cursor, simply move the mouse in the direction that you wish the cursor to move. All motions of the cursor are relative to the front of the mouse (where the buttons are located). Pushing the mouse to the front moves the cursor to the top of the screen. Pulling in the opposite direction moves the cursor to the bottom of the screen. Unlike the direction keys on the keyboard, the mouse permits you to move the cursor in any direction, even diagonally. Figure 3.2 illustrates ways that you can move the mouse and the corresponding cursor motions.



Movement of cursor on screen corresponds to movement of mouse on table or desk



**Figure 3.2 Mouse and Cursor Motions**

The cursor moves only when the mouse moves across the surface. The location of the mouse on the surface is immaterial. This means that you can lift the mouse off the surface and return it to its starting point without returning the cursor to its starting point. This feature is useful when you are moving the cursor all the way across the screen. The move can be an accumulation of short strokes instead of one long stroke.



## Demonstration Programs

The two demonstration programs, Piano and The Game of Life, are simple programs designed to let you practice and master the basic techniques of the Microsoft Mouse.

The programs are a part of the Microsoft Mouse disk. To load a demonstration program, type the filename at the keyboard and press the RETURN key. The programs' filenames are as follows:

PIANO  
LIFE

Remember, if the Microsoft Mouse software disk is not in the default drive, you must precede the filename with a drive name.

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### *Note*

The Game of Life runs only on an IBM Personal Computer that has a Color/Graphics Monitor Adapter.

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When the program is loaded and execution has begun, you will see the game screen and the mouse cursor. We recommend trying Piano first to learn how to move and control the cursor. Then try The Game of Life to learn how to use the Microsoft Mouse to select commands in a program.

## Program 1: Piano

Piano lets you create music at a video keyboard. The game screen consists of a keyboard (21 white keys and 15 black keys) and a "quit" box in the lower right corner.

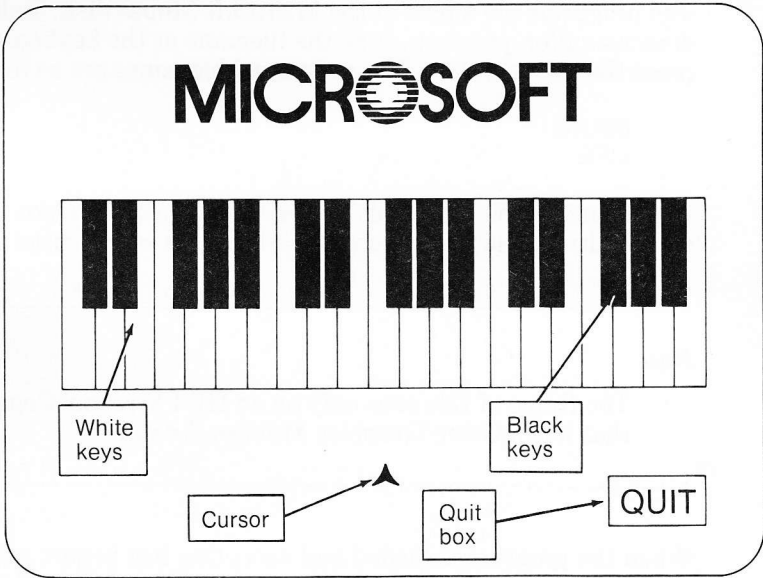


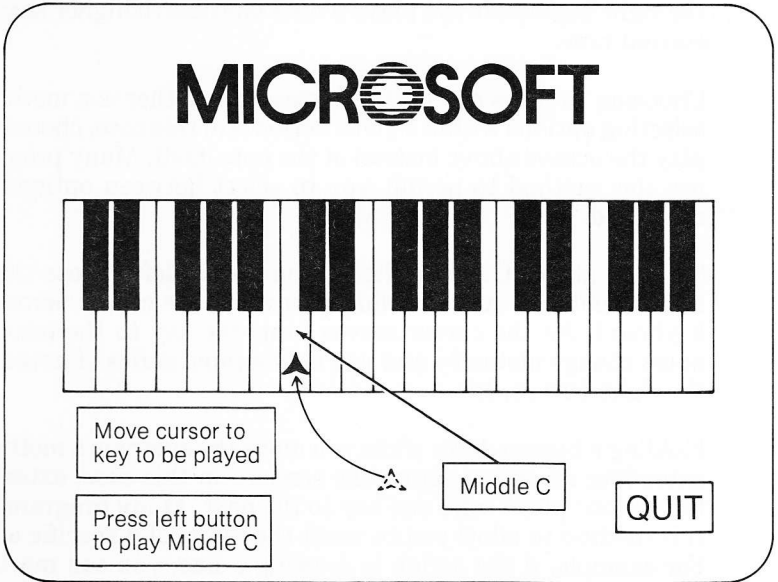
Figure 3.3 Piano Screen

The cursor is in the middle of the screen just below the keyboard. Practice moving the cursor by moving the mouse from side to side. Notice how just a small motion of the mouse moves the cursor quickly and accurately. With just a little practice you can pinpoint even the smallest objects on the screen.

Don't be afraid to move the cursor to the edge of the screen. The screen edge forms a boundary beyond which the cursor will not pass.

The notes of the white keys range from low C on the left to high B on the right. The black keys are the sharps and flats between these notes. To play a note, use the mouse to move the cursor over the key that you want and press the left button. Note that the tip of the cursor must be within the boundaries of the key.

For example, to play middle C move the cursor to the eighth white key from the left and press the left button.



**Figure 3.4** Playing the Piano

The computer responds by playing a middle C. The note plays as long as you hold the button down and stops as soon as you release the button.

Play another note by moving the cursor to another key and pressing the left button. Each note you choose plays as long as you hold the button down. Notice that if you move the cursor off the keyboard and press the button, no note will play.

Moving the cursor to a key and pressing the button is a method of selection. Many programs use this method to allow you to choose a program action from a menu of commands. You simply move the cursor to the word, command, or symbol that represents the action and press the button. This method is faster and easier than typing command letters or names at the keyboard.

Now return the cursor to middle C. To play an octave higher, you can either move eight white keys to the right, or leave the cursor where it is and press the mouse's right button. In Piano, the right button always plays a note one octave higher than the current note.

Choosing to press one button instead of another is a method of selecting options within a given action—in this case, choosing to play the octave above instead of the note itself. Many programs use this method to permit you to select between options in a command.

Starting at low C (the white key on the far left), press the left button and hold it down while you move the cursor across the keyboard. As the cursor moves from one key to the next, the notes change instantly and you hear a rapid series of notes. Try the right button, too.

Holding a button down while you move the cursor is a method of extending an action across the screen—in this case, extending the action “play” from one key to the next. Many programs use this method to allow you to mark the range of a specific action. For example, if the action is drawing a line, you can mark the starting point, the line's path, and its ending point.

When you have finished playing Piano, move the cursor to the quit box and press the left button. The computer responds by leaving Piano and displaying the system prompt.

## Program 2: The Game of Life

The Game of Life lets you simulate the growth and death of cultures of living cells. The game consists of a 20- by 39-line grid, a command line, and a message line.

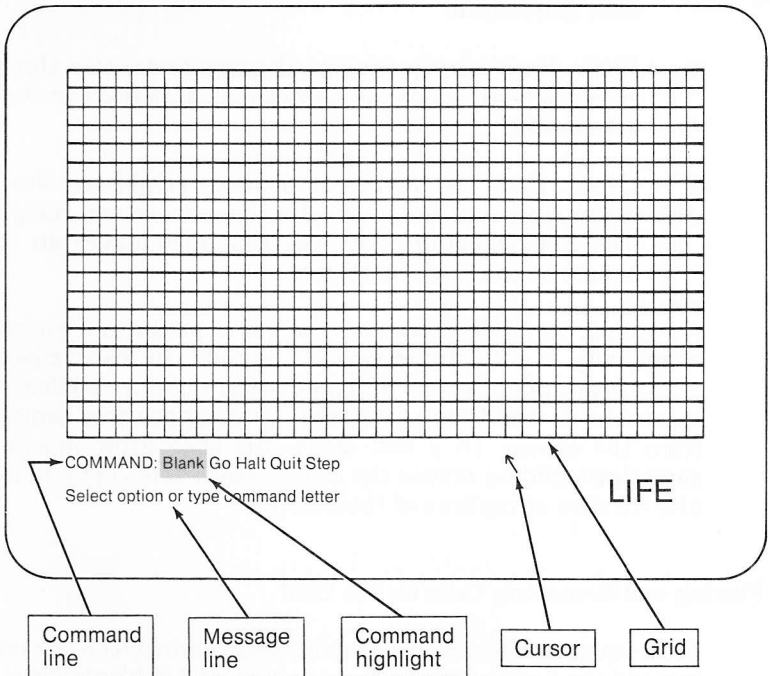


Figure 3.5 Life Screen

The object of the game is to place cells in the squares of the grid and watch how they interact generation after generation.

The Game of Life has three simple rules:

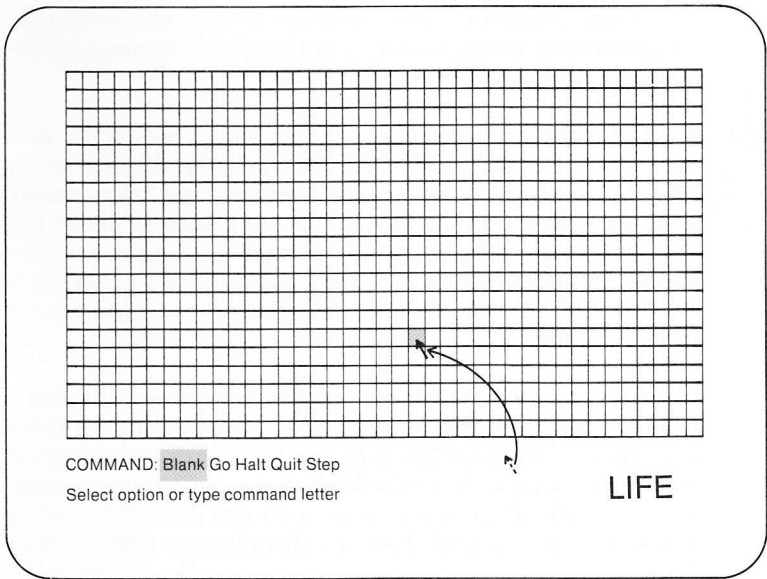
1. Survival. Every cell with two or three adjacent neighbors (vertically, horizontally, or diagonally) survives for the next generation.
2. Birth. Each empty square adjacent to exactly three live cells is a birth square. A new cell appears there in the next generation.
3. Death. Each cell with four or more neighbors dies from overpopulation. Each cell that has one or zero neighbors dies from isolation. Any cell that dies leaves an empty square in the next generation.

As simple as these rules are, the game presents a surprising complexity in the interactions of the cells. In many cases, the cells pass through several different patterns before settling down to stable or oscillating patterns, or disappearing completely from the screen. In a few cases, the cells grow indefinitely, sometimes gliding across the screen, sometimes making an infinite number of replicas of themselves.

### Placing and Removing Cells on the Grid

Each square in the grid represents the space in which one cell can live. At the beginning of the game, the grid is blank. To place a cell in a square, touch the tip of the cursor to the square and press the left button. (In The Game of Life the right button has no effect.)





**Figure 3.6** Placing a Cell

If you want to place many cells in the grid at once, move the cursor across the grid while holding down the left button. Be sure to start with the cursor in an empty cell. Cells will continue to be placed in the grid until you release the button.

Cells can only live and grow within the boundaries of the grid. If you try to place a cell outside of the grid, a warning tone sounds.

If you want to remove a cell from a square, touch the tip of the cursor to the cell and press the left button. To remove many cells at once, move the cursor over cells in the grid while holding down the left button. Be sure to start with the cursor in a square that has a cell. Cells will continue to be removed until you release the button.

### The Commands

The Game of Life has five commands that control the action of the game. Each command has a command word that appears in the command menu below the grid.

The Blank command removes all cells from the grid and resets the generation count to zero. Use the Blank command whenever you want to start a new cell culture.

The Go command starts the game, giving life to the cells you have placed in the grid. When you select Go, the grid changes to reflect the survivals, births, and deaths of the first generation of cells, then the second, and so on through each successive generation. As the grid changes, the message line keeps a count of the number of generations that have passed. The generations continue (even if no cells remain) until you stop Life by selecting the Halt command.

The Halt command stops the game after you have started it with a Go command. When you select Halt, all action on the screen stops and the message line tells you the number of the generation now on the screen. After the Halt command, you may use Go to continue Life, Step to continue one more generation of Life, or Blank to clear the grid. You can also place or remove cells from the grid.

The Step command starts the game like the Go command but sustains it for one generation only. When you select Step, the grid changes to reflect the survivals, births, and deaths of one generation and then all action stops. The message line displays the number of the generation now on the screen.

The Quit command ends the game. When you select Quit, the message "Enter Y to confirm" appears in the message line. Type Y to end The Game of Life; press the CANCEL (ESC) key to continue.

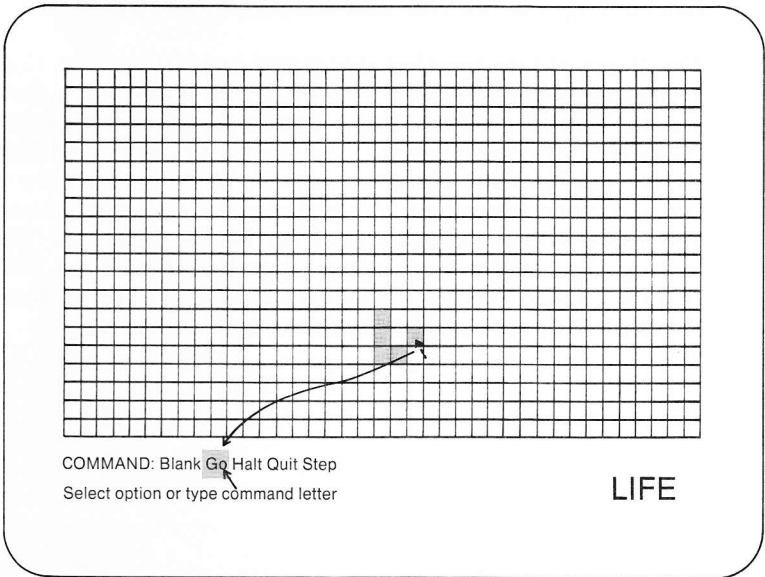
### Selecting and Entering Commands

There are three ways to select and enter commands:

1. Move the cursor to the word in the command and press and release the left button on the mouse,
2. Type the command letter (first letter of the command word), or
3. Use the space bar or TAB key to move the menu highlight to the command word and then press the RETURN key.

The most convenient method is to move the cursor to the word in the command menu and press and release the left button.

To practice this method, select the Go command. After placing cells in the grid, move the cursor so that its tip touches the word "Go" in the command menu, then press the left button. Be careful to touch the tip to the word; if it does not touch you will get a warning tone.



Move cursor  
to Go command

Press and release  
left button to  
execute command

**Figure 3.7** Selecting the Go Command

To stop the action, use the cursor to select the Halt command.

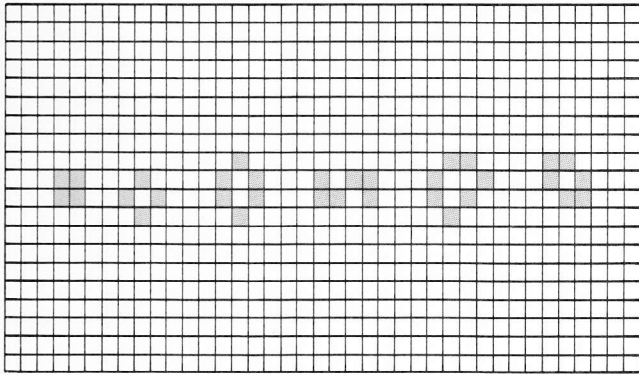
Try selecting the Go command using another method. The effect is the same, but you might find that using the keyboard is cumbersome compared to using the mouse.

## Playing the Game

The Game of Life is a game of discovery. Since in most cases the outcome is unpredictable, a large part of the charm of the game is discovering just what a certain pattern will do.

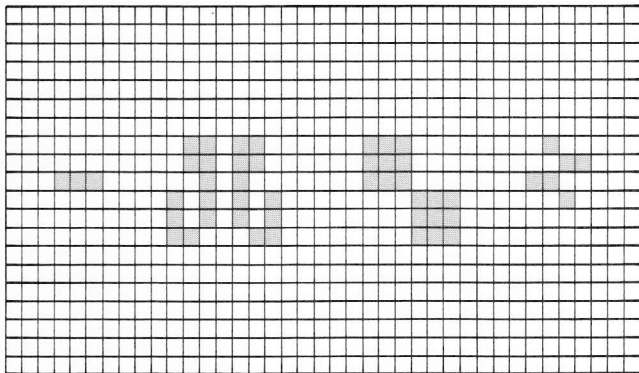
When playing the Game of Life for the first time, we recommend that you start small—with three cells—and combine them in as many patterns as possible before moving on to more cells. In this way, you will discover the basic patterns that develop into stable (unchanging), oscillating, and disappearing cultures.

The Game of Life was first suggested in 1970 by John Conway. The game quickly became a popular simulation game for computers. Since that time, many patterns have been discovered that give interesting results. The illustrations on the following pages show some of these patterns so that you may try them yourself. For descriptions of more patterns and for an interesting discussion of the mathematics of The Game of Life, see “Mathematical Games” by M. Gardner, *Scientific American*, Vol. 223, October 1970, p.120 and “Mathematical Games” by M. Gardner, *Scientific American*, Vol. 224, February 1971, p. 112.



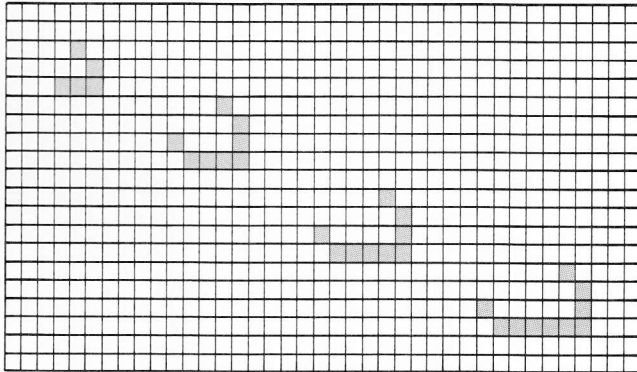
Block Tub Beehive Snake Saw Barge

**Figure 3.8 Stable Patterns**



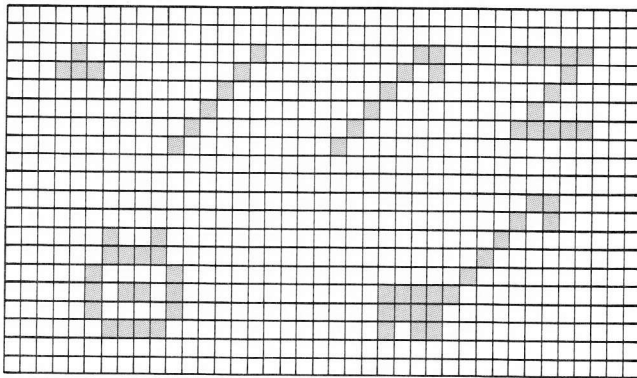
Blinker Tumbler Figure 8 Clock

**Figure 3.9 Oscillating Patterns**



Glider      Lightweight spaceship      Mediumweight spaceship      Heavyweight spaceship

**Figure 3.10    Glider and Space Ships**



TOP ROW      Traffic lights      Fuse      Capped fuse      Z

BOTTOM ROW      Cheshire cat (watch for grin generation 6)      Harvester

**Figure 3.11    Patterns with Interesting Lives**



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