**List of Designs and patterns**

**Conway's Game of Life**

101

....\*\*......\*\*.... (p5)

...\*.\*......\*.\*...

...\*..........\*...

\*\*.\*..........\*.\*\*

\*\*.\*.\*..\*\*..\*.\*.\*\*

...\*.\*.\*..\*.\*.\*...

...\*.\*.\*..\*.\*.\*...

\*\*.\*.\*..\*\*..\*.\*.\*\*

\*\*.\*..........\*.\*\*

...\*..........\*...

...\*.\*......\*.\*...

....\*\*......\*\*....

A for All

....\*\*.... (p6)

...\*..\*...

...\*\*\*\*...

.\*.\*..\*.\*.

\*........\*

\*........\*

.\*.\*..\*.\*.

...\*\*\*\*...

...\*..\*...

....\*\*....

acorn

.\*.....

...\*...

\*\*..\*\*\*

agar - any pattern that can periodically tile the Life universe,

either as a still life or as an oscillator.

aircraft carrier

\*\*.. (p1)

\*..\*

..\*\*

airforce

.......\*...... (p7)

......\*.\*.....

.......\*......

..............

.....\*\*\*\*\*....

....\*.....\*.\*\*

...\*.\*\*...\*.\*\*

...\*.\*..\*.\*...

\*\*.\*...\*\*.\*...

\*\*.\*.....\*....

....\*\*\*\*\*.....

..............

......\*.......

.....\*.\*......

......\*.......

ants

\*\*........\*\*...\*\*...\*\*...\*\*...\*\*...\*\*.. (p5 wick)

..\*\*.\*\*.....\*\*...\*\*...\*\*...\*\*...\*\*...\*\*

..\*\*...\*\*...\*\*...\*\*...\*\*...\*\*...\*\*...\*\*

\*\*.....\*\*.\*\*...\*\*...\*\*...\*\*...\*\*...\*\*..

.....\*\*................................

aVerage

.....\*..... (p5)

....\*.\*....

.....\*.....

...........

...\*\*\*\*\*...

..\*..\*..\*..

.\*.\*\*.\*\*.\*.

.\*.\*...\*.\*.

\*\*.\*...\*.\*\*

\*..\*.\*.\*..\*

..\*.....\*..

...\*\*\*\*\*...

.....\*.....

b-heptomino

.\*..

\*\*\*.

\*.\*\*

b-heptomino shuttle, p46 shuttle, twin bees shuttle

.................\*........... (p46)

\*\*...............\*\*........\*\*

\*\*................\*\*.......\*\*

.................\*\*..........

.............................

.............................

.............................

.................\*\*..........

..................\*\*.........

.................\*\*..........

.................\*...........

bakery - 4 loaves:

....\*\*.... (p1)

...\*..\*...

...\*.\*....

.\*\*.\*...\*.

\*..\*...\*.\*

\*.\*...\*..\*

.\*...\*.\*\*.

....\*.\*...

...\*..\*...

....\*\*....

barberpole - any length extension of this p2 oscillator:

.....\*\* (p2)

......\*

...\*.\*.

.......

.\*.\*...

\*......

\*\*.....

barge

.\*.. (p1)

\*.\*.

.\*.\*

..\*.

beacon

\*\*.. (p2)

\*...

...\*

..\*\*

beehive

.\*\*. (p1)

\*..\*

.\*\*.

beehive and dock, beehive on big table

\*\*..\*\* (p1)

\*....\*

.\*\*\*\*.

......

...\*\*.

..\*..\*

...\*\*.

beehive with tail

.\*... (p1)

\*.\*..

\*.\*..

.\*...

..\*\*\*

....\*

bi-loaf, half bakery, loaf on loaf

.\*..... (p1)

\*.\*....

\*..\*...

.\*\*.\*..

...\*.\*.

...\*..\*

....\*\*.

biblock

\*\*.\*\* (p1)

\*\*.\*\*

big S, S-spiral

....\*\*. (p1)

...\*..\*

...\*.\*\*

\*\*.\*...

\*..\*...

.\*\*....

bipole, short barberpole - this length of the barberpole:

\*\*... (p2)

\*.\*..

.....

..\*.\*

...\*\*

blinker

... (p2)

\*\*\*

...

blinker ship - an object which travels while growing larger by

leaving an increasing trail of blinkers, but which leaves no

permanent exhaust. Example:

...........\*..\*...............

..........\*...................

..........\*...\*...............

..\*\*......\*\*\*\*................

.\*\*\*\*.........................

\*\*.\*\*.........................

.\*\*.....\*\*.\*\*\*................

.......\*.....\*\*.......\*....\*\*\*

......\*\*.......\*......\*....\*.\*

.......\*.....\*\*.......\*....\*\*\*

.\*\*.....\*\*.\*\*\*................

\*\*.\*\*.........................

.\*\*\*\*.........................

..\*\*......\*\*\*\*................

..........\*...\*...............

..........\*...................

...........\*..\*...............

block

\*\* (p1)

\*\*

block and dock, block on big table

\*\*..\*\* (p1)

\*....\*

.\*\*\*\*.

......

...\*\*.

...\*\*.

block on table

\*\*... (p1)

.\*...

.\*.\*\*

\*\*.\*\*

blocker

.......\*.\* (p8)

......\*...

\*\*..\*....\*

\*\*.\*..\*.\*\*

.....\*\*...

boat

.\*. (p1)

\*.\*

.\*\*

boat-bit - a memory device in which a bit of information is

represented as the presence or absence of a boat adjacent to a

snake (or eater or beacon or ...)

boat on boat, boat-tie, bow tie, bi-boat

.\*.... (p1)

\*.\*...

.\*\*...

...\*\*.

...\*.\*

....\*.

bookends

\*\*...\*\* (p1)

\*.\*.\*.\*

..\*.\*..

.\*\*.\*\*.

boss

.....\*..... (p4)

....\*.\*....

....\*.\*....

...\*\*.\*\*...

..\*.....\*..

.\*.\*.\*.\*.\*.

.\*.\*...\*.\*.

\*\*.\*...\*.\*\*

\*..\*.\*.\*..\*

..\*.....\*..

...\*\*.\*\*...

....\*.\*....

....\*.\*....

.....\*.....

brain

.\*\*........ (c/3)

\*..\*.....\*\*

\*\*\*...\*\*\*..

\*..\*.\*\*\*\*..

.\*\*\*...\*...

.\*..\*\*\*....

...\*....\*\*.

...\*\*\*\*\*.\*.

...........

...\*\*\*\*\*.\*.

...\*....\*\*.

.\*..\*\*\*....

.\*\*\*...\*...

\*..\*.\*\*\*\*..

\*\*\*...\*\*\*..

\*..\*.....\*\*

.\*\*........

bunnies

\*.....\*.

..\*...\*.

..\*..\*.\*

.\*.\*....

burloaferimeter

.....\*..... (p7)

....\*.\*....

...\*.\*.\*...

...\*.\*.\*...

\*\*.\*.\*.\*.\*\*

\*\*.\*....\*.\*

....\*\*\*\*...

...........

....\*\*.....

....\*\*.....

caterer

.....\*.. (p3)

\*\*\*\*...\*

...\*...\*

.......\*

....\*...

.....\*\*.

centinal

\*\*................................................\*\* (p100)

.\*................................................\*.

.\*.\*.....................\*\*.....................\*.\*.

..\*\*........\*............\*\*............\*\*.......\*\*..

...........\*\*..........................\*.\*..........

..........\*\*.............................\*..........

...........\*\*..\*\*......................\*\*\*..........

....................................................

....................................................

....................................................

...........\*\*..\*\*......................\*\*\*..........

..........\*\*.............................\*..........

...........\*\*..........................\*.\*..........

..\*\*........\*............\*\*............\*\*.......\*\*..

.\*.\*.....................\*\*.....................\*.\*.

.\*................................................\*.

\*\*................................................\*\*

chemist

.......\*....... (p5)

.......\*\*\*.....

..........\*....

.....\*\*\*..\*..\*\*

....\*.\*.\*.\*.\*.\*

....\*...\*.\*.\*..

.\*\*.\*.\*.\*.\*.\*\*.

..\*.\*.\*...\*....

\*.\*.\*.\*.\*.\*....

\*\*..\*..\*\*\*.....

....\*..........

.....\*\*\*.......

.......\*.......

cis-mirrored R-bee

.\*\*. (p1)

\*..\*

\*\*\*.

....

\*\*\*.

\*..\*

.\*\*.

cis-boat with tail, down boat with tail

....\* (p1)

..\*\*\*

.\*...

\*.\*..

.\*\*..

clock

..\*. (p2)

\*\*..

..\*\*

.\*..

cloverleaf, Achim's p4

...\*.\*... (p4)

.\*\*\*.\*\*\*.

\*...\*...\*

\*.\*.\*.\*.\*

.\*\*\*\*\*\*\*.

.........

.\*\*\*\*\*\*\*.

\*.\*.\*.\*.\*

\*...\*...\*

.\*\*\*.\*\*\*.

...\*.\*...

confused eaters

\*.......... (p4)

\*\*\*........

...\*.......

..\*........

..\*..\*.....

.....\*.....

...\*.\*.....

...\*\*..\*\*..

.......\*.\*.

.........\*.

.........\*\*

cross

..\*\*\*\*.. (p3)

..\*..\*..

\*\*\*..\*\*\*

\*......\*

\*......\*

\*\*\*..\*\*\*

..\*..\*..

..\*\*\*\*..

dart

........\*. (c/3)

.......\*.\*

......\*\*..

.........\*

.....\*...\*

..\*..\*....

.\*.\*..\*\*\*\*

\*..\*......

.\*.\*..\*\*\*\*

..\*..\*....

.....\*...\*

.........\*

......\*\*..

.......\*.\*

........\*.

dead spark coil, JC

\*\*...\*\* (p1)

\*.\*.\*.\*

..\*.\*..

\*.\*.\*.\*

\*\*...\*\*

diamond ring

......\*...... (p3)

.....\*.\*.....

....\*.\*.\*....

....\*...\*....

..\*\*..\*..\*\*..

.\*....\*....\*.

\*.\*.\*\*.\*\*.\*.\*

.\*....\*....\*.

..\*\*..\*..\*\*..

....\*...\*....

....\*.\*.\*....

.....\*.\*.....

......\*......

domino spark - a 2-bit spark, orthogonally connected, such as the

one on the heavyweight spaceship.

double wing, moose antlers

\*\*.....\*\* (p1)

\*.......\*

.\*\*\*.\*\*\*.

...\*.\*...

....\*....

eater, fishhook - this eater, which eats gliders and fish:

\*\*.. (p1)

\*.\*.

..\*.

..\*\*

elevener, intentionless

....\*\* (p1)

.....\*

..\*\*\*.

..\*...

\*.\*...

\*\*....

figure 8, big beacon

\*\*\*... (p8)

\*\*\*...

\*\*\*...

...\*\*\*

...\*\*\*

...\*\*\*

fleet - 4 ships:

....\*\*.... (p1)

....\*.\*...

.....\*\*...

.......\*\*.

\*\*.....\*.\*

\*.\*.....\*\*

.\*\*.......

...\*\*.....

...\*.\*....

....\*\*....

fourteener, 14-ner

....\*\*. (p1)

\*\*..\*.\*

\*.....\*

.\*\*\*\*\*.

...\*...

fumarole

...\*\*... (p5)

.\*....\*.

.\*....\*.

.\*....\*.

..\*..\*..

\*.\*..\*.\*

\*\*....\*\*

glider

..\* (c/4)

\*.\*

.\*\*

glider gun - any pattern that grows forever by emitting gliders.

Gosper gun, original glider gun

.........................\*..........

......................\*\*\*\*....\*.....

.............\*.......\*\*\*\*.....\*.....

............\*.\*......\*..\*.........\*\*

...........\*...\*\*....\*\*\*\*.........\*\*

\*\*.........\*...\*\*.....\*\*\*\*..........

\*\*.........\*...\*\*........\*..........

............\*.\*.....................

.............\*......................

gourmet

..........\*\*........ (p32)

..........\*.........

..\*.\*\*.\*\*.\*.....\*\*..

..\*\*.\*.\*.\*......\*...

........\*........\*..

................\*\*..

....................

...........\*....\*\*..

\*.........\*.\*..\*.\*..

\*\*\*......\*\*.\*\*..\*...

...\*.............\*\*\*

..\*.\*..............\*

..\*\*................

....................

..\*\*................

..\*........\*........

...\*......\*.\*.\*.\*\*..

..\*\*.....\*.\*\*.\*\*.\*..

.........\*..........

........\*\*..........

gray counter

....\*.... (p4)

...\*.\*...

....\*....

.........

..\*\*\*\*\*..

.\*.....\*.

\*.\*...\*.\*

.\*.....\*.

..\*\*\*\*\*..

.........

....\*....

...\*.\*...

....\*....

great on-off

..\*\*.... (p2)

.\*..\*...

.\*.\*\*...

\*\*.\*.\*\*.

....\*\*.\*

.......\*

....\*\*\*.

....\*...

gun - any pattern that grows forever by emitting spaceships.

hassler - an oscillator that can alternately change a properly

placed object, and then change it back.

hat

..\*.. (p1)

.\*.\*.

.\*.\*.

\*\*.\*\*

heavyweight emulator

.......\*\*....... (p4)

..\*\*.\*....\*.\*\*..

..\*..........\*..

...\*\*......\*\*...

\*\*\*..\*\*\*\*\*\*..\*\*\*

\*..\*........\*..\*

.\*\*..........\*\*.

heavyweight spaceship, HWSS, big fish

.\*\*\*\*\*\* (c/2)

\*.....\*

......\*

\*....\*.

..\*\*...

heavyweight volcano

.........\*.......................... (p5)

........\*.\*.........................

......\*\*\*.\*.........................

.....\*....\*\*.\*......................

.....\*.\*\*...\*\*......\*\*..............

....\*\*.\*.\*\*.........\*.\*.............

.........\*.\*\*\*\*\*......\*..\*.\*\*.......

..\*.\*\*.\*\*.\*.....\*....\*\*.\*.\*\*.\*......

.....\*\*.....\*\*\*\*........\*....\*......

\*...\*.\*..\*...\*.\*....\*\*.\*.\*\*\*\*.\*\*....

\*...\*.\*..\*\*.\*.\*\*.\*\*....\*.\*....\*.\*...

.....\*\*...\*\*\*.\*\*.\*.\*\*\*.\*..\*\*\*...\*...

..\*.\*\*.\*\*.\*\*.............\*.\*..\*.\*.\*\*

...........\*......\*.\*.\*.\*..\*\*.\*.\*.\*.

....\*\*.\*.\*.\*\*......\*\*.\*.\*.\*...\*.\*.\*.

.....\*.\*\*.\*..\*.......\*.\*\*..\*\*\*\*.\*\*..

.....\*....\*.\*........\*...\*\*.........

....\*\*....\*\*........\*\*...\*..\*.......

...........................\*\*.......

Heisenburp device - a Life object which can detect the passage of a

glider without affecting the glider's path or timing.

Hertz oscillator

...\*\*.\*.... (p8)

...\*.\*\*....

...........

....\*\*\*....

...\*.\*.\*.\*\*

...\*...\*.\*\*

\*\*.\*...\*...

\*\*.\*...\*...

....\*\*\*....

...........

....\*\*.\*...

....\*.\*\*...

hexlife - an alternative game similar to Conway's, which is played

on a hexagonal grid. No set of rules has yet emerged as uniquely

interesting.

HighLife - an alternate set of rules similar to Conway's, but with

the additional rule that 6 neighbors generates a birth. Most of

the interest in this variant is due to the replicator that evolves

from:

\*\*\*.

...\*

...\*

...\*

honeyfarm - 4 beehives:

......\*...... (p1)

.....\*.\*.....

.....\*.\*.....

......\*......

.............

.\*\*.......\*\*.

\*..\*.....\*..\*

.\*\*.......\*\*.

.............

......\*......

.....\*.\*.....

.....\*.\*.....

......\*......

hustler

.....\*\*.... (p3)

.....\*\*....

...........

...\*\*\*\*....

\*.\*....\*...

\*\*.\*...\*...

...\*...\*.\*\*

...\*....\*.\*

....\*\*\*\*...

...........

....\*\*.....

....\*\*.....

induction coil - any pattern used to stabilize a border. Example:

.\*\*.... (p1)

.\*..\*..

..\*\*\*..

.......

\*\*\*\*\*\*\*

\*..\*..\*

inductor - an oscillator of one or two-way orthogonal symmetry which

depends on mutual symmetry to exist. Examples: pulsar, tumbler.

integral sign

...\*\* (p1)

..\*.\*

..\*..

\*.\*..

\*\*...

jam

....\*\*. (p3)

...\*..\*

.\*..\*.\*

\*....\*.

\*......

..\*\*\*..

keys

.\*........\*. (p3)

\*.\*\*\*..\*\*\*.\*

.\*..\*..\*..\*.

....\*..\*....

kickback reaction

....\*.\*

\*\*\*..\*\*

..\*..\*.

.\*.....

Kok's galaxy

\*\*\*\*\*\*.\*\* (p8)

\*\*\*\*\*\*.\*\*

.......\*\*

\*\*.....\*\*

\*\*.....\*\*

\*\*.....\*\*

\*\*.......

\*\*.\*\*\*\*\*\*

\*\*.\*\*\*\*\*\*

light bulb

.\*\*.\*.. (p2)

.\*.\*\*..

.......

..\*\*\*..

.\*...\*.

.\*...\*.

..\*.\*..

\*.\*.\*.\*

\*\*...\*\*

lightspeed wire - a wick that can burn non-destructively at the

speed of light, which might be useful for sending a signal or

constructing oscillators with periods not currently attainable.

Unfortunately, no way has been found to return a signal to its

starting point, either by reflecting it or bending it around a

corner. Example:

...\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*...

...\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*...

................................................................

.\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

\*.................................\*.......\*..........\*.........\*

\*\*\*\*.\*\*.\*..\*\*\*\*\*..\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*....\*\*\*\*\*....\*\*\*\*\*\*\*...\*\*\*\*\*\*\*\*

....\*...\*\*.....\*\*.......\*.......\*........\*............\*.........

\*\*\*\*\*\*..\*..\*\*\*\*\*..\*\*\*\*\*....\*\*\*\*\*\*....\*\*\*\*\*....\*\*\*\*\*\*\*...\*\*\*\*\*\*\*\*

\*......................\*.........\*........\*..........\*.........\*

.\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

................................................................

...\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*...

...\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*..\*...

lightweight emulator

..\*\*.\*..\*.\*\*.. (p4)

..\*........\*..

...\*\*....\*\*...

\*\*\*..\*\*\*\*..\*\*\*

\*..\*......\*..\*

.\*\*........\*\*.

lightweight spaceship, LWSS, small fish

.\*\*\*\* (c/2)

\*...\*

....\*

\*..\*.

line puffer - a puffer whose output comes from a long row of cells

generated orthogonal to the direction of motion of the puffer.

Some types of line puffers appear to be extensible and have

arbitrarily large periods, but this has not been proven.

loaf

.\*.. (p1)

\*.\*.

\*..\*

.\*\*.

long barge

.\*... (p1)

\*.\*..

.\*.\*.

..\*.\*

...\*.

long boat

.\*.. (p1)

\*.\*.

.\*.\*

..\*\*

long ship

\*\*.. (p1)

\*.\*.

.\*.\*

..\*\*

loop

\*... (p1)

\*\*\*.

...\*

\*\*.\*

\*.\*.

lumps of muck, LoM, blockade - 4 blocks:

\*\*.....................

\*\*.....................

.......................

.......................

.\*\*.................\*\*.

.\*\*.................\*\*.

.......................

.......................

.....................\*\*

.....................\*\*

mango, dove, cigar

.\*\*.. (p1)

\*..\*.

.\*..\*

..\*\*.

mazing

...\*\*.. (p4)

.\*.\*...

\*.....\*

.\*...\*\*

.......

...\*.\*.

....\*..

methuselah - any small "seed" pattern that does not stabilize for a

very long time. Not used to describe objects that are known to

grow forever. Originally defined as a pattern having a population

of at most 10 and a Life-span of at least 100. Examples: acorn,

bunnies, rabbits.

middleweight emulator

.......\*....... (p4)

..\*\*.\*...\*.\*\*..

..\*.........\*..

...\*\*.....\*\*...

\*\*\*..\*\*\*\*\*..\*\*\*

\*..\*.......\*..\*

.\*\*.........\*\*.

middleweight spaceship, MWSS, medium fish

.\*\*\*\*\* (c/2)

\*....\*

.....\*

\*...\*.

..\*...

middleweight volcano

...\*\*\*\*\*\*\*... (p5)

.\*\*\*.\*\*\*.\*\*\*.

\*....\*\*\*....\*

.\*\*\*\*.\*.\*\*\*.\*

...........\*.

\*.\*\*.\*.\*.\*...

\*\*.\*.\*.\*.\*\*..

....\*..\*.\*...

.....\*\*..\*...

.........\*\*..

MIT oscillator, cuphook

....\*\*... (p3)

...\*.\*...

...\*.....

\*\*.\*.....

\*\*.\*..\*..

....\*\*.\*.

.......\*.

.......\*\*

mold

.\*\*... (p4)

\*..\*..

\*.\*..\*

.\*....

..\*\*.\*

....\*.

monogram, JHC

\*\*...\*\* (p4)

.\*.\*.\*.

.\*\*.\*\*.

.\*.\*.\*.

\*\*...\*\*

negentropy

......\*\*.... (p2)

......\*\*....

............

....\*\*\*\*..\*\*

\*\*.\*..\*.\*..\*

.\*.\*...\*\*.\*.

\*..\*....\*.\*\*

\*\*..\*\*\*\*....

............

....\*\*......

....\*\*......

octagon II

...\*\*... (p5)

..\*..\*..

.\*....\*.

\*......\*

\*......\*

.\*....\*.

..\*..\*..

...\*\*...

Orion

...\*\*......... (c/4)

...\*.\*........

...\*..........

\*\*.\*..........

\*....\*........

\*.\*\*......\*\*\*.

.....\*\*\*....\*\*

......\*\*\*.\*.\*.

.............\*

......\*.\*.....

.....\*\*.\*.....

......\*.......

....\*\*.\*......

.......\*......

.....\*\*.......

oscillator - any pattern that reappears in the same position after a

certain number of generations.

paperclip, drain trap

..\*\*. (p1)

.\*..\*

.\*.\*\*

\*\*.\*.

\*..\*.

.\*\*..

pedestle

.....\*..... (p5)

....\*.\*....

.\*..\*\*.....

.\*\*\*.......

.....\*\*\*...

...\*\*...\*..

..\*....\*..\*

.\*.\*.\*.\*.\*\*

.\*.\*...\*.\*.

\*\*.\*.\*.\*.\*.

\*..\*....\*..

..\*...\*\*...

...\*\*\*.....

.......\*\*\*.

.....\*\*..\*.

....\*.\*....

.....\*.....

penny lane

...\*\*.....\*\*... (p4)

...\*.......\*...

\*\*.\*.......\*.\*\*

\*\*.\*.\*\*\*\*\*.\*.\*\*

....\*..\*..\*....

.....\*\*\*\*\*.....

...............

.......\*.......

......\*.\*......

.......\*.......

pentadecathlon, PD

..\*....\*.. (p15)

\*\*.\*\*\*\*.\*\*

..\*....\*..

period - the number of generations it takes for an oscillator to

repeat, or a spaceship to be displaced exactly. Often the

notation pN is used, for example, p2 for period 2. Also, pN/m when

symmetry is involved, where m is the number of translations, for

example, p6/2 describes a period 6 flipper.

phoenix - any pattern whose cells all die in every generation, and

yet lives forever. Example:

...\*.... (p2)

...\*.\*..

.\*......

......\*\*

\*\*......

......\*.

..\*.\*...

....\*...

pi heptomino

\*\*\*

\*.\*

\*.\*

pond

.\*\*. (p1)

\*..\*

\*..\*

.\*\*.

pond on pond, bi-pond

.\*\*.... (p1)

\*..\*...

\*..\*...

.\*\*.\*\*.

...\*..\*

...\*..\*

....\*\*.

population - the number of live ("on") cells of an object.

predecessor - any pattern that can precede a given pattern by any

number of generations.

pressure cooker

.....\*..... (p3)

....\*.\*....

....\*.\*....

...\*\*.\*\*...

\*.\*.....\*.\*

\*\*.\*.\*.\*.\*\*

...\*...\*...

...\*...\*...

....\*\*\*....

...........

...\*.\*\*....

...\*\*.\*....

pseudo-barberpole

..........\*\* (p5)

...........\*

.........\*..

.......\*.\*..

............

.....\*.\*....

............

...\*.\*......

............

..\*\*........

\*...........

\*\*..........

puffer, puffer train - any pattern that moves, leaving a trail.

pulsar, CP-pulsar, pulsar CP 48-56-72

..\*\*\*...\*\*\*.. (p3)

.............

\*....\*.\*....\*

\*....\*.\*....\*

\*....\*.\*....\*

..\*\*\*...\*\*\*..

.............

..\*\*\*...\*\*\*..

\*....\*.\*....\*

\*....\*.\*....\*

\*....\*.\*....\*

.............

..\*\*\*...\*\*\*..

pushalong - a tagalong on the front end of a spaceship. Example:

..\*\*\*.\*..... (c/2)

.\*\*\*\*.\*.....

\*\*..........

.\*.\*........

..\*\*\*\*.\*....

...\*\*\*......

............

............

......\*\*\*\*\*.

......\*....\*

......\*.....

.......\*...\*

.........\*..

pyrotechneczum

.......\*........ (p8)

.....\*\*\*\*\*......

....\*.....\*.....

.\*..\*..\*\*\*.\*....

\*.\*.\*.\*....\*..\*.

.\*..\*....\*.\*.\*.\*

....\*.\*\*\*..\*..\*.

.....\*.....\*....

......\*\*\*\*\*.....

........\*.......

quad, barberpole intersection

\*\*..\*\* (p2)

\*..\*.\*

.\*....

....\*.

\*.\*..\*

\*\*..\*\*

quapole, quadpole, barberpole of length 4 - this length of the

barberpole:

\*\*..... (p2)

\*.\*....

.......

..\*.\*..

.......

....\*.\*

.....\*\*

queen bee

\*....

\*\*\*\*.

.\*\*\*\*

.\*..\*

.\*\*\*\*

\*\*\*\*.

\*....

queen bee shuttle, p30 shuttle

..........\*........... (p30)

..........\*\*\*\*........

\*\*.........\*\*\*\*.....\*\*

\*\*.........\*..\*.....\*\*

...........\*\*\*\*.......

..........\*\*\*\*........

..........\*...........

r-pentomino

.\*\*

\*\*.

.\*.

R2D2

...\*\*... (p8)

...\*\*...

........

.\*\*\*\*\*\*.

\*......\*

\*\*\*...\*\*

........

\*\*\*\*\*\*\*\*

\*......\*

...\*\*...

...\*\*...

rabbits

\*...\*\*\*

\*\*\*..\*.

.\*.....

rake - any puffer that leaves a trail of spaceships.

relay - an oscillator in which gliders or spaceships travel in a

loop.

rephaser

...\*\*...

...\*\*...

........

........

.\*\*..\*\*.

\*.\*..\*.\*

..\*..\*..

replicator - a Life object which repeatedly forms copies of itself.

Such things are known to be possible in Life, but no example is

known. But in the HighLife variant, there is a simple replicator.

revolver

\*\*....\*\* (p2)

.\*....\*.

.\*.\*\*.\*.

..\*..\*..

...\*....

.....\*..

.\*\*.....

.....\*\*.

..\*.....

....\*...

..\*..\*..

.\*.\*\*.\*.

.\*....\*.

\*\*....\*\*

roteightor

.\*............ (p8)

.\*\*\*........\*\*

....\*.......\*.

...\*\*.....\*.\*.

..........\*\*..

..............

.....\*\*\*......

.....\*..\*.....

.....\*........

..\*\*..\*...\*...

.\*.\*......\*...

.\*.......\*....

\*\*........\*\*\*.

............\*.

rotor - the active cells in an oscillator.

sawtooth - a pattern whose population is unbounded, but doesn't tend

uniformly to infinity. The population returns to its minimum

value at intervals, producing a zig-zag graph.

Schick engine

.....\*\*\*\* (c/2)

....\*...\*

........\*

\*\*..\*..\*.

\*\*\*......

\*\*..\*..\*.

........\*

....\*...\*

.....\*\*\*\*

scorpion

...\*... (p1)

.\*\*\*...

\*...\*\*.

\*.\*.\*.\*

.\*\*.\*.\*

.....\*.

scrubber

....\*...... (p2)

..\*\*\*......

.\*.........

.\*..\*\*\*....

\*\*.\*...\*...

...\*...\*...

...\*...\*.\*\*

....\*\*\*..\*.

.........\*.

......\*\*\*..

......\*....

shillelagh

\*\*... (p1)

\*..\*\*

.\*\*.\*

ship

\*\*. (p1)

\*.\*

.\*\*

ship on boat, boat-ship-tie

\*\*.... (p1)

\*.\*...

.\*\*...

...\*\*.

...\*.\*

....\*.

shiptie, ship on ship, bi-ship, half fleet

\*\*.... (p1)

\*.\*...

.\*\*...

...\*\*.

...\*.\*

....\*\*

shuttle, piston - any oscillator in which some part moves back and

forth. Examples: queen bee shuttle, b-heptomino shuttle.

siesta

...........\*\*... (p5)

...\*\*.....\*.\*...

...\*.\*....\*.....

.....\*...\*\*.\*...

...\*.\*\*.....\*\*\*.

.\*\*\*.....\*.\*...\*

\*...\*.\*.....\*\*\*.

.\*\*\*.....\*\*.\*...

...\*.\*\*...\*.....

.....\*....\*.\*...

...\*.\*.....\*\*...

...\*\*...........

sinking ship

...\*\* (p1)

....\*

...\*.

\*.\*..

\*\*...

skewed quad

.\*\*.... (p2)

.\*...\*\*

..\*.\*.\*

.......

\*.\*.\*..

\*\*...\*.

....\*\*.

smiley

\*\*.\*.\*\* (p8)

...\*...

\*.....\*

.\*\*\*\*\*.

.......

.......

\*\*\*.\*\*\*

snacker

\*\*................\*\* (p9)

.\*................\*.

.\*.\*............\*.\*.

..\*\*............\*\*..

.......\*....\*.......

.....\*\*.\*\*\*\*.\*\*.....

.......\*....\*.......

..\*\*............\*\*..

.\*.\*............\*.\*.

.\*................\*.

\*\*................\*\*

snake

\*.\*\* (p1)

\*\*.\*

snake pit

\*.\*\*.\*\* (p2)

\*\*.\*.\*.

......\*

\*\*\*.\*\*\*

\*......

.\*.\*.\*\*

\*\*.\*\*.\*

sombreros

...\*\*........\*\*... (p6)

...\*.\*......\*.\*...

.....\*......\*.....

...\*.\*\*....\*\*.\*...

.\*\*\*..........\*\*\*.

\*...\*.\*....\*.\*...\*

.\*\*\*..........\*\*\*.

...\*.\*\*....\*\*.\*...

.....\*......\*.....

...\*.\*......\*.\*...

...\*\*........\*\*...

space dust - a section of an oscillator or spaceship which is

composed of an almost random mixture of live and dead cells. Such

objects are very hard to construct.

spacefiller - any pattern that grows quadratically by filling space

with still life.

spaceship - any pattern that moves, leaving no trail.

spark - any piece of an oscillator or spaceship which dies out,

without further interacting with the oscillator or spaceship that

created it, but can interact with other objects before dying.

spark coil, grapser

\*\*....\*\* (p2)

\*.\*..\*.\*

..\*..\*..

\*.\*..\*.\*

\*\*....\*\*

Sparky

..........\*.................... (c/4)

..........\*...............\*\*...

......\*\*.\*.\*\*\*..........\*\*...\*.

\*.\*\*.\*\*.\*\*..\*.\*...\*\*.\*\*\*\*......

\*...\*\*..\*.\*\*..\*\*\*..\*.\*\*..\*\*...\*

\*.\*\*....\*\*\*.\*.\*\*\*......\*\*..\*...

........\*\*.\*...............\*..\*

\*.\*\*....\*\*\*.\*.\*\*\*......\*\*..\*...

\*...\*\*..\*.\*\*..\*\*\*..\*.\*\*..\*\*...\*

\*.\*\*.\*\*.\*\*..\*.\*...\*\*.\*\*\*\*......

......\*\*.\*.\*\*\*..........\*\*...\*.

..........\*...............\*\*...

..........\*....................

speed of light, light speed, c - traveling at one cell per

generation. Slower speeds are usually written as fractions of c.

spiral

\*\*....\* (p1)

.\*..\*\*\*

.\*.\*...

..\*.\*..

...\*.\*.

\*\*\*..\*.

\*....\*\*

star

.....\*..... (p3)

....\*\*\*....

..\*\*\*.\*\*\*..

..\*.....\*..

.\*\*.....\*\*.

\*\*.......\*\*

.\*\*.....\*\*.

..\*.....\*..

..\*\*\*.\*\*\*..

....\*\*\*....

.....\*.....

stator - the unchanging cells in an oscillator.

still life - oscillators of period 1; stable patterns.

stretcher - any pattern that grows by stretching a wick or agar.

switch engine:

.\*.\*..

\*.....

.\*..\*.

...\*\*\*

synthesis, glider synthesis - method of generating a pattern using

gliders only.

table on table, ][, pair of tables

\*..\* (p1)

\*\*\*\*

....

\*\*\*\*

\*..\*

tagalong - a dependent part of a spaceship that can be removed

without destroying the spaceship.

technician finished product

.....\*..... (p5)

....\*.\*....

....\*\*.....

..\*\*.......

.\*...\*\*\*...

\*..\*\*...\*.\*

.\*\*....\*.\*\*

...\*.\*.\*...

...\*...\*...

....\*\*\*....

......\*.\*..

.......\*\*..

test tube baby

\*\*....\*\* (p2)

\*.\*..\*.\*

..\*..\*..

..\*..\*..

...\*\*...

toad

.\*\*\* (p2)

\*\*\*.

toadsucker - a hassler that sucks a toad. Example:

...\*....\*.. (p60)

.\*\*.\*\*\*\*.\*\*

...\*....\*..

...........

...........

...........

...........

...........

.....\*\*\*...

....\*\*\*....

...........

...........

...........

...........

...........

..\*....\*...

\*\*.\*\*\*\*.\*\*.

..\*....\*...

toaster, lightweight volcano

...\*\*..\*\*... (p5)

.\*\*\*.\*\*.\*\*\*.

\*..........\*

.\*\*\*\*..\*\*\*\*.

....\*..\*....

.\*\*......\*\*.

.\*..\*..\*..\*.

..\*\*\*..\*\*\*..

............

\*\*\*\*.\*\*.\*\*\*\*

\*..\*\*..\*\*..\*

traffic circle

.....................\*\*....\*\*................... (p100)

.....................\*.\*..\*.\*...................

.......................\*..\*.....................

......................\*....\*....................

......................\*....\*....................

......................\*....\*....................

........................\*\*.....\*\*...............

...............................\*\*\*..............

...............................\*\*.\*.............

.................................\*.\*............

.........................\*\*\*....\*..\*............

.................................\*\*.............

.........\*\*............\*.....\*..................

........\*..\*...........\*.....\*..................

......\*..\*.\*...........\*.....\*..................

..........\*.....................................

......\*.\*\*...............\*\*\*....................

.......\*.....\*..................................

.............\*..................................

\*\*...........\*..................................

\*..\*\*\*..........................................

.\*\*......\*\*\*...\*\*\*............................\*\*

......\*...................................\*\*\*..\*

......\*......\*...............................\*\*.

.\*\*..........\*........\*..................\*......

\*..\*\*\*.......\*......\*\*.\*\*............\*...\*......

\*\*....................\*............\*\*.\*\*.....\*\*.

.....................................\*....\*\*\*..\*

..............................................\*\*

................................................

......................................\*.\*.......

....................\*\*\*..................\*......

.....................................\*..\*.......

..................\*.....\*...........\*.\*.\*.......

..................\*.....\*...........\*..\*........

..................\*.....\*............\*\*.........

.............\*\*.................................

............\*..\*....\*\*\*.........................

............\*.\*.\*...............................

.............\*.\*\*\*..............................

...............\*\*\*..............................

......................\*\*........................

....................\*....\*......................

....................\*....\*......................

....................\*....\*......................

.....................\*..\*.......................

...................\*.\*..\*.\*.....................

...................\*\*....\*\*.....................

traffic jam - a traffic light hassler. Example: traffic circle.

traffic lights - 4 blinkers:

....\*.... (p2)

....\*....

....\*....

.........

\*\*\*...\*\*\*

.........

....\*....

....\*....

....\*....

trans-boat with tail, up boat with tail

...\*\* (p1)

..\*.\*

.\*.\*.

.\*...

\*\*...

trice tongs

\*\*..... (p3)

\*\*..\*..

..\*\*.\*.

..\*..\*

.\*...\*\*

..\*\*\*..

....\*..

tripole, short barberpole - this length of the barberpole:

\*\*.... (p2)

\*.\*...

......

..\*.\*.

.....\*

....\*\*

tub

.\*. (p1)

\*.\*

.\*.

tub with tail

.\*... (p1)

\*.\*..

.\*.\*.

...\*.

...\*\*

tubber

....\*.\*...... (p3)

....\*\*.\*.....

.......\*\*\*...

....\*\*....\*..

\*\*.\*..\*\*..\*..

.\*.\*....\*.\*\*.

\*...\*...\*...\*

.\*\*.\*....\*.\*.

..\*..\*\*..\*.\*\*

..\*....\*\*....

...\*\*\*.......

.....\*.\*\*....

......\*.\*....

tumbler

.\*\*.\*\*. (p14)

.\*\*.\*\*.

..\*.\*..

\*.\*.\*.\*

\*.\*.\*.\*

\*\*...\*\*

turtle

.\*\*\*.......\*.. (c/3)

.\*\*..\*.\*\*.\*\*..

...\*\*\*....\*...

.\*..\*.\*...\*...

\*....\*....\*..\*

\*....\*....\*..\*

.\*..\*.\*...\*...

...\*\*\*....\*...

.\*\*..\*.\*\*.\*\*..

.\*\*\*.......\*..

twinhat, twin peaks

..\*...\*.. (p1)

.\*.\*.\*.\*.

.\*.\*.\*.\*.

\*\*.\*.\*.\*\*

....\*....

two eaters

\*\*....... (p3)

.\*.......

.\*.\*.....

..\*\*.....

.....\*\*..

.....\*.\*.

.......\*.

.......\*\*

unix

.\*\*..... (p6)

.\*\*.....

........

.\*......

\*.\*.....

\*..\*..\*\*

....\*.\*\*

..\*\*....

very long barge, long long barge

.\*.... (p1)

\*.\*...

.\*.\*..

..\*.\*.

...\*.\*

....\*.

very long boat, long long boat

.\*... (p1)

\*.\*..

.\*.\*.

..\*.\*

...\*\*

very long ship, long long ship

\*\*... (p1)

\*.\*..

.\*.\*.

..\*.\*

...\*\*