Vats

The goal of this group of puzzles is to align the mixing arms of nine vats and the bridges, so that players can cross from a starting position to the vat on the bottom right. Along the way, players must avoid the green blobs that are trying to destroy them and collect as many of the ten dinosaur eggs as possible. And, as an additional challenge, each move the player makes creates a certain amount of pressure on the bridges; too much pressure will destroy them.

The vats are used to mix up Echidna's Tasti-Pet pet food. Each vat has tick marks at the top (as well as a number that tells players how many tick marks there are). These marks indicate how many moves it will take to rotate the arm of that vat a full 360 degrees. One arm might take 4 ticks to move around the vat; another might take 12.

The player controls how the arms move by putting a number in the remote control device that governs the movement of the arms. For example, if the player puts in a value of 6, the vat arm with 4 ticks will revolve one-and-a-half times, while the arm of the 12-tick vat will move only half way around its vat. All arms rotate in a clockwise direction.

The player can move from the bridge to an arm only when the arm is precisely aligned with the bridge. The player can collect dinosaur eggs only when they are on a mixing arm when it stops at the tick mark where an object is located. The player is destroyed by the monster when they both arrive at the same location on a bridge or arm. Bridges have five states of "damage," ranging from "undamaged" to "destroyed." When players begin a round, three bridges are in states of damage that range from 1 to 3; each move they make increases the pressure (which they can monitor on an on-screen meter), leading to the destruction of some (or all of the) bridges.

At levels 2 and 3, drawbridges replace bridges, increasing the difficulty. The player must calculate the input value that will get both arms of two adjacent vats to stop at the bridge at the same time. Unless the arms align, the bridge stays up, and the player can't advance. Drawbridges connect a few of the vats at level 2, and all of them at level 3.

The Vats puzzles explore algebraic concepts like variables, rates of change, balancing equations, and especially modular arithmetic. The greatest challenges are:

1. Advancing arms to target positions with the minimum number of commands (arithmetic, modular arithmetic).
2. Plotting the most efficient path through the vats (spatial reasoning).
3. At levels 2 and 3, programming commands that will cause vats of different "periodicities" to align (variables, simultaneous equations).