The Art Of the Puzzle

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Introduction

Sam Loyd

"I have always treated and considered puzzles from an educational standpoint. . . . [They] sharpen the wits, clear fog and cobwebs from the brain, and school the mind to concentrate properly."

Will Shortz

"Of course, puzzles are designed primarily for entertainment. That's why we do them. But it's nice to know that we're becoming smarter and better human beings in the process."

Puzzles, Science, and Mathematics

- Mathematics is the solving of abstract puzzles
- Feynman attributed some of his contributions to quantum mechanics to his lifelong passion for puzzle solving.[1]
- topology and graph theory have their origins in Euler's puzzle about the Bridges of Königsberg.

[1] Feynman also like safe cracking, a form of puzzle solving

Puzzles and Life

- Puzzles reflect the mentality of their times.
- They reflect the
  - Culture
  - Values
  - History
  - Society

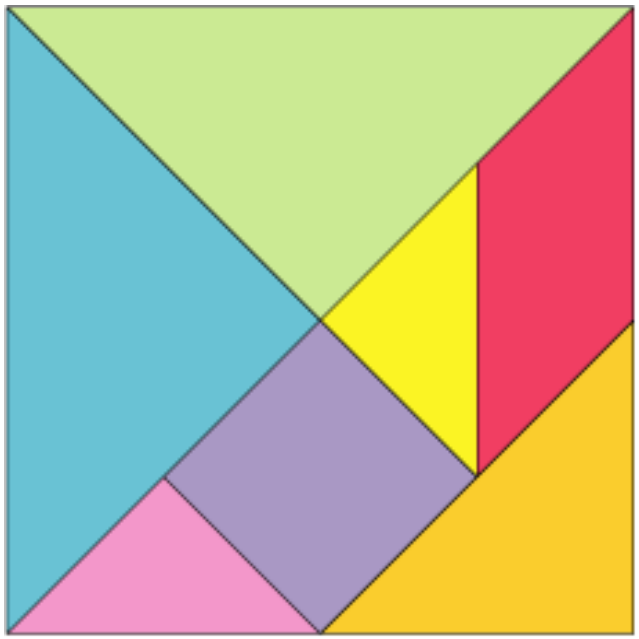
Mechanical Puzzle Classification

Classifications are based on what must be done in order to solve the puzzle.

1. Put-together puzzles: put some object together.
2. Take-apart puzzles: opening or taking apart the puzzle.
3. Interlocking puzzles: involved disassembly or re-assembly.
4. Disentanglement puzzles: disentangle or re-entangle the puzzle.
5. Sequential-movement puzzles: move parts of the object to a goal.
6. Dexterity puzzles: requires manual dexterity.
7. Puzzle vessels: avoid spilling, or figure how to fill.
8. Vanish puzzles: explain a vanished or changed image.
9. Folding puzzles: fold the puzzle to form a specific pattern.
10. Impossible puzzles: explain how a puzzle is made or why it behaves in a seemingly impossible way.

Put-Together Puzzles

- Solved by assembly
- The oldest class of mechanical puzzle
- Excellent example is the Tangram



Take-Apart Puzzles

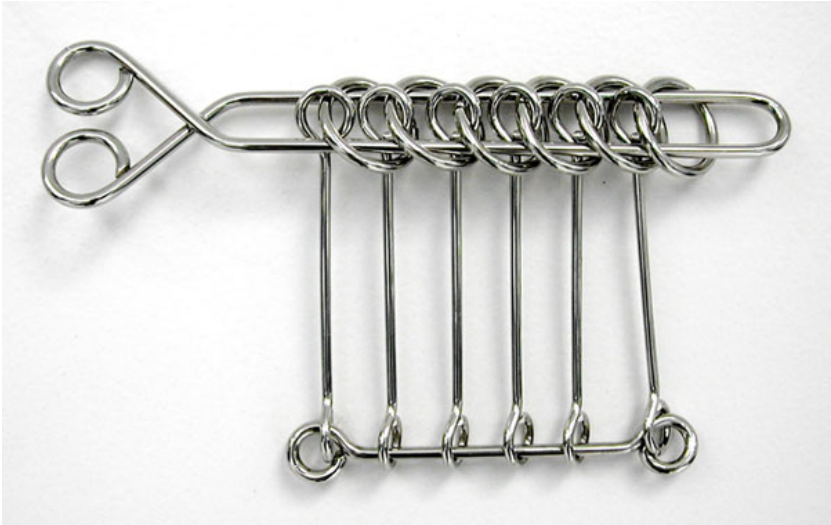
Japanese puzzle boxes are an excellent example of these. Many demonstrate various principles in physics.

Interlocking Puzzles

- Often the greater challenge is in re-assembly
- Burr puzzles are representative of this type.

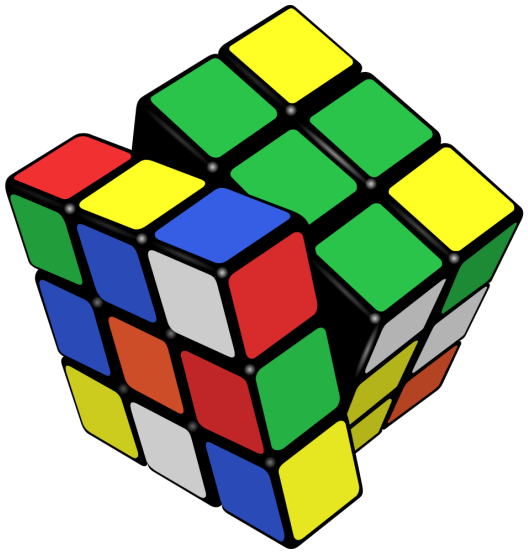
Disentanglement Puzzles

- Often involve freeing an attached part of the puzzle
- Examples include
  - Solomon's Seal
  - Chinese rings
  - Hobble



Sequential Movement Puzzles

- Involve moving parts of a puzzle to a goal
- Examples include
  - Puzzle of fifteen (sliding block puzzles)
  - Rubik's Cube



Dexterity Puzzles

- Throw and catch puzzles and rolling balls (in maze)
- Logic is often part of the key to the solution
- Specific type was used to help British prisoners escape during WWII

Puzzle Vellels

- May require the solver to not spill while drinking
- Solutions involve using the vessel in other than ordinary ways

Vanish Puzzles

- Geometric paradoxes
- Involve rearrangement of parts of a figure
- Part of the figure vanishes
- Examples include
  - The Magic Egg
  - Get Off the Earth

Folding Puzzles

- Have been used in advertisements
- Popular in Mad Magazine

Impossible Puzzles

- Trick is to figure out how it was made
- Often include objects in bottles

Summary

Puzzles

- Entertain
- Educate
- Protect
- Are art
- Require astute problem solving skills, analysis, and observation