Patent Law

Winter 2019

Professor William Fisher

This is a three-hour, in-class, closed-book examination. It will be administered from 2:00 p.m. to 5:00 p.m. on January 25, 2019.

You may not bring into the exam room any written material, paper, or electronic devices other than your computer. (The only exception to this rule is that a student who is not a native speaker of English may bring into the exam room a paper copy of a dictionary enabling him or her to translate English words into his or her principal language.) The proctors will supply scrap paper that you may use to take notes during the exam. In preparing your answer, you may not consult in any way with your fellow students or with any other person.

The exam mode is CLOSED. This means that you will not have access to the hard drive of your computer or to the Internet. Nor will you have access to your answer once you have submitted it.

The exam contains two questions. Your answer to question #1 may not exceed 2000 words. Your answer to question #2 may not exceed 1500 words.

60% of your final grade will be determined by the quality of your answer to question #1; 40% will be determined by the quality of your answer to question #2.

Exam4 will automatically put your Anonymous ID and word count on the exam copy. Do not write your name on any part of your response. To preserve the anonymity of your response, avoid including any information that would enable the instructor to identify you.

DO NOT TURN TO PAGE TWO UNTIL THE PROCTOR TELLS YOU TO BEGIN.

Question #1

In 1981, Moleculon Research Corporation, the assignee of U.S. Patent #3,655,201, brought an infringement suit in federal district court against CBS, Inc., the successor to the Ideal Toy Corporation. The facts of the case (as found by the District Court) are as follows:

> The subject of the '201 patent, in its preferred embodiment, is a cube puzzle composed of eight smaller cublets that may be rotated in groups of four adjacent cubes, and a method by which the sets of cubes may be rotated, first to randomize, and then to restore a predetermined pattern on the six faces of the composite cube….
>
> Nichols' interest in puzzles began at the age of five or six. His interest in the familiar "Sam Loyd 15" puzzle[1] evolved into a desire to improve on what he perceived to be its shortcomings. In particular he considered various ways of eliminating the empty space, while allowing pieces to be moved.
>
> During an evening stroll in the Summer of 1957, these thoughts and ideas suddenly fell into place in Nichols' mind and he conceived of a three-dimensional puzzle capable of rotational movement. Nichols quickly envisioned an assembly of eight cubes stacked in a 2 X 2 X 2 arrangement, with each of the six faces of the composite cube distinguished by a different color. He recognized that the smaller cubes would be rotated in sets of four around one of three mutually perpendicular axes. He felt immediate satisfaction at having arrived at this concept.
>
> Nichols very quickly realized that magnets could be used to hold the cubes in assembled form yet allow rotational movement. His efforts to conceive of a feasible mechanical means of assembly proved more difficult; however, by the Fall of 1957, Nichols believed that a double tongue-in-groove arrangement could be made to work.
>
> During the period 1957-1968, Nichols constructed several models of his puzzle, making cubes of heavy file-card type paper and affixing small magnets to the inside of the small cubes. These models confirmed the feasibility of Nichols' conception, but lacked durability. During this period he also attempted to explore mechanical alternatives, such as engaging the cubes through a tab-and-slot arrangement, but these experiments were not satisfactory.
>
> Nichols spent the years 1959-62 as a graduate student in organic chemistry at Harvard. During this period, a few close friends, including two roommates and a colleague in the Chemistry Department, had occasion to see one of these paper models in Nichols' room and Nichols explained its operation to at least one of them.
>
> In 1962, after completing the requirements for a Ph.D. in organic chemistry, Nichols

[1] The Sam Loyd 15 puzzle, invented in 1873, is the familiar square, two-dimensional puzzle inset with fifteen flat square numbered tiles and an empty space that could accommodate a sixteenth tile. The tiles can be moved one at a time by sliding them into the empty space. [A photograph of the Sam Loyd puzzle appears in the appendix to this exam.]

accepted employment as a research scientist at Moleculon. In 1968, Nichols happened upon some small, strong and relatively inexpensive magnets in a retail store. Realizing that he now had access to machining equipment at work, he undertook to make a wood block prototype of his puzzle. Working after working hours, he drilled holes in the internal faces of eight small wooden blocks, inserted the magnets, properly oriented them, and glued them in. He then painted each of the six faces of the composite cube a different color. To his satisfaction, it held together nicely.

Nichols usually kept the puzzle at home, but on occasion brought it to his office to work on it or to play with it. In early January of 1969, Dr. Obermayer, the president of Moleculon, entered Nichols' office and happened to see the model sitting on his desk. He immediately expressed an interest in the puzzle, and in response, Nichols explained its workings. He asked to take it home and was given permission to do so. Obermayer asked whether Nichols intended to commercialize the puzzle. When Nichols answered in the negative, Obermayer suggested that Moleculon attempt to do so and Nichols expressed general agreement. In March of 1969, Nichols signed a written agreement assigning all his rights in the puzzle invention to Moleculon in return for a share of any proceeds of commercialization. Moleculon in turn assumed all expenses of commercializing the puzzle.

Shortly thereafter Moleculon undertook an extensive effort to commercialize the puzzle. Obermayer called Parker Brothers in February of 1969 to determine whether they had an interest in receiving for consideration puzzle ideas from outside inventors and, if so, how one should go about making a submission. Parker Brothers responded with a letter and booklet describing their general practice regarding puzzle and game submissions and on March 7, 1969, Moleculon sent Parker Brothers an actual model and a description of the cube puzzle. During the subsequent three-year period, Moleculon contacted between fifty and sixty toy and game manufacturers. Among those contacted was Ideal. Moleculon sent Ideal only a generalized, non-specific description of the puzzle, and Ideal responded to the effect that it did not currently have an interest in marketing the puzzle. In fact, Moleculon did not succeed in marketing the Nichols cube.

Toward the end of 1969, Nichols began working on a patent application for his puzzle. After several drafts were exchanged between Nichols and his attorney, a patent application was filed on behalf of Moleculon on March 3, 1970. On April 11, 1972, the '201 patent covering Nichols' invention was issued.

In February or March of 1981, Obermayer first became aware of Ideal's Rubik's Cube through items in the press. Shortly thereafter, he purchased a Rubik's cube. Struck by the similarity to the Nichols' cube, Obermayer wrote to the president of Ideal calling his attention to the '201 patent. Ideal, through its patent attorney, responded that it had studied the prior art and believed that Rubik's Cube did not infringe any valid patent claims. In August 1981, Obermayer met with Ideal's chairman to discuss the possibility of Ideal licensing the '201 patent. At that meeting, Obermayer was given a

> copy of U.S. Patent No. 3,081,089 issued to Gustafson on March 12, 1963 ("the Gustafson Patent"). When subsequent meetings between counsel for Moleculon and Ideal failed to produce an agreement, this suit was instituted. During the pendency of this litigation, Ideal was acquired by CBS.
>
> It is not claimed that Ideal was aware of or in any way derived its Rubik's Cube from the '201 patent. On the contrary, the Rubik's Cube was first brought to Ideal's attention by an inventor's agent from England. Captivated by the puzzle, Ideal executives concluded a licensing agreement with the Hungarian state agency, Konsumex, and in February 1980, the Rubik's Cube was introduced to the trade at the International Toy Fair in New York City. The Rubik's Cube was patented in Hungary, but was marketed by Ideal in the United States without seeking the benefit of patent protection over the cube puzzle itself.

Moleculon claimed that the Rubik's cube infringed claims 3 and 9 of the '201 patent – and sought both damages and an injunction against the continued manufacture and distribution of the product. The principal grounds on which CBS relied in resisting the suit were:

(a) The '201 patent fell outside the subject-matter coverage of the patent system because it sought protection for an abstract idea;
(b) The '201 patent was invalid because Nichols had violated both the public-use and on-sale bars;
(c) The '201 patent was invalid because it sought protection for an invention that was obvious in light of the Sam Loyd 15 puzzle and the '089 patent;
(d) The '201 patent was invalid because the applicant had failed to demonstrate that the claimed puzzle was operable – and thus had not satisfied the utility requirement;
(e) The Rubik's cube did not literally infringe any of the claims in the '201 patent;
(f) The Rubik's cube did not infringe any of the claims in the '201 patent under the doctrine of equivalents;
(g) Even if the '201 patent were held to be valid and infringed, it would be inappropriate for the court to enjoin the manufacture and sale of Rubik's cubes.

Assume that the rules governing the U.S. patent system today had been applied to Moleculon's suit against CBS. Which party would likely have prevailed on each of the seven issues ((a) through (g)) set forth above?

Your answer to this question may not exceed 2000 words. In preparing your answer, you may find helpful the following materials, all of which are included in the appendix to this examination:

- The relevant portions of the '201 patent;
- The relevant portions of the '089 patent;
- A photograph of the Sam Loyd 15 puzzle
- Photographs of the Rubik's cube.
- A description of the history of Rubik's cube (from Wikipedia)

In addition, several Rubik's cubes will be available in the examination room. You should feel free to examine and manipulate one during the examination.

Question #2

Answer one and only one of the following three questions:

(A) Select two aspects of the patent system in the United States that, in your view, are deficient. Describe how you would improve them and defend your proposals.

(B) In what ways, if any, should the law accord stronger legal protection to traditional knowledge, defined as understanding or skill developed and preserved by the members of an indigenous group concerning socially beneficial uses of natural resources (e.g., plants, animals, or components thereof)?

(C) Select an aspect of patent law that, in your view, should be handled differently in the United States and in some other country. Justify your contention that the rule that would be optimal as part of the national patent system in the United States would not be optimal as part of the national patent system in the other country.

Your answer to question #2 may not exceed 1500 words.

Appendix

U.S. Patent 3,655,201

Inventor: Larry D. Nichols
Assignee: Moleculon Research Corp.
Priority date: March 4, 1970
Granted: April 11, 1972

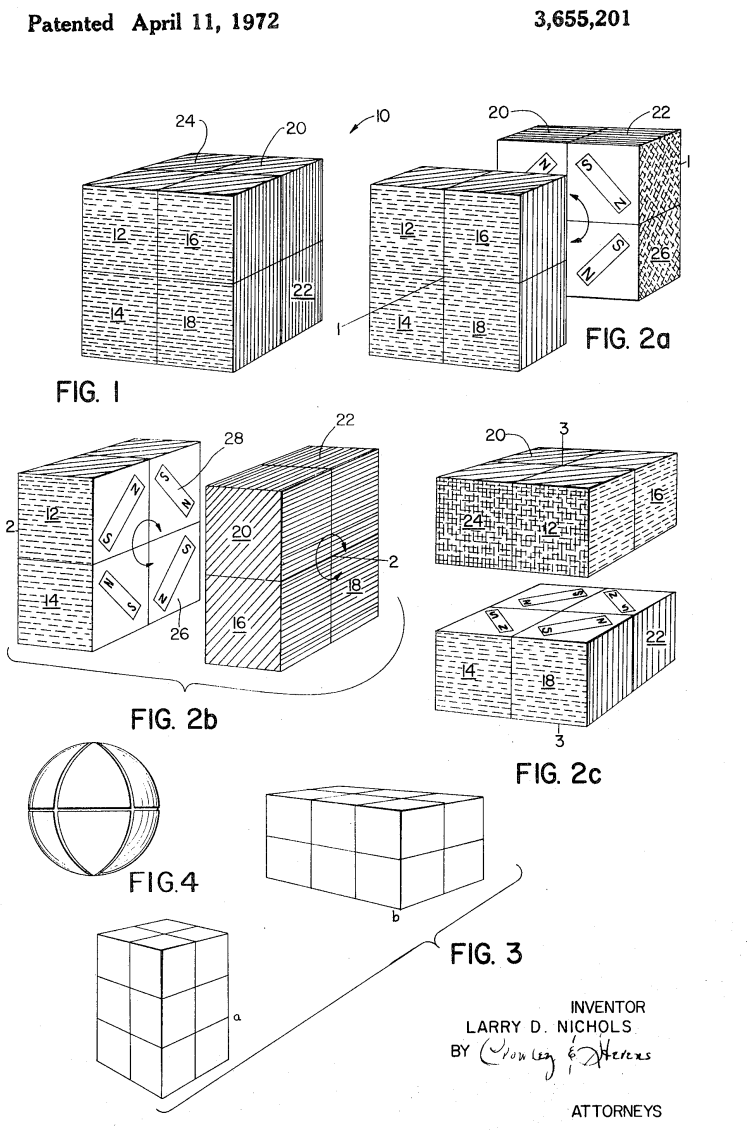
Abstract:
Eight cube-type pieces are magnetically engaged to form a cube-type assembly with educational and entertaining features. The cubes are adapted to rotate in complementary sets of four about one of three mutually perpendicular axes. Each cube has colored surfaces and, when properly arranged, one distinct color on each of the six faces is presented. Each set which shares one face of the assembly may be rotated in multiples of 90 degrees with respect to the other set. If the assembly is initially arranged properly and then disarranged by a random sequence of rotations, it then serves as a device whose object is the restoration of the original arrangement.

Description:
This invention relates to a device which may be utilized as a new form of puzzle in which portions of an assembly of engaged mobile pieces are rotated relative to one another about various axes in an effort to achieve certain predetermined arrangements of the pieces. Aside from its entertaining aspects, the device also finds application in the educational field to demonstrate the effect of repetitive operations on symmetrical structures, and particularly to demonstrate noncommutative operations in which the final result depends on the order of the individual steps; such noncommutative operations are fundamental to modern mathematics and science. …

Briefly, the invention comprises a set of internally engaged and externally decorated pieces assembled into a structure which constantly poses a choice between two or more distinct manual operations, each consisting of rotation of one set of pieces with respect to the remainder, and each leading to a different subsequent arrangement of pieces and another choice of alternative operations. In particular, the invention includes such devices wherein the engagement is provided by mechanical or magnetic means providing structural integrity without restriction of rotational freedom, and wherein each piece is colored or patterned on its exposed surfaces in a way which allows its arrangement, with the other pieces, into a recognizable predetermined pattern whose establishment is the object of manipulation.

Brief Descriptions of the Drawings:

FIG. 1 is an isometric view of one embodiment of the invention in a three-dimensional form;
FIGS. 2a, 2b, and 2c are isometric views of FIG. 1 defining the various axes about which the various subsets of the structure may rotate;
FIGS. 3a and 3b are alternative embodiments of FIG. 1; and
FIG. 4 is an isometric view of an alternative embodiment of the invention in three-dimensional form.



Description of the Preferred Embodiment:

The preferred embodiment will be described in reference to a three-dimensional structure as shown in FIG. 1 which comprises a cube divided into eight smaller cubes 12-26. …

Although the three-dimensional aspect of the invention has been described with reference to a cube, other geometric configurations may be used for a three-dimensional embodiment. For example, a sphere divided into eight octants represents the same concept in a different form; the octants fall into six sets in a manner similar to the cube, such as shown in FIG. 4, in that the eight

octants are divided by three coordinate planes along which the various sets may be disengaged and twisted….

Although FIGS. 1 and 2 have been described with particular reference to eight cubes magnetically engaged and adapted to form various sets of four cubes each able to twist about a fixed axis, this effect may be multiplied in other embodiments. For example, referring to FIG. 3 additional sets of cubes are added to the basic embodiment to provide additional planes within which various sets of pieces may rotate or twist with respect to other sets. In any of these three-dimensional embodiments it is also possible to achieve engagement by mechanical rather than magnetic means, as for example by using a pop-in snap linkage, or a tongue-in-groove arrangement allowing rotation without disengagement. …

Claims
What I claim is:…

3. A method for restoring a preselected pattern from sets of pieces, which pieces have constantly exposed and constantly nonexposed surfaces, the exposed surfaces adapted to be combined to form the preselected pattern, which sets when in random engagement fail to display said preselected pattern which comprises:

a. engaging eight cube pieces as a composite cube;
b. rotating a first set of cube pieces comprising four cubes about a first axis;
c. rotating a second set of four cubes about a second axis; and
d. repeating steps (b) and (c) until the preselected pattern is achieved….

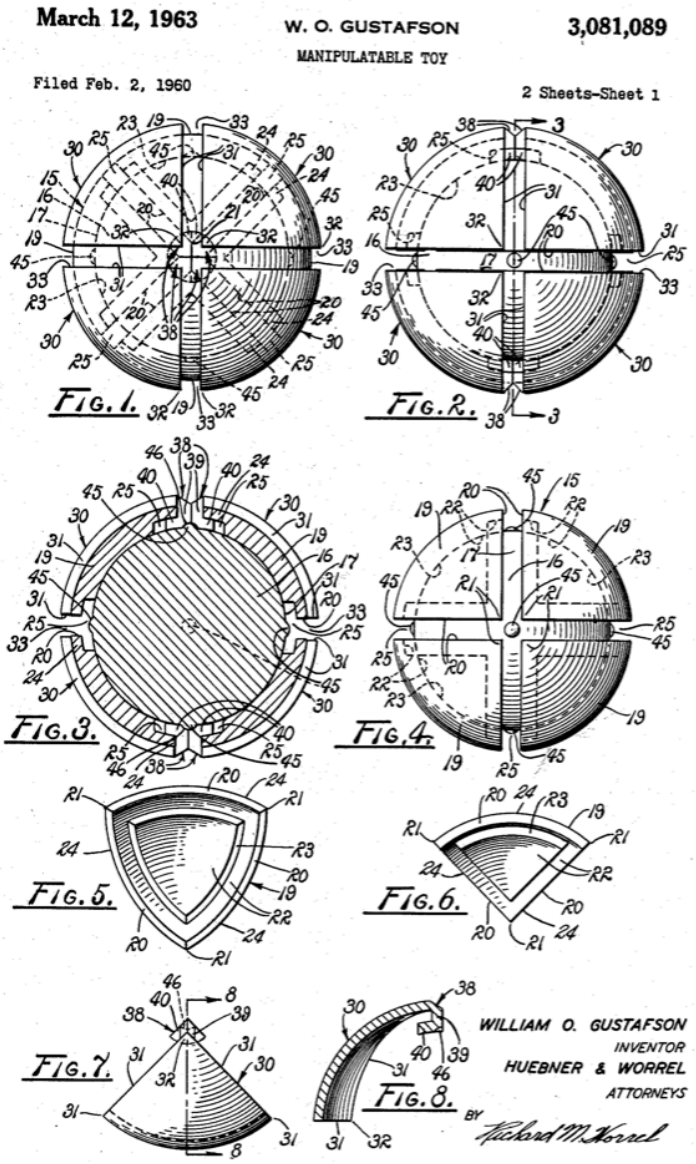
9. A puzzle comprising eight cubes, visually distinguishable indicia on three faces only of each cubes with the eight cubes together having six visually distinct indicia, means associated with each of the remaining faces only of each of the cubes releasably maintaining the cubes in assembled relationship forming a composite cube, said maintaining means enabling three inter-affiliated groups of four contiguous cubes each to be rotated respectively about three mutually perpendicular axes, the six distinct indicia being so located on the respective cubes that the cube groups can be rotated to effect the display of a distinct indicia on each of the six faces of the composite cube….

U.S. Patent 3,081,089

Inventor: William O. Gustafson
Priority date: February 2, 1960
Granted: March 12, 1963

Abstract:

The present invention relates to a manipulatable toy and more particularly to a mechanical puzzle having a plurality of vari-colored parts which are movable relative to each other to form various patterns. …



In the drawings:

FIG. 1 is an end elevation of a puzzle embodying the principles of the present invention and showing hidden inner portions thereof in dashed lines.

FIG. 2 is a side elevation of the puzzle of FIG. 1 degrees from the position shown in FIG. 1. 1

FIG. 3 is a transverse section taken on line 33 of FIG. 2.

' FIG. 4 is an end elevation of an internal ball-shaped member forming part of the puzzle of the subject invention. I

FIG. 5 is a somewhat enlarged inside face view of an inner spherically triangular segment as utilized in the subject puzzle.

FIG. 6 is an edge view of the segment of FIG. 5.

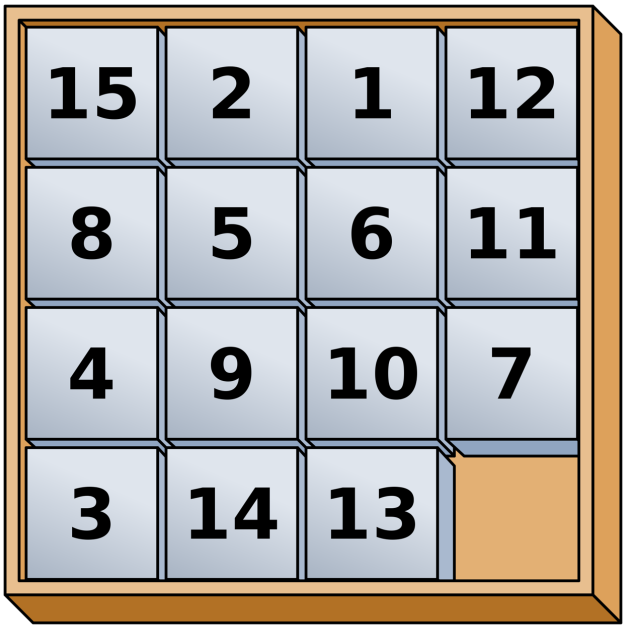
FIG. 7 is an outside face view of an outer segment and tongue both of which form a part of the puzzle of the present invention.

FIG. 8 is a cross-section taken on line 88 of FIG. 7. …

I claim:

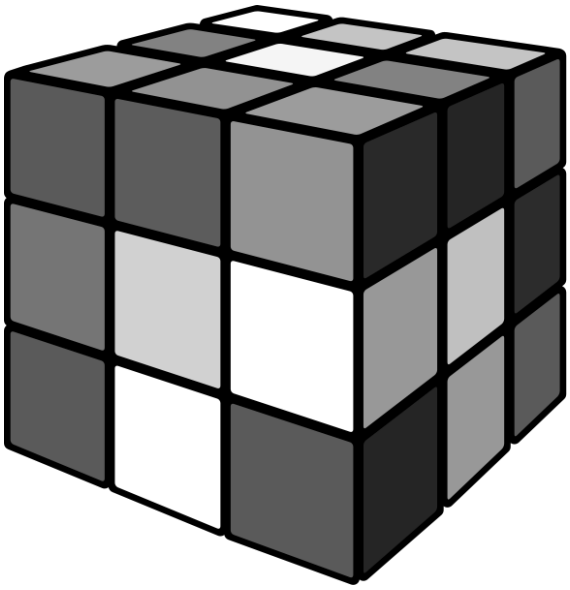
1. A toy puzzle comprising a core having a substantially spherical smooth outer surface substantially concentric to the 'center' of the core; a plurality of substantially triangular fractionally spherical inner and outer segments of substantially uniform size having side edges, the inner segments having mounting portions providing inner surfaces secured to the core with said inner segments in substantially spherical formation and providing marginal flanges having inner surfaces in radially spaced relation grooves in concentric circumscribing relation to axes extended through the center of the core…

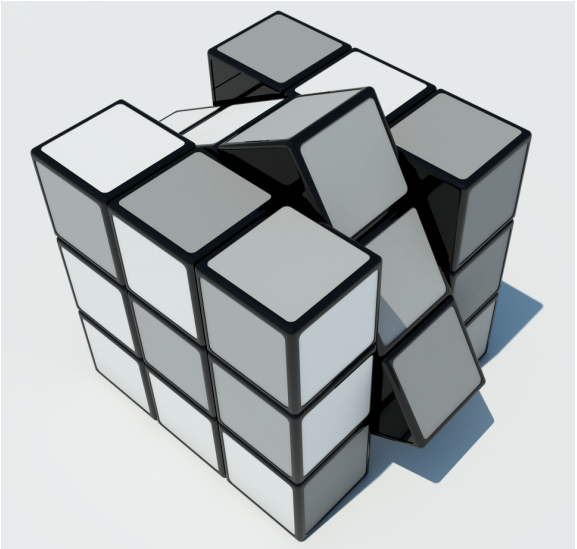
Example of the Sam Loyd 15 Puzzle



To solve the puzzle, the squares must be rearranged into numerical order.

Examples of the Rubik's Cube





From Wikipedia:

"**Rubik's Cube** is a 3-D combination puzzle invented in 1974 by Hungarian sculptor and professor of architecture Ernő Rubik. Originally called the **Magic Cube**, the puzzle was licensed by Rubik to be sold by Ideal Toy Corp. in 1980 via businessman Tibor Laczi and Seven Towns founder Tom Kremer, and won the German Game of the Year special award for Best Puzzle that year. As of January 2009, 350 million cubes had been sold worldwide making it the world's top-selling puzzle game. It is widely considered to be the world's best-selling toy.

On the original classic Rubik's Cube, each of the six faces was covered by nine stickers, each of one of six solid colours: white, red, blue, orange, green, and yellow. The current version of the cube has been updated to coloured plastic panels instead, which prevents peeling and fading. In currently sold models, white is opposite yellow, blue is opposite green, and orange is opposite red, and the red, white and blue are arranged in that order in a clockwise arrangement. On early cubes, the position of the colours varied from cube to cube. An internal pivot mechanism enables each face to turn independently, thus mixing up the colours. For the puzzle to be solved, each face must be returned to have only one colour. Similar puzzles have now been produced with various numbers of sides, dimensions, and stickers, not all of them by Rubik.

Although the Rubik's Cube reached its height of mainstream popularity in the 1980s, it is still widely known and used. Many speedcubers continue to practice it and similar puzzles; they also compete for the fastest times in various categories. Since 2003, the World Cube Association, the Rubik's Cube's international governing body, has organised competitions worldwide and recognise world records.