

RUBICKS HYPERCUBE HELP FILE
FOR RUBICKS HYPERCUBE VERSION BETA-5200
HELP FILE VERSION 5200-002

Rubick's Hypercube Help Index

[Click here for the Tutorial](#)

[Click here for help with a particular area of the screen](#)

How To ...

[Rotate a side of the Rubick's Hypercube](#)

[Choose which section you want to rotate](#)

[See the entire Rubick's Hypercube](#)

[Keep track of where you are within the Rubick's Hypercube](#)

[Change where you are within the Rubick's Hypercube](#)

[Help! I've closed the toolbar. How do I make it come back?](#)

[Know when you've solved the Rubick's Hypercube](#)

[Report problems/questions](#)

Menus

[File menu](#)

[Edit menu](#)

[View menu](#)

[Game menu](#)

[Help menu](#)

Toolbars

[Toolbar](#)

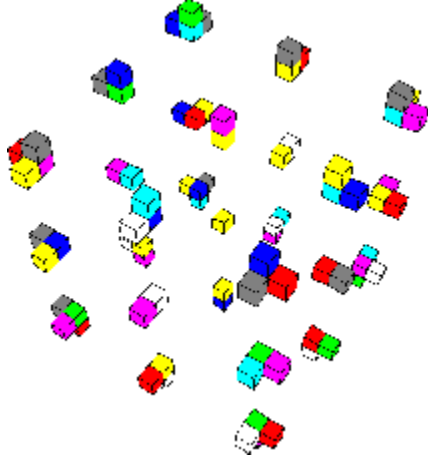
[Custom Toolbar](#)

-

Help with an area of the screen.

Please click on the link next to the area of the screen you are interested in to receive help on it.

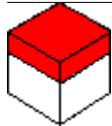
Current Region



Center Map



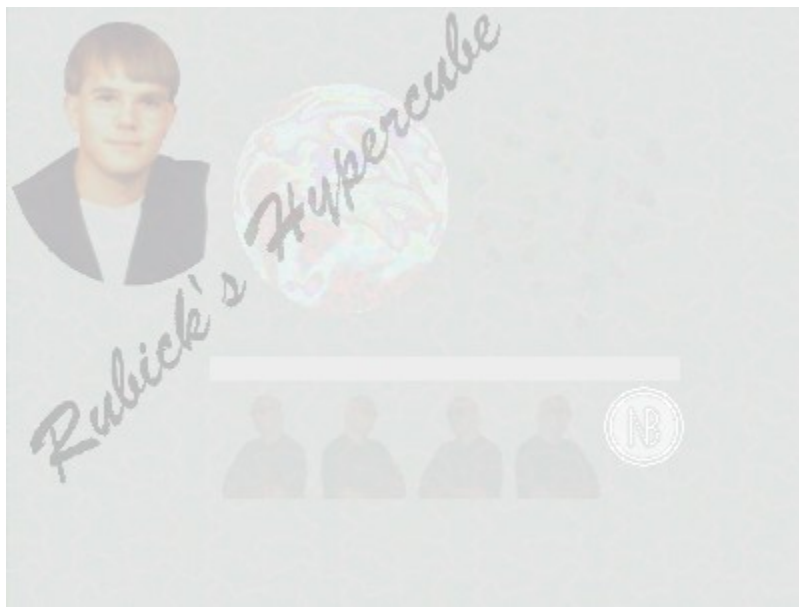
Section Selected



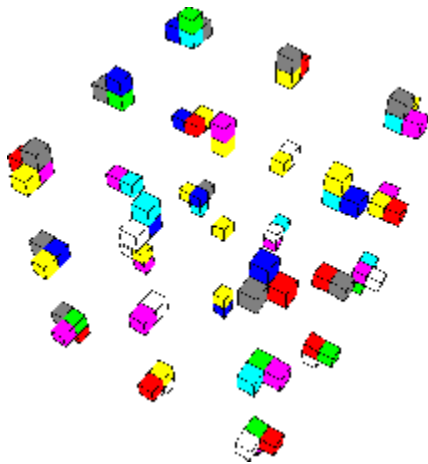
Game Info

Name: Jon Doe
Difficulty Level: Easy
Number of moves: 0
Time elapsed: 0:00:00
Percent solved: 0%

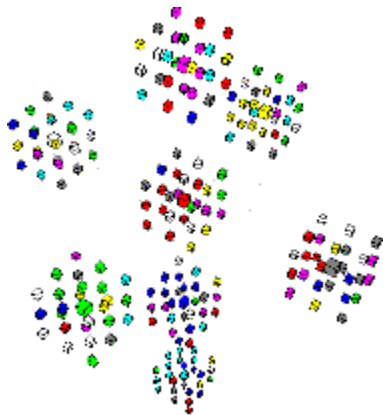
Background



Screen Component: Current Region



The current region is the part of the display that shows a portion of the Rubick's Hypercube. It shows a region of the Rubick's Hypercube along with the cubes attached to it. If you are viewing the Rubick's Hypercube in Full View, it shows the entire Rubick's Hypercube, and it looks like this:

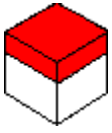


Screen Component: Center Map



The center map is a picture of 8 cubes that shows where the middle cubes are in each region of the Rubick' s Hypercube. This is useful because the positions of the middle cubes do not change in relation to each other. A good way to solve the Rubick's Hypercube is to line up all of the cubes in each region to the same color as the middle cube.

Screen Component: Section Selected



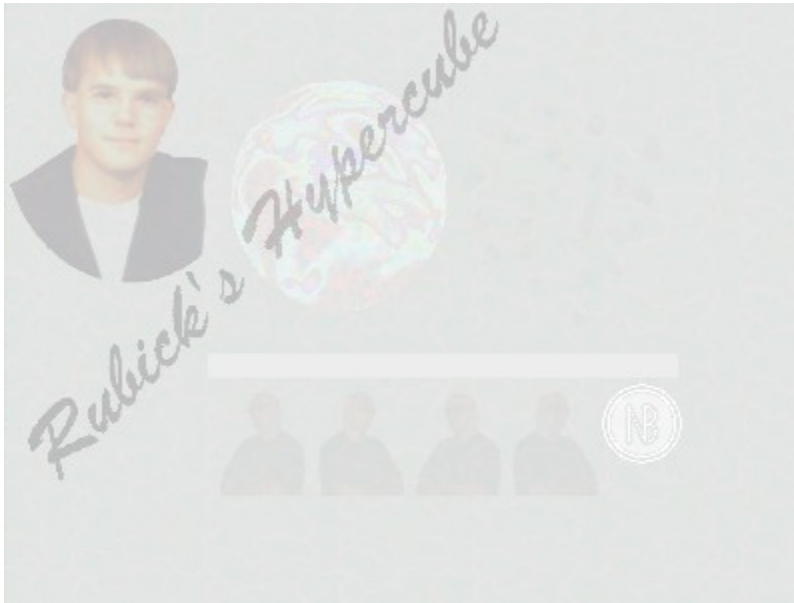
The section selected indicates which section you have selected. A section is a part of the Rubick's Hypercube that can be rotated. In easy mode, there are 9 different sections that you can rotate. In hard mode, you can only rotate an entire region at a time.

Screen Component: Game Info

Name: Jon Doe
Difficulty Level: Easy
Number of moves: 0
Time elapsed: 0:00:00
Percent solved: 0%

The game info shows you certain information about the current game, such as whether you are in hard or easy mode, how much time has elapsed, and how many moves you have made (only moves that change the Rubick's Hypercube are counted).

Screen Component: Background







The Background of the Rubick's Hypercube shows a watermark of me (the author) along with the words "Rubick's Hypercube".

Tutorial

Welcome to Rubick's Hypercube!

The following is a tutorial that will take you through a walk-through of the game. You'll learn what a Rubick's Hypercube is, how to use this program to solve one, and how to contact the author of this game.

A Rubick's Hypercube is a 4-dimensional extension of the ordinary 3-d Rubick's Cube. The Rubick's Hypercube has several things in common with the Rubick's Cube. The Rubick's Cube has 3 different kinds of pieces, pieces with one color (middle pieces), two colors (edge pieces), or three colors (corner pieces). Similarly, the Rubick's Hypercube has 4 different kinds of pieces, pieces with one color (middle pieces), two colors (face pieces), three colors (edge pieces), and four colors (corner pieces). Also, because the Rubick's Hypercube has an extra dimension, the colored sides are 3-dimensional cubes rather than flat squares.

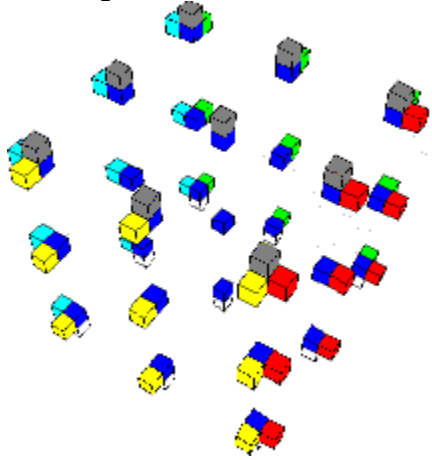
Piece	Name	Number of colored cubes in piece	Total number of these pieces in Rubick's Hypercube
	Center Piece	1	8
	Face Piece	2	24
	Edge Piece	3	32
	Corner Piece	4	16

[Click here to go to the next page](#)

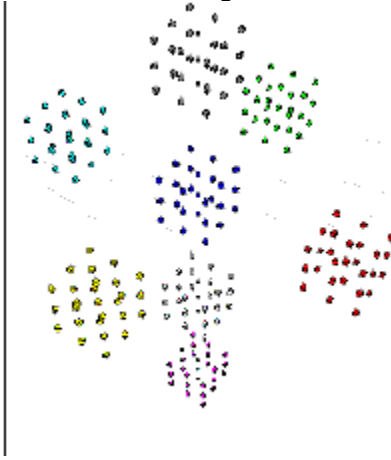
Rubick's Hypercube Tutorial: page 2

The goal of the Rubick's Hypercube is to solve the Rubick's Hypercube such that every side has cubes that are all the same color, much like the ordinary Rubick's Cube having all of the sides contain squares of all the same color. The difference is, a side of the Rubick's Hypercube is a 3-dimensional cube, rather than the square side of a Rubick's Cube. Here is an example of what a solved Rubick's Hypercube looks like:

One Region View




All Region View




[Click here to go to the next page](#)

Rubick's Hypercube Tutorial: page 3

Now, on to playing the game. There are two versions of the Rubick's Hypercube. The easy version is easier and allows a wider variety of moves. The hard version is harder and is more limited in the number of moves that you can do. We'll start with the easy version. If you haven't already opened a Rubick's Hypercube game, open one now by double clicking on "RubicksHypercube.exe". When it asks which version you wish to play, select "Easy Version". If you have already started a game, make sure that the text in the upper right hand side of the screen indicates that the difficulty level is set to "easy". If not, go up to the menu and click "Game", then "Switch Version". Ok, now that you have a game running and are in easy mode, click the button that looks like this  in the Rubick's Hypercube window. This will shrink the window to one half of the screen. Next, resize this help window to fill the other half of the screen. If you don't know how to do that, [click here](#). Now you should be able to see both windows at the same time. These next pages of the tutorial will take you through a walk-through of the game.

[Click here to go to the next page](#)


How to Resize a Window:


In order to resize a window, simply move the mouse over the edge of the window, until the pointer looks like this  . Dragging the mouse when it looks like this will allow you to resize the window. You can also move the window around by dragging on the Title Bar at the top of the window. The title bar looks like this:



[Click here to go back to the tutorial](#)

Rubick's Hypercube Tutorial: page 4

Ok, now that you have the Rubick's Hypercube window open, click on the button in the left toolbar that looks like this: . This selects the back section of the Rubick's Hypercube. The buttons in this group of nine allow you to select any of the nine sections in the current view. The red area in the big cube at the left side of the screen indicates which section is selected. This is the section that will rotate when you click a rotation button.

Now click the button that looks like this: . This button rotates the cubes in the current section in the direction indicated (In this case, clockwise). Now try clicking the button that looks like this:



and then the the button that looks like this



. As you can see, you can rotate any of the sections in any direction you wish, much like an ordinary Rubick's Cube.

Suppose you made a mistake on that last move. Rubick's Hypercube has commands in the Edit menu that let you undo and redo your moves (Undo and Redo, respectively). You can undo all of your moves all the way down to your first move, and you can redo them all the way back to the first move you undid. You will also notice a command in the edit menu called "Replay moves". This replays all of the moves you did in the game. Finally, the "Reset" button the Edit menu resets the Rubick's Hypercube to it's original state (before you did any moves on it). Be careful with this command, because you cannot undo the Reset command.


Rubick's Hypercube also has a File menu. The file menu has the standard commands that most file menus have. For a more detailed description of how to use the file menu, and shortcuts for file menu commands, [click here](#).


[Click here to go to the next page](#)


The File menu of Rubick's Hypercube.





The File menu of Rubick's Hypercube has several commands. The first command is the "New" command. This creates a new randomly scrambled Rubick's Hypercube. There is also a shortcut to

this command in the toolbar at the top of the screen: . There are also commands that let you save a file "Save"

, and save with a new name "Save As". Once you've saved a file, you can open it with the "Open" command under the file menu, or click

. Also, the file menu has a list of recently used files that you can open just by clicking their name where they appear in the File menu. Finally, there is the "Exit" command. This is how you quit the game. You can also exit the game by clicking the

 button in the upper right hand corner of the screen.

Command	Toolbar shortcuts	Keyboard shortcuts
<u>N</u> ew		Ctrl+N, Alt+F N
<u>O</u> pen		Ctrl+O, Alt+F O
<u>S</u> ave		Ctrl+S, Alt+F S
Save <u>A</u> s	none	Alt+F A
<u>1</u> , <u>2</u> , <u>3</u> , ...	none	Alt+F (1, 2, 3, ...)
<u>E</u> xit	 (Upper right corner)	Alt+F X

[Click here to continue with the tutorial](#)

Rubick's Hypercube Tutorial: page 5

One important button that can help you out is the Context Sensitive Help button. It looks like this



. When you click on it, the pointer changes to a question mark with an arrow. You can then click on anything in the Rubick's Hypercube window to get help on it. When you're done with this tutorial, try using this button to get help on anything you still don't understand. Ok, here's something you can do now: Click on the



button. This will show you information telling you which version of Rubick's Hypercube you have, along with the date it was completed, and the author's name and email address.

The Rubick's Hypercube is more than what you see in the Rubick's Hypercube window right now.



Click on the button to see all of it. As you can see, the Rubick's Hypercube consists of 8 regions. What you were seeing before was just one of these regions, plus all of the cubes that were attached to it from the adjacent regions. You'll notice the middle cube in each of these regions is a little bit larger than the other cubes.


The middle cubes are larger because they are the most important cubes in the Rubick's Hypercube. They can never be scrambled. They are just like the middle pieces in a regular Rubick's Cube, they only have one color, and they can never be scrambled. If you've ever taken a Rubick's Cube apart, all of the pieces are separate from each other, except for the middle cubes. These cubes are attached directly to the center, and they can rotate around, but they never move into different positions relative to each other and to the center. Therefore, they serve as a good guide to solving the Rubick's Cube. The same is true of the middle pieces of Rubick's Hypercube. These cubes are so important, I thought you should be able to see them at all times, therefore I have made a "Center Map" that shows you where all of these cubes are. That is what the little cubes are on the left side of the screen just below the big cube with the red section in it. These are the middle cubes from each of the 8 sections.



Now click the button. Now we're back to seeing only part of the Rubick's Hypercube. Notice that there is a little cube in the middle of the Center Map, and it is the same color as the cube in the center of the region of cubes shown on the screen. Now it's time to try out some of the other buttons.

[Click here to go to the next page](#)

Rubick's Hypercube Tutorial: page 6

Ok, try clicking the  button. This brings you up one region to the one above the one you were just at. Now, observe the color in the middle of this region. Notice that it is the same as the color in the middle of the Center Map. Now look at the cube below this one in the Center Map. It is the same color as the middle cube in the region you were at before. Click on the



button to go back down. Notice the color of the cube in the middle of this region. The Center Map is a valuable tool because it tells you the color of the middle cube in each of the eight regions, the regions above, below, to the left of, right of, in front of, and behind you, as well as the middle cube where you are now, and the one at the other end of the Rubick's Hypercube (that is the one that is two cubes below the middle in the Center Map). By now you probably have a good idea what the buttons with the straight yellow arrows do. But now let's try the buttons with the curved yellow arrows.



Click on the button. You will see the region you are looking at rotate in the direction of the yellow arrow. But not only has the region you were looking at rotated, the entire Rubick's Hypercube has rotated. Try to think of the yellow buttons as similar to turning a regular Rubick's Cube in your hand to look at different parts of it, or see it from a different angle. It doesn't change the Rubick's Cube itself, it just changes the way you look at it. Same thing for the yellow buttons and the Rubick's Hypercube. There are two more buttons you should know about. These are the animation button



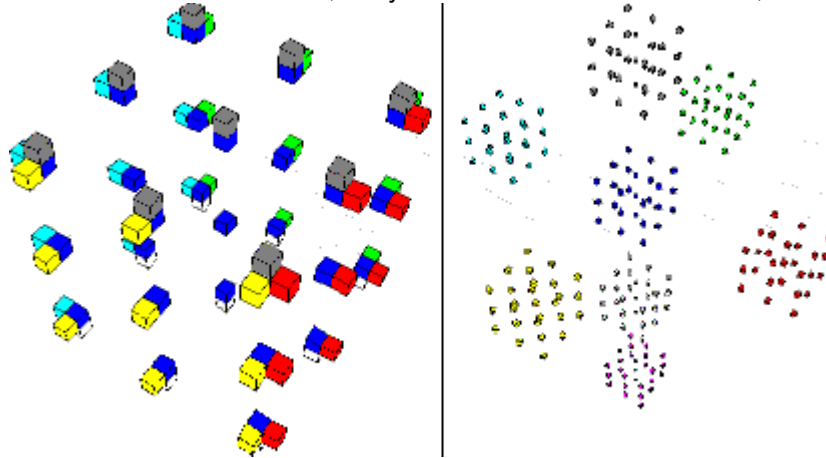
and the perspective button



. Try clicking the perspective button now. As you can see, perspective has now been turned off. All of the cubes are now the same size, instead of the cubes that are farther away looking smaller and the ones that are nearer looking larger. The animation button turns animation on and off. (For those with slower computers, it may be helpful to turn the animation off, otherwise, I recommend leaving animation on all the time).

Lastly, there is the hard version of Rubick's Hypercube. This version is harder because you are only allowed to rotate one entire region at a time, therefore there are no buttons for selecting a section, and no cube with a red section selected. Instead, there are 6 rotation buttons for rotating the current region clockwise and counterclockwise about the x, y, and z axes. You can toggle between the easy and hard versions by selecting Game~Switch Version from the menu at the top of the screen. If you solve the easy version of the Rubick's Hypercube, try the harder version.

This tutorial has covered most of the buttons and menus in Rubick's Hypercube. If there is a button or menu item this tutorial has not covered, but you want to know more about it, use the context-



sensitive help button

By now you should have a good overview of the game. If you have any problems with the game or questions you can't find answers to in this help file, feel free to email me at berglunb@pop.rose-hulman.edu.

File menu commands

The File menu offers the following commands:

<u>New</u>	Creates a new document.
<u>Open</u>	Opens an existing document.
<u>Close</u>	Closes an opened document.
<u>Save</u>	Saves an opened document using the same file name.
<u>Save As</u>	Saves an opened document to a specified file name.
<u>Exit</u>	Exits Rubick's Hypercube.

Edit menu commands

The Edit menu offers the following commands:

<u>Undo</u>	Undoes your last move.
<u>Redo</u>	Redoes a move previously undone.
<u>Reset</u>	Resets the Rubick's Hypercube to it's original state. (undoes all of your moves).
<u>Replay moves</u>	Replays all of the moves you have done.

View menu commands

The View menu offers the following commands:

Toolbars Shows or hides the Custom Toolbar.
Status Bar Shows or hides the status bar.

Game menu commands

The Game menu offers the following commands:

<u>Switch Version</u>	Brings up a dialog box to let you switch between the hard and easy versions.
<u>Change Name</u>	Brings up the box that asks you your name so you can change it.
<u>Create High scores file</u>	Create a high scores file. This can be used for a high scores table, such as the one at http://www.rose-hulman.edu/~berglunb/Rubick/highscores.html

Help menu commands

The Help menu offers the following commands:

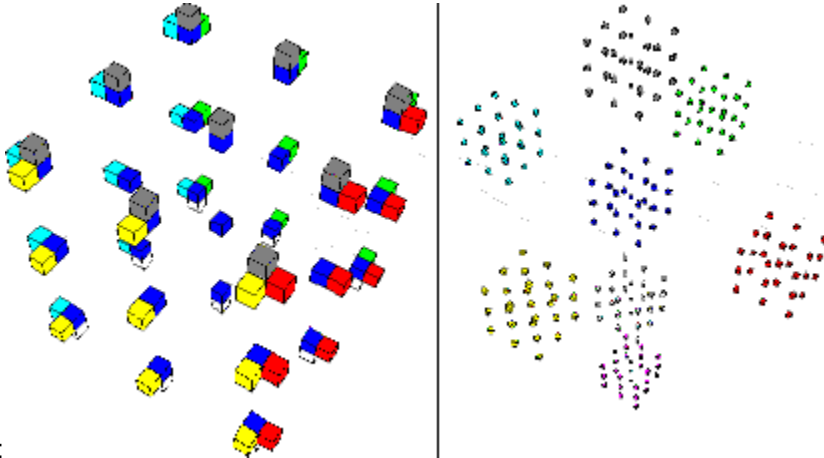
- Help Topics Displays a list of topics you can get help on.
- About Displays the copyright notice and version number of your copy of Rubick's Hypercube.

New command (File menu)

Use this command to create a new document in Rubick's Hypercube.

You can open an existing document with the Open command.

Shortcuts



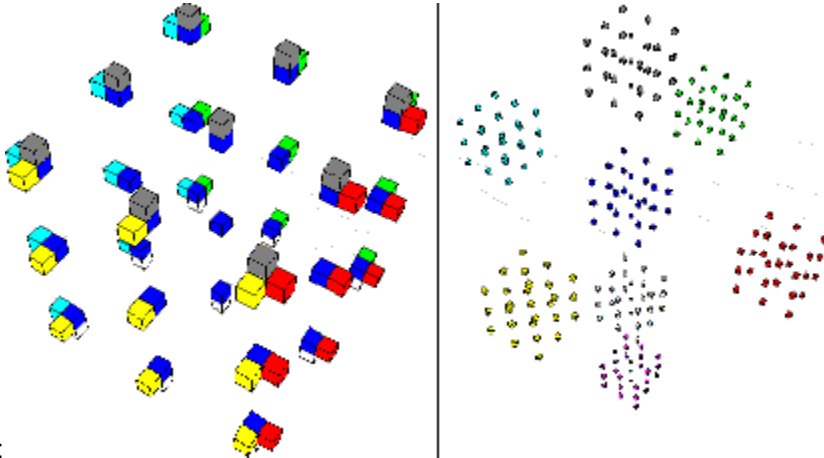
Toolbar:
Keys: CTRL+N

Open command (File menu)

Use this command to open an existing document.

You can create new documents with the [New command](#).

Shortcuts



Toolbar:
Keys: CTRL+O

File Open dialog box

The following options allow you to specify which file to open:

File Name

Type or select the filename you want to open. This box lists files with the extension you select in the List Files of Type box.

List Files of Type

Select the type of file you want to open:

Rubick's Hypercube files are files with extension ".rhc"

Drives

Select the drive in which Rubick's Hypercube stores the file that you want to open.

Directories

Select the directory in which Rubick's Hypercube stores the file that you want to open.

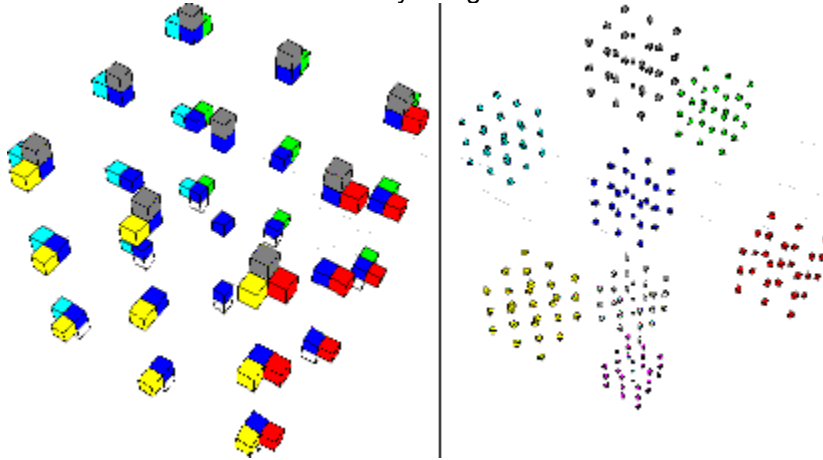
Network...

Choose this button to connect to a network location, assigning it a new drive letter.

Close command (File menu)

Use this command to close all windows containing the active document. Rubick's Hypercube suggests that you save changes to your document before you close it. Before closing an untitled document, Rubick's Hypercube displays the Save As dialog box and suggests that you name and save the document.

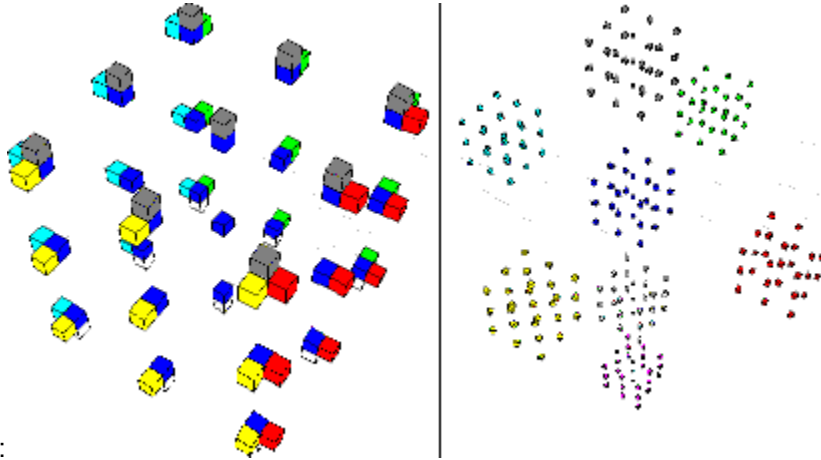
You can also close a document by using the Close icon on the document's window, as shown below:



Save command (File menu)

Use this command to save the active document to its current name and directory. When you save a document for the first time, Rubick's Hypercube displays the Save As dialog box so you can name your document. If you want to change the name and directory of an existing document before you save it, choose the Save As command.

Shortcuts



Toolbar:
Keys: CTRL+S

Save As command (File menu)

Use this command to save and name the active document. Rubick's Hypercube displays the Save As dialog box so you can name your document.

To save a document with its existing name and directory, use the Save command.

File Save As dialog box

The following options allow you to specify the name and location of the file you're about to save:

File Name

Type a new filename to save a document with a different name. A filename can contain up to eight characters and an extension of up to three characters. Rubick's Hypercube adds the extension you specify in the Save File As Type box.

Drives

Select the drive in which you want to store the document.

Directories

Select the directory in which you want to store the document.

Network...

Choose this button to connect to a network location, assigning it a new drive letter.

1, 2, 3, 4 command (File menu)

Use the numbers and filenames listed at the bottom of the File menu to open the last four documents you closed. Choose the number that corresponds with the document you want to open.

Exit command (File menu)

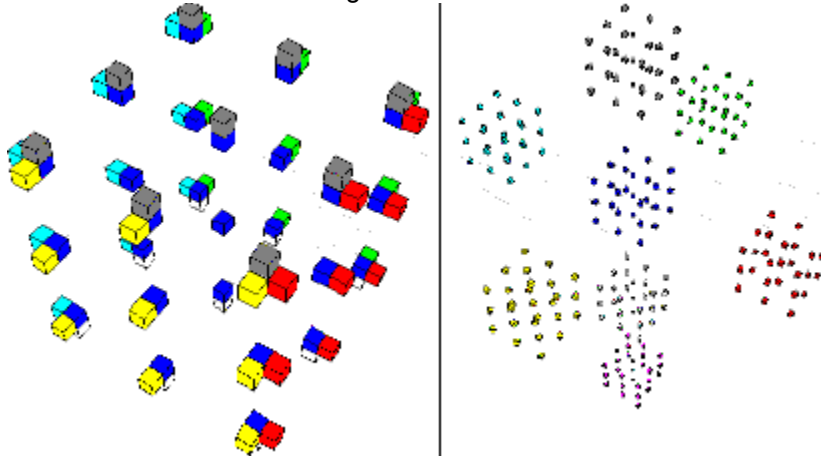
Use this command to end your Rubick's Hypercube session. You can also use the Close command on the application Control menu.

Shortcuts

Mouse: Double-click the application's Control menu button.



Click the Exit button on the right side of the Title Bar.



Keys: ALT+F4

Undo command (Edit menu)

Use this command to undo your previous move. Some moves (such as resetting the Rubick's Hypercube) cannot be undone. If it is not possible to undo a move, or there are no moves to undo, this command appears grayed in the menu.

Shortcuts

Keys: CTRL+Z

Redo command (Edit menu)

Use this command to redo a move previously undone. If there are no undone moves to redo, this command appears grayed in the menu.

Shortcuts

Keys: CTRL+Y

Reset command (Edit menu)

Use this command to reset the Rubick's Hypercube to it's original state before you perfomed moves to it.
Warning! This command cannot be undone.

Replay Moves command (Edit menu)

Use this command to replay all of the moves you have done in the current game. The time elapsed is adjusted to not include the time it took to replay the moves.

Toolbars command (View menu)

Use this command to display and hide the toolbars, which include buttons for many commands in Rubick's Hypercube, such as Perspective. A check mark appears next to the menu item when the toolbars are displayed. It is recommended that you do not hide the Custom Toolbar (toolbar on the left), because some of the commands in Rubick's Hypercube can be accessed only through the Custom Toolbar.

See [Toolbars](#) for help on using the toolbars.

Toolbars

Rubick's Hypercube has 2 different toolbars. Please select which toolbar you'd like more help on.



Main Toolbar



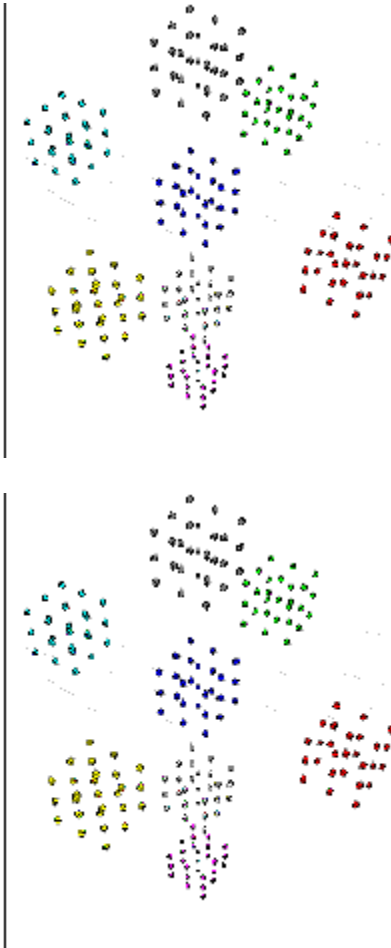
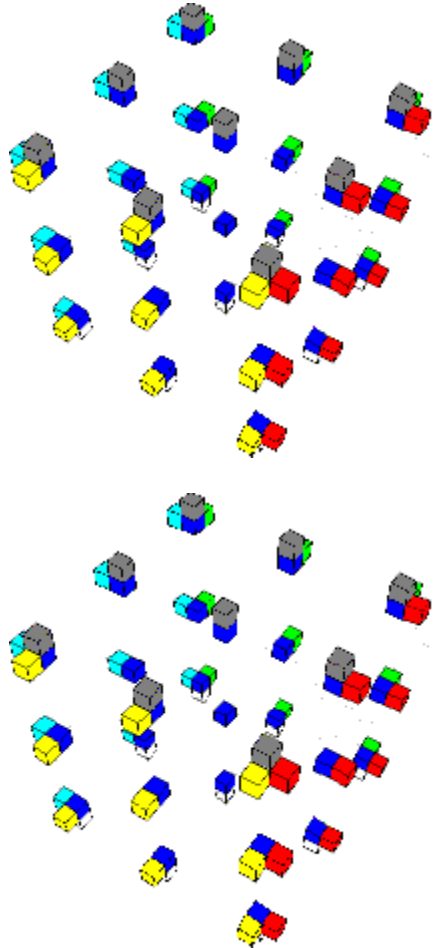
Custom Toolbar

Toolbar



The main toolbar is displayed across the top of the application window, below the menu bar. The main toolbar provides quick mouse access to many tools used in Rubick's Hypercube,

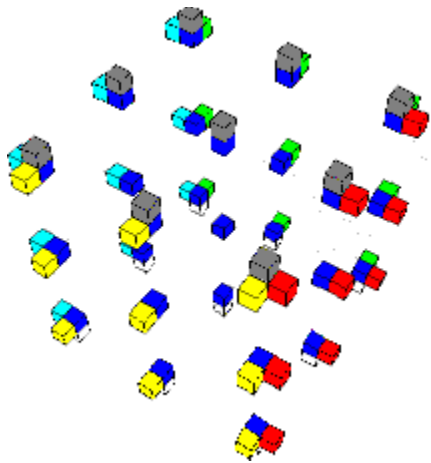
Click To



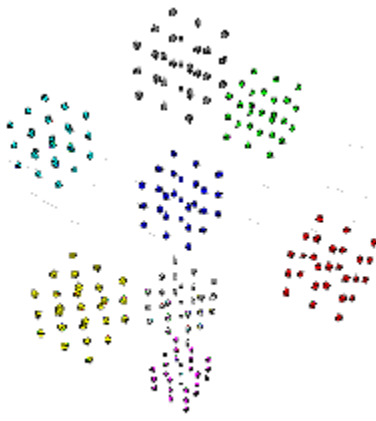
Open a new document.

Open an existing document.

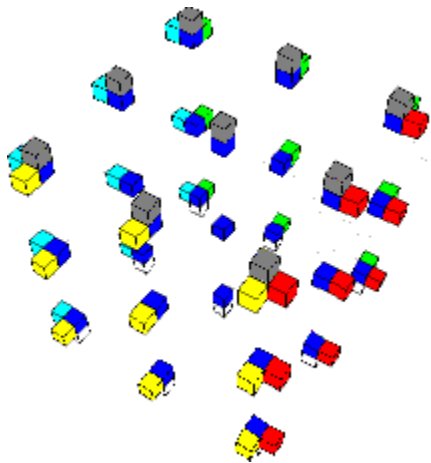
Rubick's Hypercube displays the Open dialog box, in which you can locate and open the desired file.



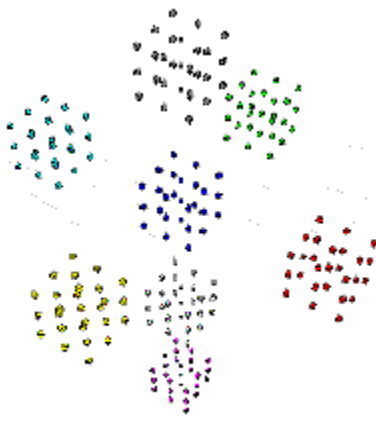
template with its current name. If you have not named the document, Rubick's Hypercube displays the Save As dialog box.



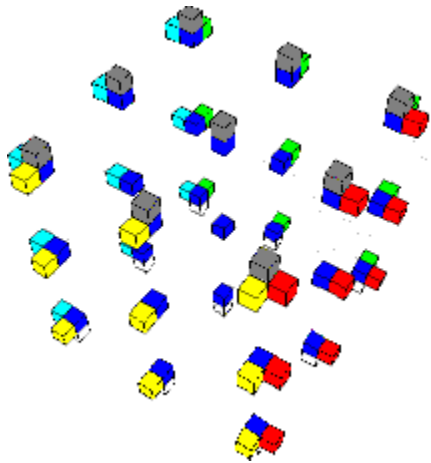
Save the active document or



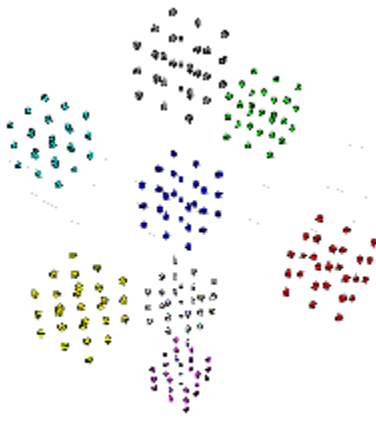
Rubick's Hypercube.



Obtain help on some portion of



address, and version number of your copy of Rubick's Hypercube.



Display author, author's email

Status Bar command (View menu)

Use this command to display and hide the Status Bar, which describes the action to be executed by the selected menu item or depressed toolbar button, and keyboard latch state. A check mark appears next to the menu item when the Status Bar is displayed.

See [Status Bar](#) for help on using the status bar.

Status Bar



The status bar is displayed at the bottom of the Rubick's Hypercube window. To display or hide the status bar, use the Status Bar command in the View menu.

The left area of the status bar describes actions of menu items as you use the arrow keys to navigate through menus. This area similarly shows messages that describe the actions of toolbar buttons as you depress them, before releasing them. If after viewing the description of the toolbar button command you wish not to execute the command, then release the mouse button while the pointer is off the toolbar button.

The right areas of the status bar indicate which of the following keys are latched down:

Indicator	Description
CAP	The Caps Lock key is latched down.
NUM	The Num Lock key is latched down.
SCRL	The Scroll Lock key is latched down.

Index command (Help menu)

Use this command to display the opening screen of Help. From the opening screen, you can jump to step-by-step instructions for using Rubick's Hypercube and various types of reference information.

Once you open Help, you can click the Contents button whenever you want to return to the opening screen.

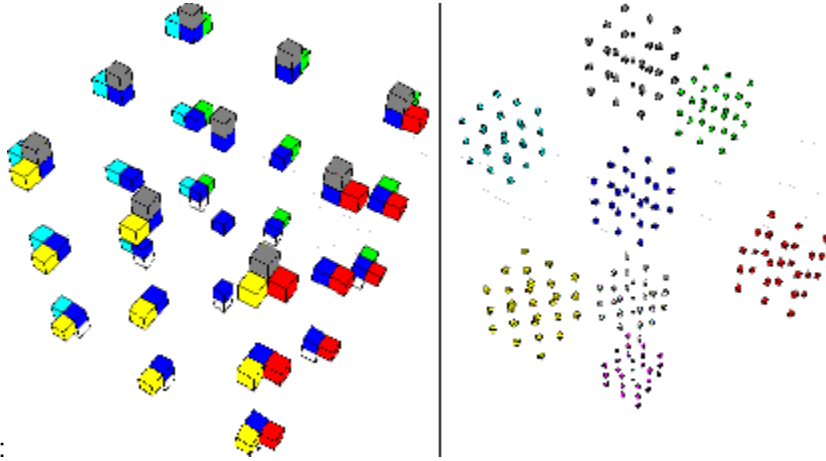
Using Help command (Help menu)

Use this command for instructions about using Help.

About command (Help menu)

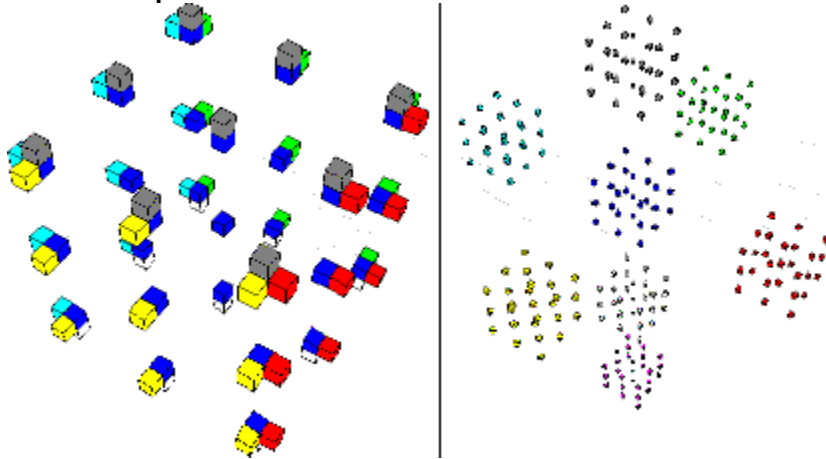
Use this command to display the author, author's email address, and version number of your copy of Rubick's Hypercube.

Shortcuts



Toolbar:

Context Help command

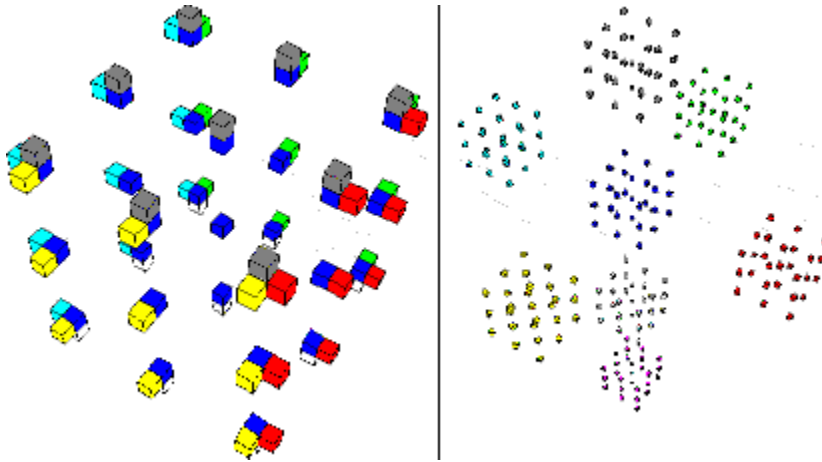


Use the Context Help command to obtain help on some portion of Rubick's Hypercube. When you choose the Toolbar's Context Help button, the mouse pointer will change to an arrow and question mark. Then click somewhere in the Rubick's Hypercube window, such as another Toolbar button. The Help topic will be shown for the item you clicked.

Shortcut

Keys: SHIFT+F1

Title Bar



The title bar is located along the top of a window. It contains the name of the application and document.

To move the window, drag the title bar. Note: You can also move dialog boxes by dragging their title bars.

A title bar may contain the following elements:

- Application Control-menu button
- Document Control-menu button
- Maximize button
- Minimize button
- Name of the application
- Name of the document
- Restore button

Size command (System menu)

Use this command to display a four-headed arrow so you can size the active window with the arrow keys.



After the pointer changes to the four-headed arrow:

1. Press one of the DIRECTION keys (left, right, up, or down arrow key) to move the pointer to the border you want to move.
2. Press a DIRECTION key to move the border.
3. Press ENTER when the window is the size you want.

Note: This command is unavailable when the window is maximized (In Rubick's Hypercube the window is maximized by default).

Shortcut

Mouse: Drag the size bars at the corners or edges of the window.

Move command (Control menu)

Use this command to display a four-headed arrow so you can move the active window or dialog box with the arrow keys.



Note: This command is unavailable when the window is maximized (In Rubick's Hypercube the window is maximized by default).


Shortcut

Keys: CTRL+F7

Minimize command (application Control menu)

Use this command to reduce the Rubick's Hypercube window to an icon.

Shortcut


Mouse: Click the minimize icon  on the title bar.

Keys: ALT+F9

Maximize command (System menu)

Use this command to enlarge the active window to fill the available space. By default, Rubick's Hypercube maximizes the window.

Shortcut

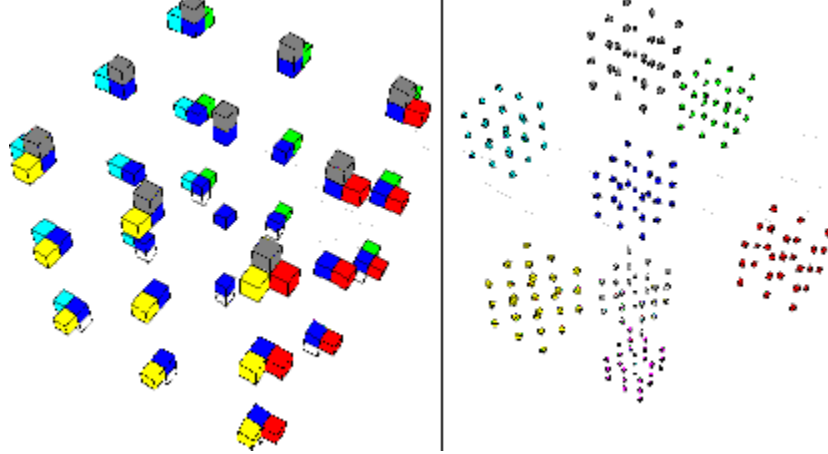
Mouse: Click the maximize icon  on the title bar; or double-click the title bar.

Keys: CTRL+F10 enlarges a document window.

Close command (Control menus)

Use this command to close the active window or dialog box.

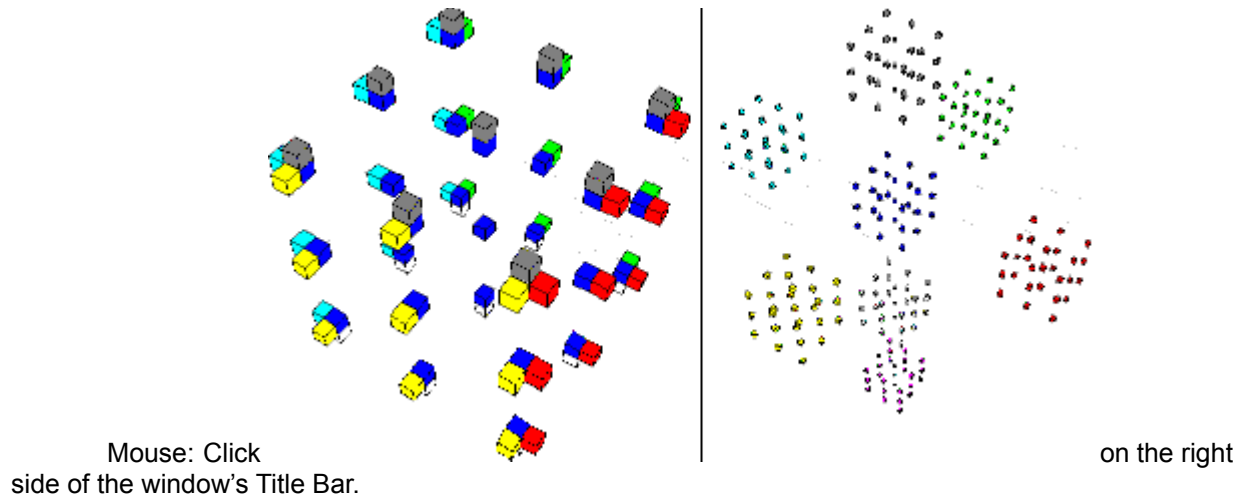
Double-clicking a Control-menu box is the same as choosing the Close command.



Note: If you have multiple windows open for a single document, the Close command on the document Control menu closes only one window at a time. You can close all windows at once with the Close command on the File menu.

Shortcuts

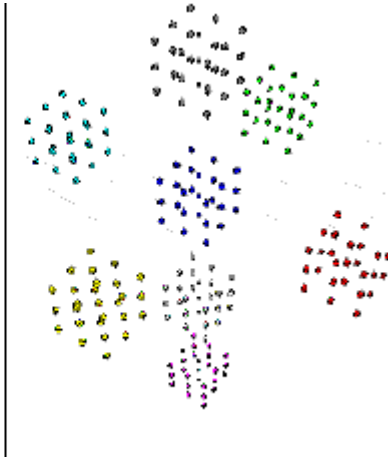
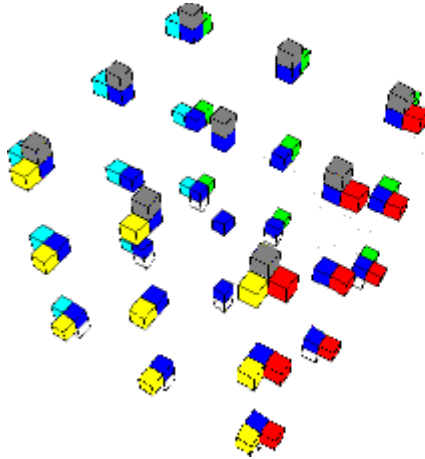
Keys: CTRL+F4 closes a document window
ALT+F4 closes the Rubick's Hypercube window or dialog box



Restore command (Control menu)

Use this command to return the active window to its size and position before you chose the Maximize or Minimize command.

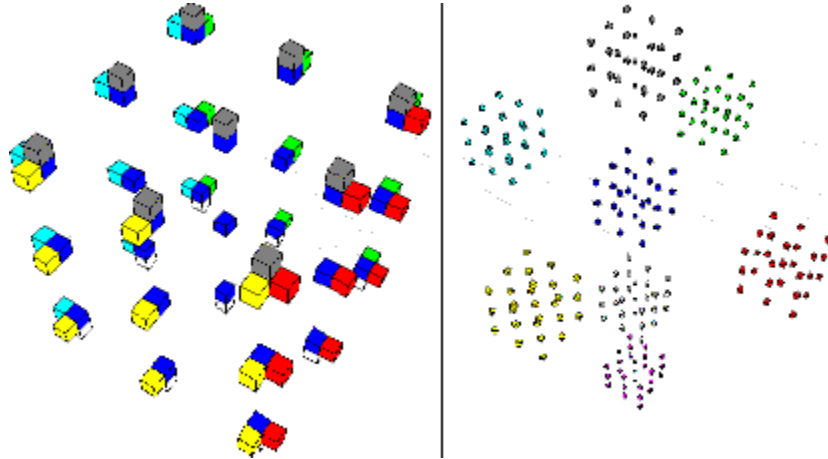
Shortcut



Mouse: Click
side of the window's Title Bar.

on the right

Custom Toolbar



The custom toolbar is displayed along the left side of the application window. The custom toolbar provides quick mouse access to many tools used in Rubick's Hypercube.

Buttons

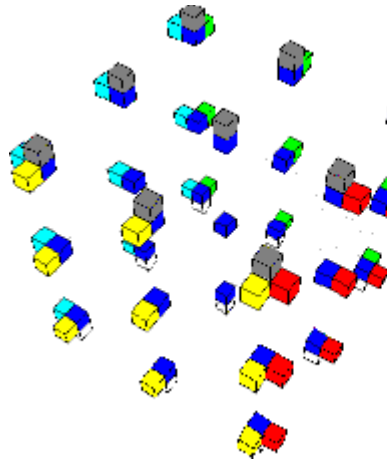


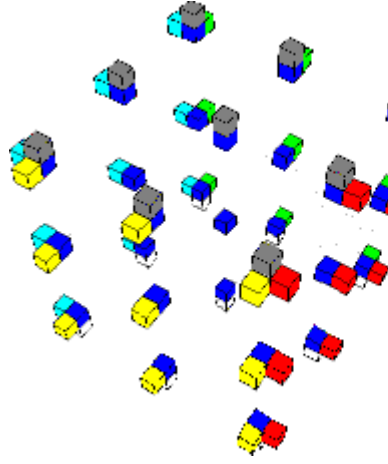
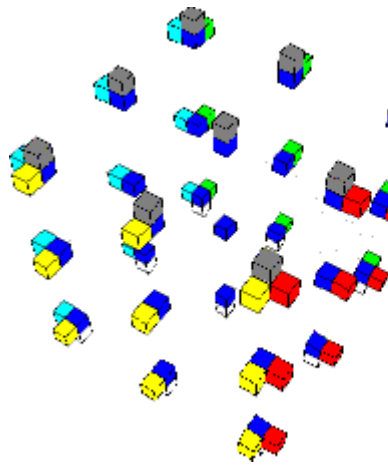
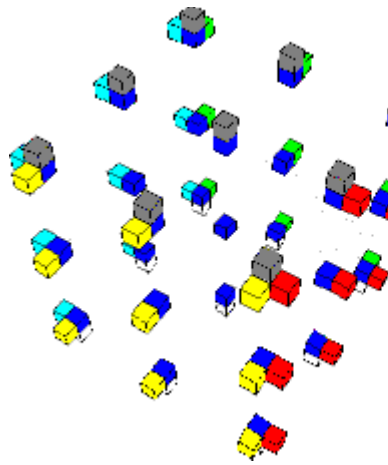
Name

Side to be rotated buttons.

Do the following

Select which side you wish to rotate.





Direction of rotation buttons.

Select which direction you want to rotate the side you have selected.

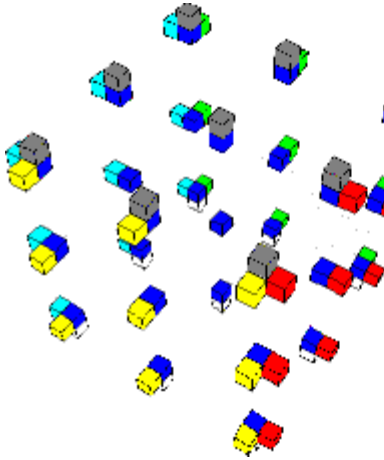
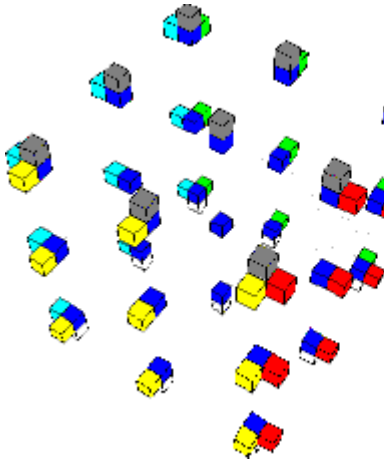
OR

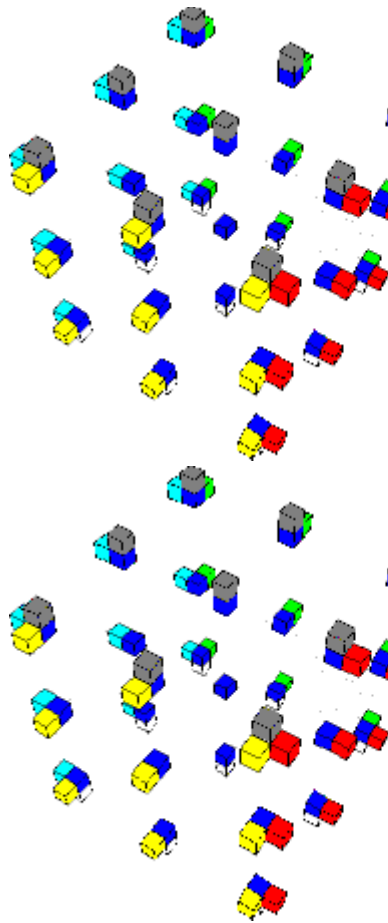
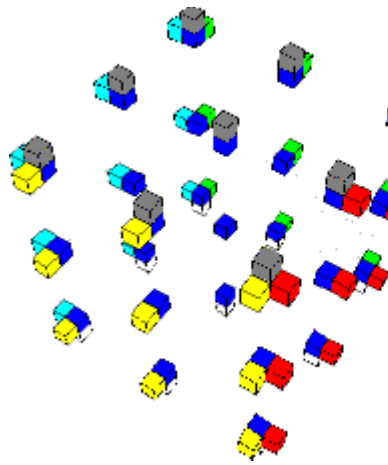




Shifting buttons.

Shift you to a different area of the hypercube.



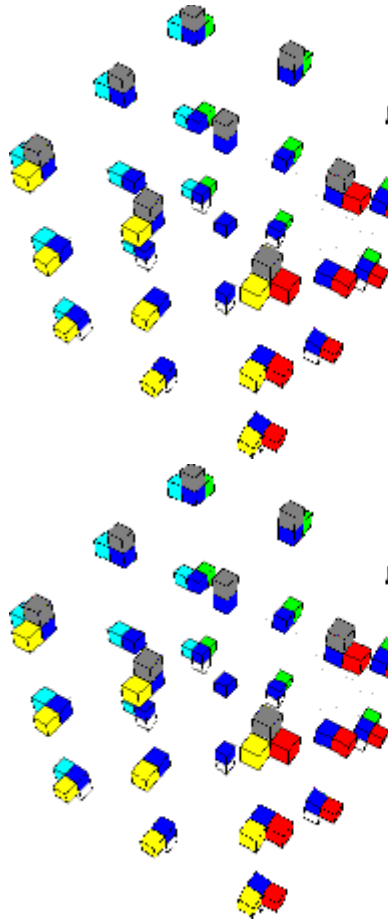


View buttons.

Select how you want to view the hypercube.

Animation, and Perspective.

Turn animation and perspective on and off.



Direction of Rotation buttons (Custom Toolbar).

The direction of rotation buttons determine whether you want to rotate the current section clockwise or counterclockwise, and if you are in hard mode, which axis to rotate about.

Click To

More Help

The following are buttons used only in easy mode.

Rotate the current section clockwise.

Rotate Clockwise



Rotate the current section counterclockwise.

Rotate Counterclockwise



The following are buttons used only in hard mode.



Rotate the current region clockwise about the y-axis.

Rotate Clockwise (Y)



Rotate the current region clockwise about the z-axis.

Rotate Clockwise (Z)



Rotate the current region clockwise about the x-axis.

Rotate Clockwise (X)



Rotate the current region counterclockwise about the y-axis.

Rotate Counterclockwise (Y)

Rotate the current region counterclockwise about the z-axis.

Rotate Counterclockwise (Z)

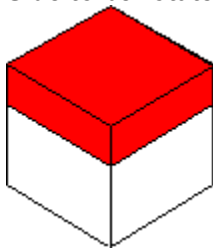


Rotate the current region counterclockwise about the x-axis.

Rotate Counterclockwise (X)



Side to be rotated buttons (Custom Toolbar).



The 'side to be rotated' buttons determine which part of the hypercube you want to rotate. These buttons only apply in easy mode. For more information about how the sides are named, see the page on the definition of directions in Rubick's Hypecube. The picture above shows the side selected indicator, which indicates which side of the Rubick's Hypecube is currently selected.

Click To

More Help

Select the leftmost cubes in the current view.

Left Section



Select the middle layer of cubes (perpendicular to the y-axis) in the current view.

Middle Section (Y)



Select the rightmost cubes in the current view.

Right Section



Select the topmost cubes in the current view.

Top Section



Select the middle layer of cubes (perpendicular to the z-axis) in the current view.

Middle Section (Z)



Select the bottommost cubes in the current view.

Bottom Section



Select the frontmost cubes in the current view.

Front Section



Select the middle layer of cubes (perpendicular to the x-axis) in the current view.

Middle Section (X)



Select the backmost cubes in the current view.

Back Section



View buttons (Custom Toolbar)

These change your view of the Rubick's Hypercube, whether you see all of it at once, or only part of it.
Click To More Help

Show the entire Rubick's Hypercube unfolded.

One Region View



Show just one region of the Rubick's Hypercube.

Full View



Shifting buttons (Custom Toolbar)

These buttons move you from one region of the Rubick's Hypercube to another, or to rotate the entire Rubick's Hypercube about an axis. These actions do not change the Rubick's Hypercube.

Click To More Help



Move to the region left of the current one in the Rubick's Hypercube. Shift Left

Move to the region above the current one in the Rubick's Hypercube. Shift Up



Move to the region behind the current one in the Rubick's Hypercube. Shift Back



Move to the region in front of the current one in the Rubick's Hypercube. Shift Forward



Move to the region below the current one in the Rubick's Hypercube. Shift Down



Move to the region right of the current one in the Rubick's Hypercube. Shift Right
Rotate the entire Rubick's Hypercube clockwise about the x-axis. Shift Clockwise (X)



Rotate the entire Rubick's Hypercube clockwise about the y-axis. Shift Clockwise (Y)



Rotate the entire Rubick's Hypercube clockwise about the z-axis.

Shift Clockwise (Z)



Rotate the entire Rubick's Hypercube counterclockwise about the x-axis.

Shift Counterclockwise (X)



Rotate the entire Rubick's Hypercube counterclockwise about the y-axis.

Shift Counterclockwise (Y)

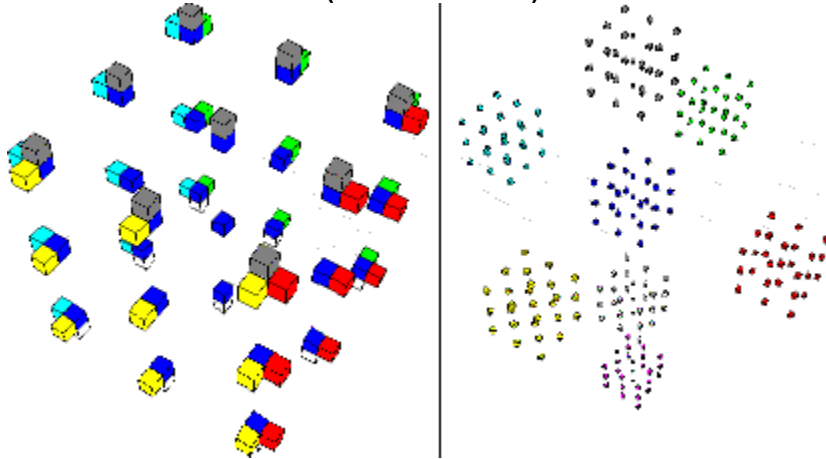


Rotate the entire Rubick's Hypercube counterclockwise about the z-axis.

Shift Counterclockwise (Z)

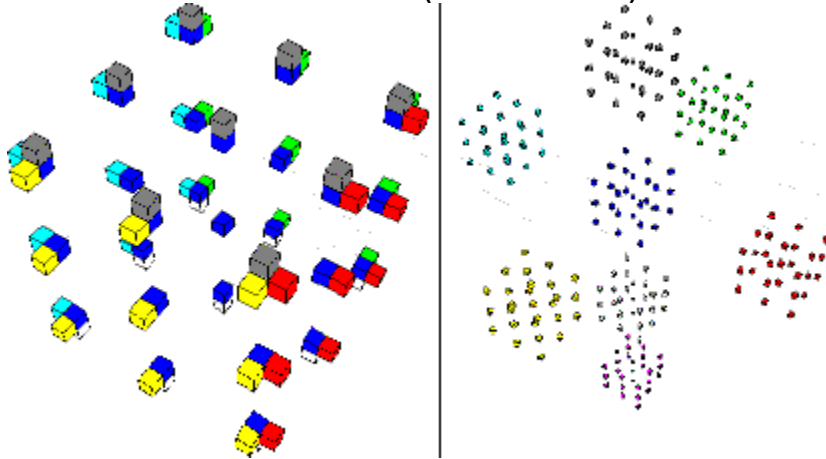


Rotate Clockwise button (Custom toolbar)



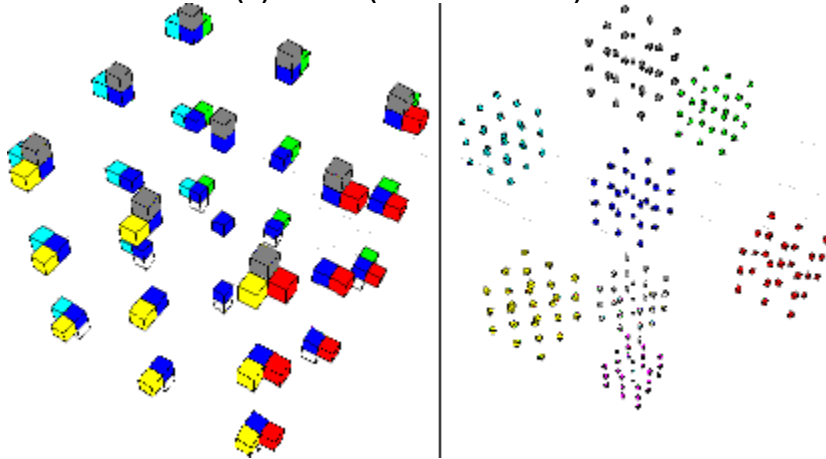
This button rotates the current section selected in the clockwise direction.

Rotate Counterclockwise button (Custom toolbar)



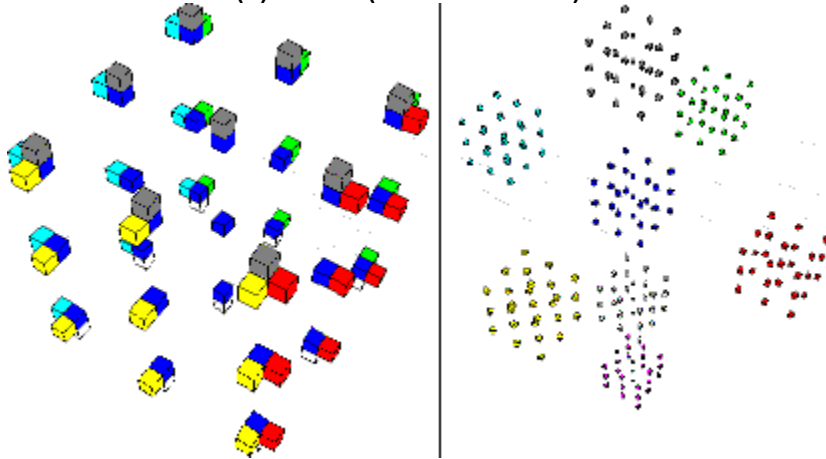
This button rotates the current section selected in the counterclockwise direction.

Rotate Clockwise (Y) button (Custom toolbar)



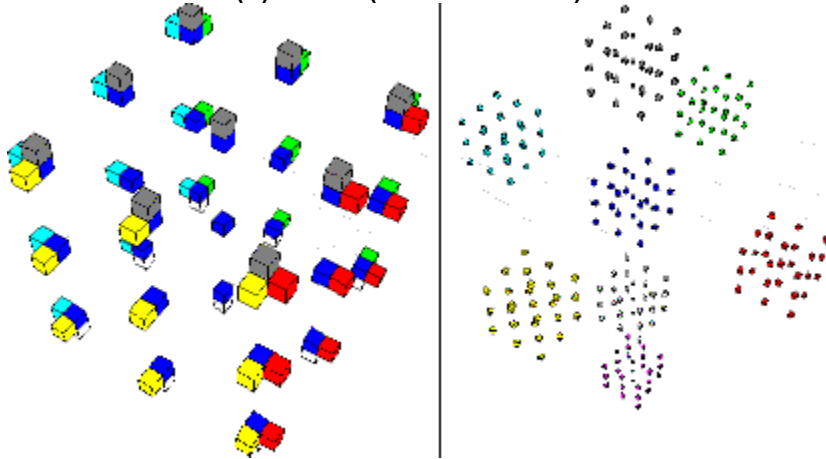
This button rotates the current region in the clockwise direction about the y-axis.

Rotate Clockwise (Z) button (Custom toolbar)



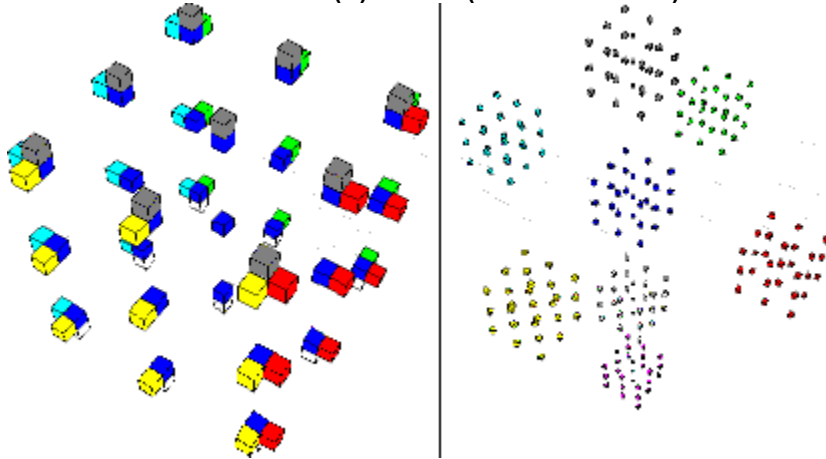
This button rotates the current region in the clockwise direction about the z-axis.

Rotate Clockwise (X) button (Custom toolbar)



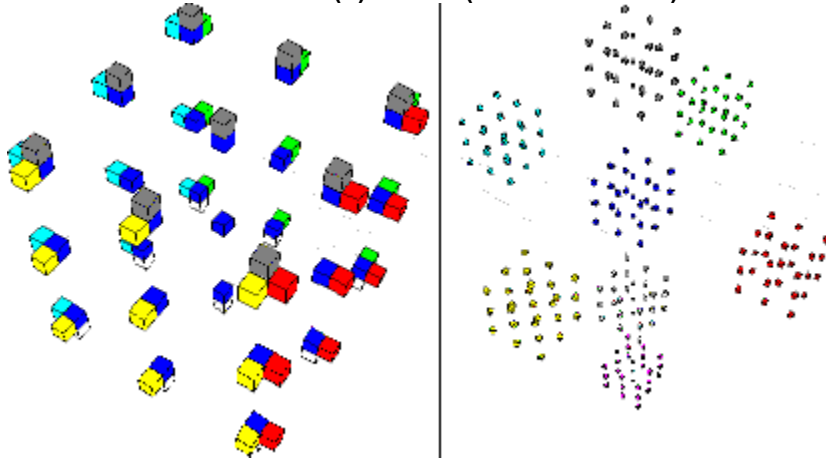
This button rotates the current region in the clockwise direction about the x-axis.

Rotate Counterclockwise (Y) button (Custom toolbar)



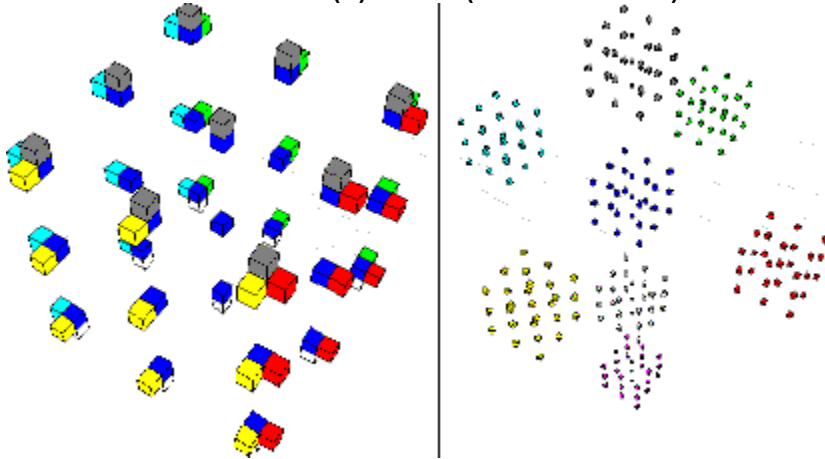
This button rotates the current region in the counterclockwise direction about the y-axis.

Rotate Counterclockwise (Z) button (Custom toolbar)



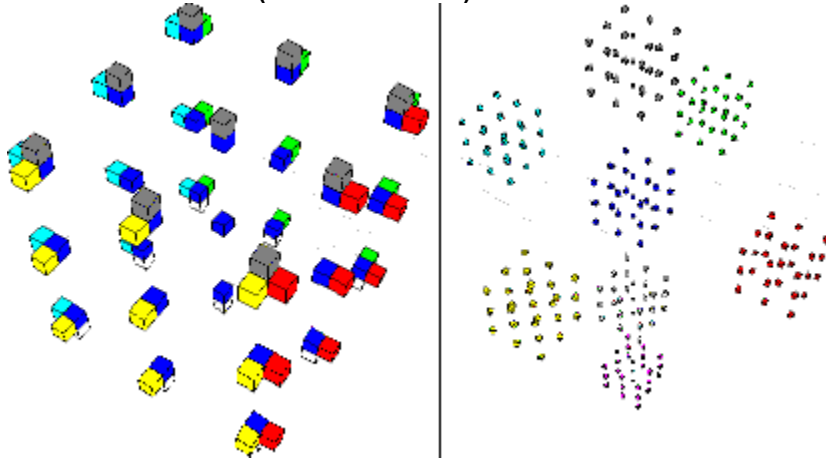
This button rotates the current region in the counterclockwise direction about the z-axis.

Rotate Counterclockwise (X) button (Custom toolbar)



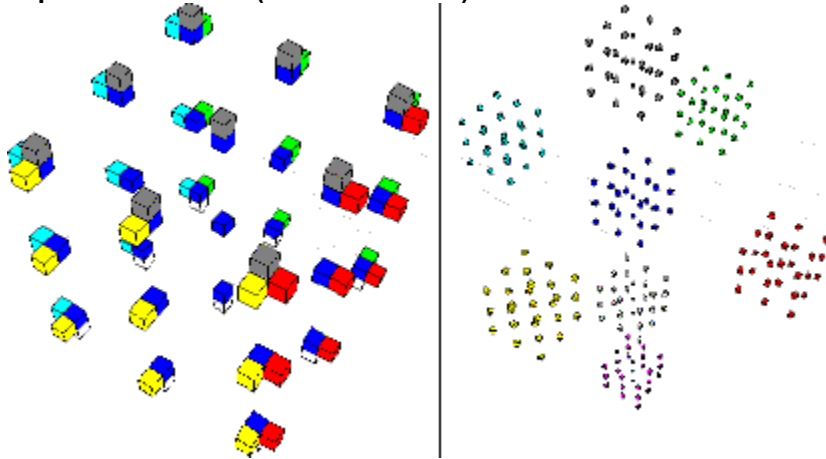
This button rotates the current region in the counterclockwise direction about the x-axis.

Left Section button (Custom toolbar)



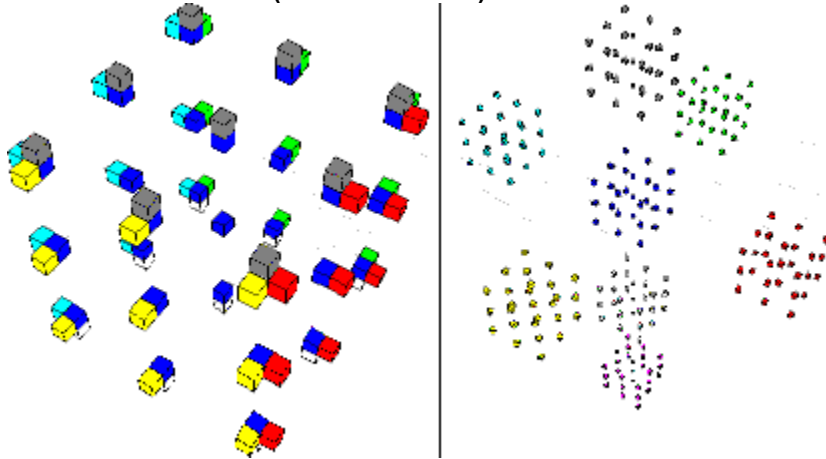
This button causes the current section selected to be the leftmost section in the current region. The left section contains 30 cubes and rotates around the y-axis. This button only applies in easy mode.

Top Section button (Custom toolbar)



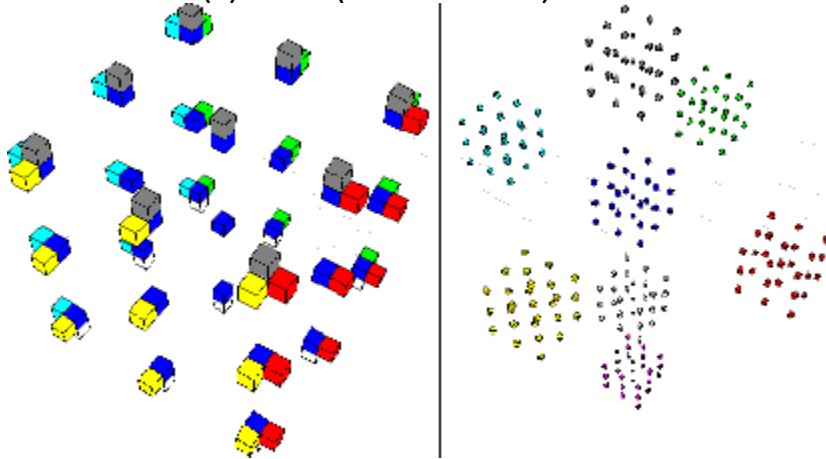
This button causes the current section selected to be the topmost section in the current region. The top section contains 30 cubes and rotates around the z-axis. This button only applies in easy mode.

Back Section button (Custom toolbar)



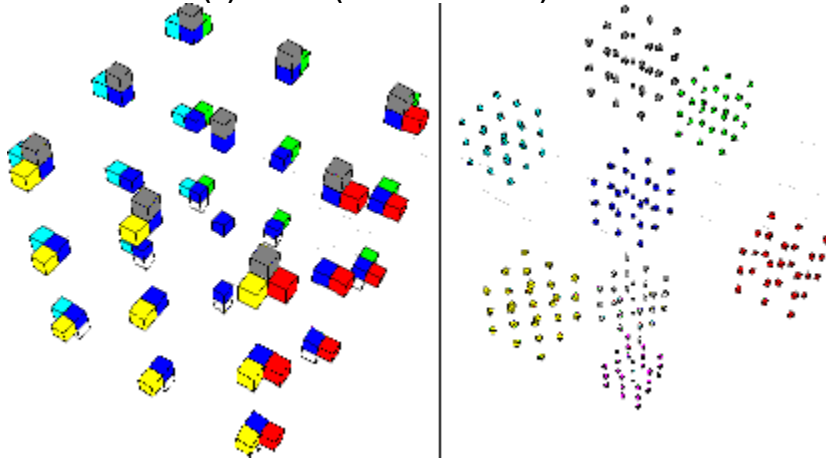
This button causes the current section selected to be the backmost section in the current region. The back section contains 30 cubes and rotates around the x-axis. This button only applies in easy mode.

Middle Section (Y) button (Custom toolbar)



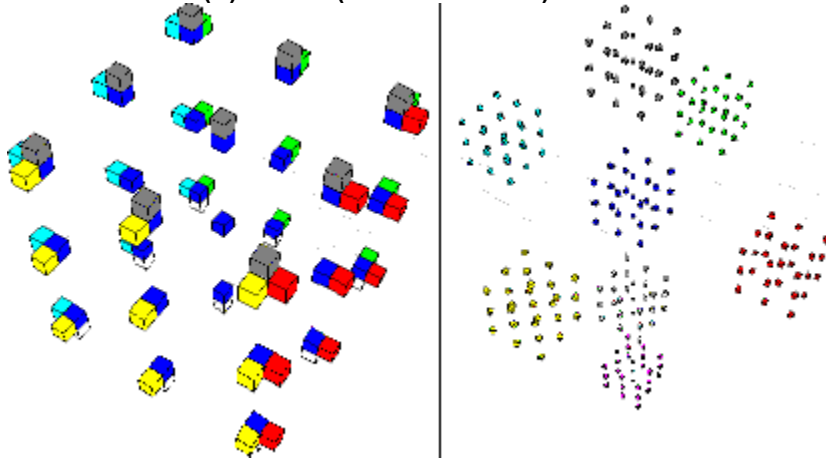
This button causes the current section selected to be the middle section (with respect to the y-axis) in the current region. This middle section is sandwiched between the left and right sections, contains 21 cubes and rotates around the y-axis. This button only applies in easy mode.

Middle Section (Z) button (Custom toolbar)



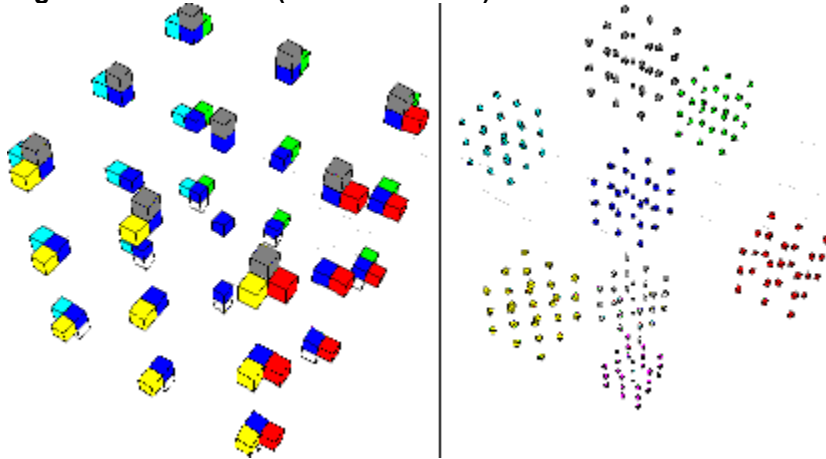
This button causes the current section selected to be the middle section (with respect to the z-axis) in the current region. This middle section is sandwiched between the top and bottom sections, contains 21 cubes and rotates around the z-axis. This button only applies in easy mode.

Middle Section (X) button (Custom toolbar)



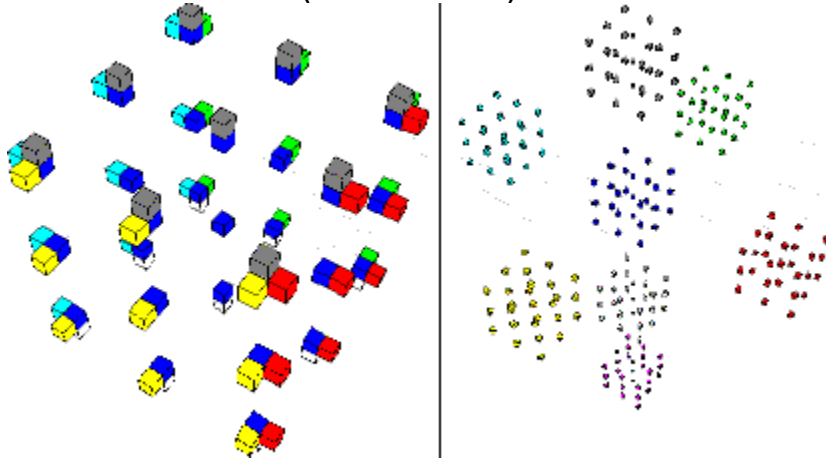
This button causes the current section selected to be the middle section (with respect to the x-axis) in the current region. This middle section is sandwiched between the front and back sections, contains 21 cubes and rotates around the x-axis. This button only applies in easy mode.

Right Section button (Custom toolbar)



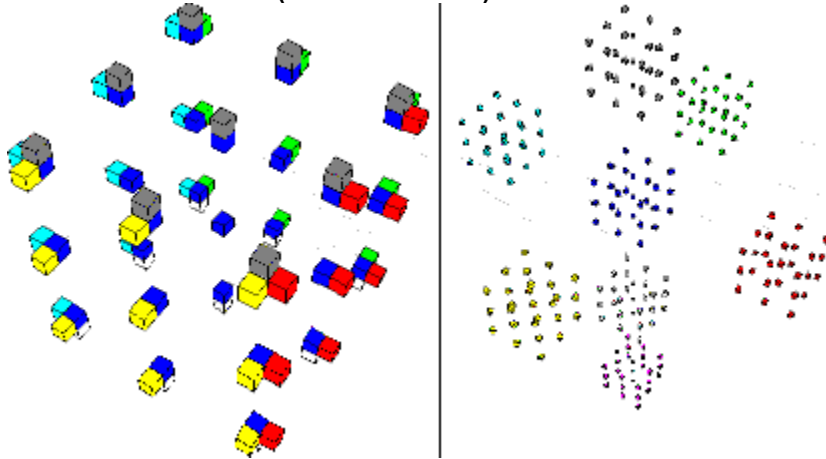
This button causes the current section selected to be the rightmost section in the current region. The right section contains 30 cubes and rotates around the y-axis. This button only applies in easy mode.

Bottom Section button (Custom toolbar)



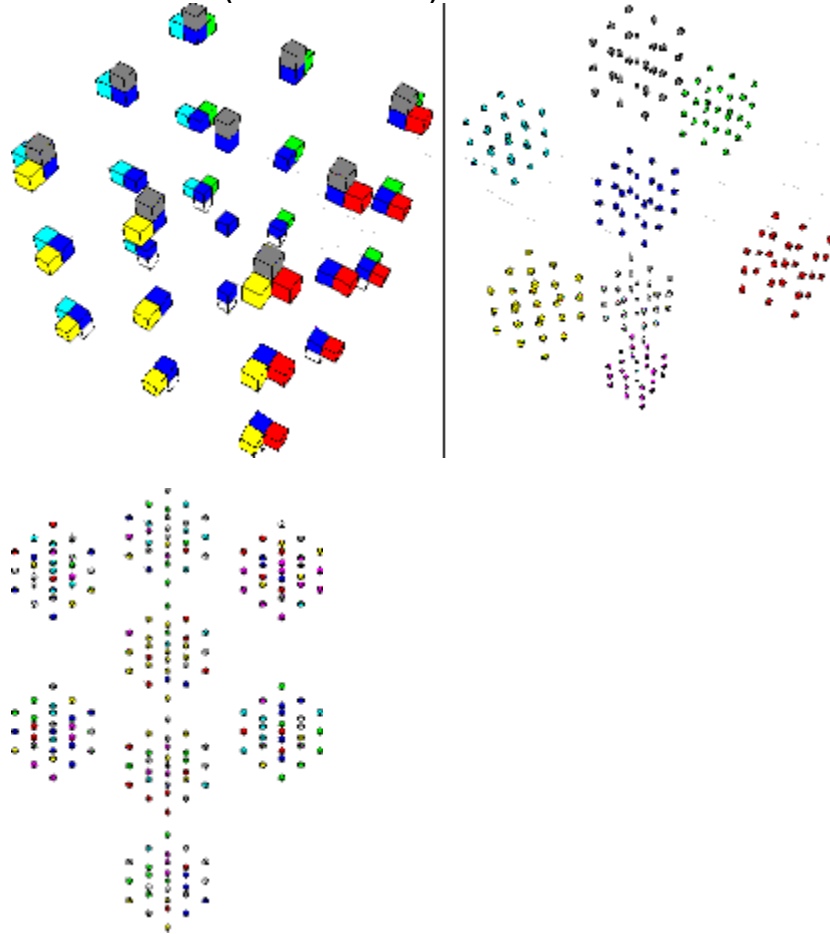
This button causes the current section selected to be the bottommost section in the current region. The bottom section contains 30 cubes and rotates around the z-axis. This button only applies in easy mode.

Front Section button (Custom toolbar)



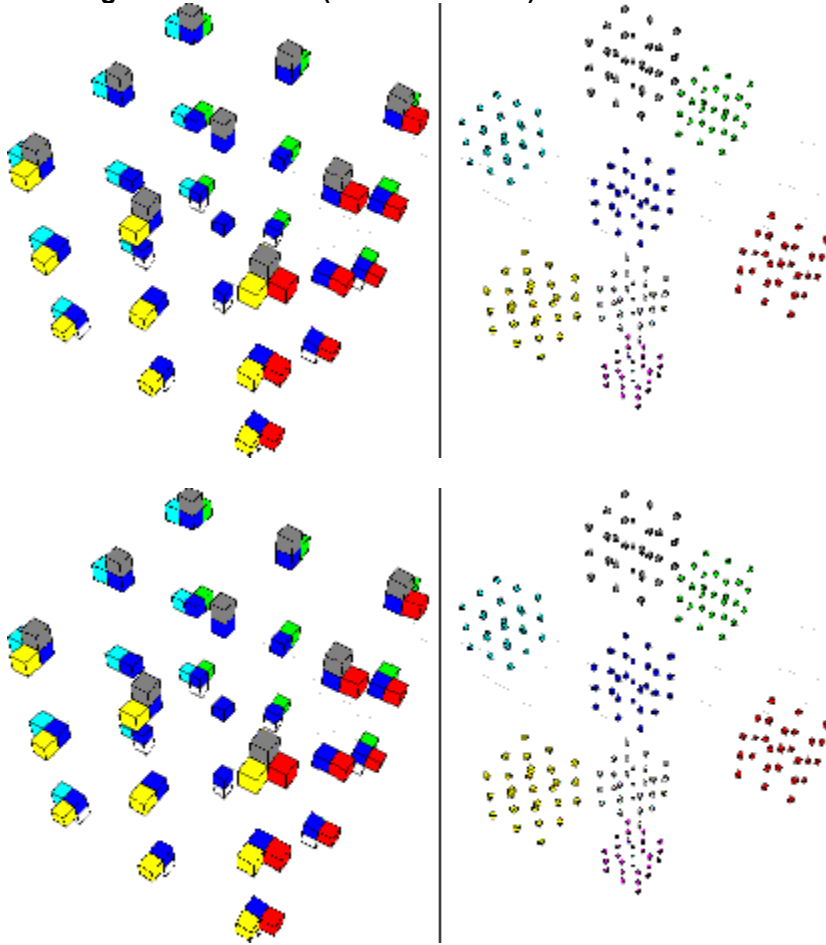
This button causes the current section selected to be the frontmost section in the current region. The front section contains 30 cubes and rotates around the x-axis. This button only applies in easy mode.

Full View button (Custom toolbar)



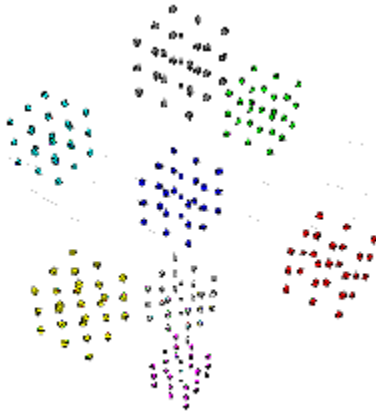
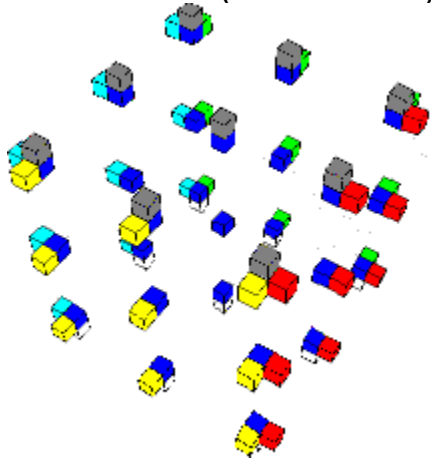
The full view button shows the entire Rubick's Hypercube unfolded (shown at right). You will notice that the Rubick's Hypercube is divided into 8 cube shaped regions, and each of these is divided into 3rds in each direction so that they each have 27 cubes. This makes for a total of 216 cubes in the Rubick's Hypercube. Because it can be confusing looking at 216 cubes at once, by default Rubick's Hypercube displays the smaller view, showing only 81 cubes at a time.

One Region View button (Custom toolbar)



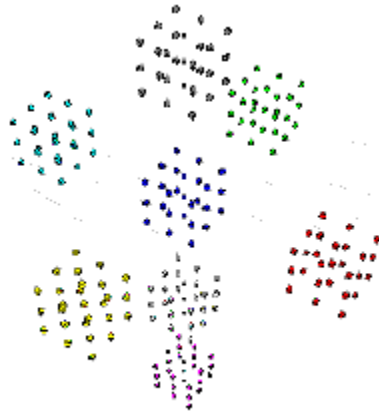
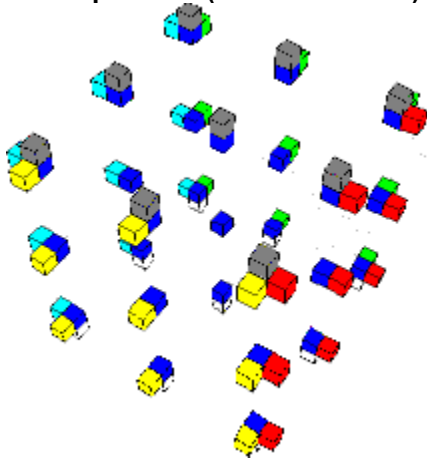
The one cube view button shows one region of the Rubick's Hypercube and the cubes connected to it. This is view that you see when you first open the program. This view is also the only view that supports animation.

Shift Left button (Custom toolbar)



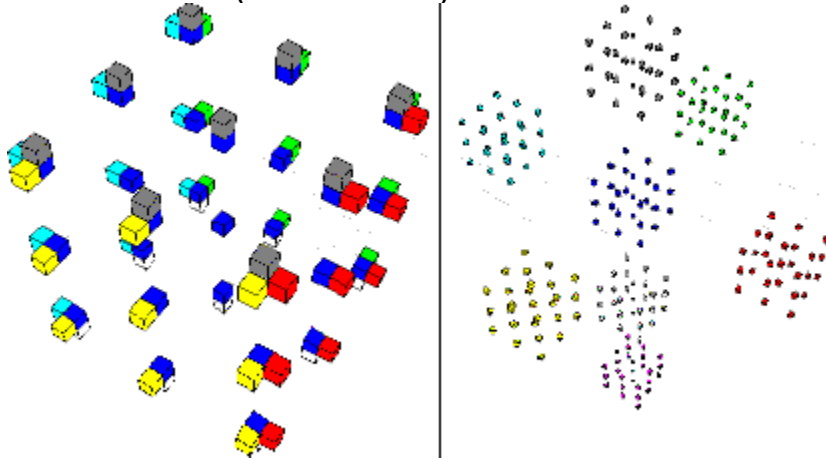
The Shift Left button moves you to the region to the left of the one you're currently looking at. This does not change the Rubick's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubick's Cube.

Shift Up button (Custom toolbar)



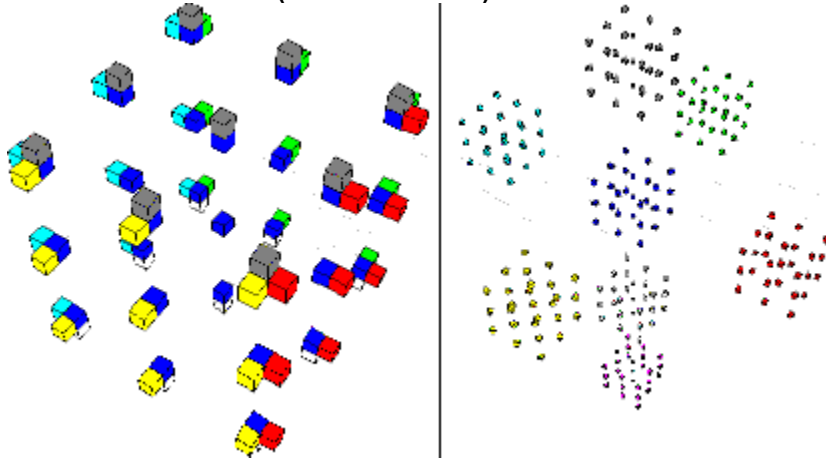
The Shift Up button moves you to the region above the one you're currently looking at. This does not change the Rubik's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubik's Cube.

Shift Back button (Custom toolbar)



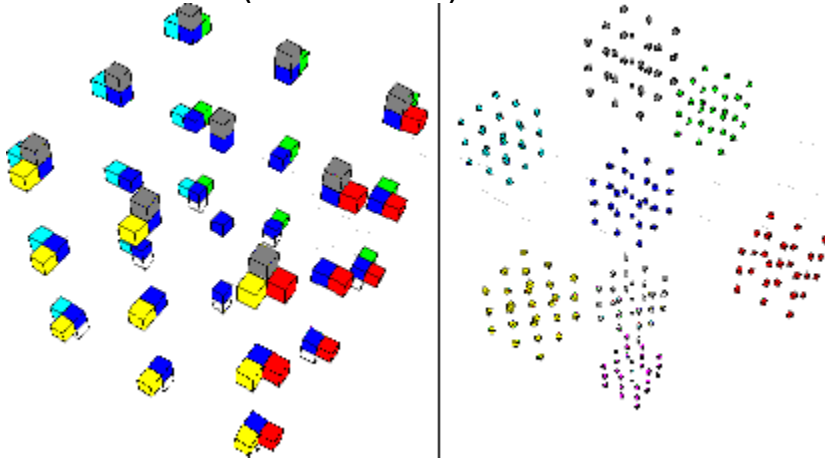
The Shift Back button moves you to the region behind the one you're currently looking at. This does not change the Rubick's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubick's Cube.

Shift Forward button (Custom toolbar)



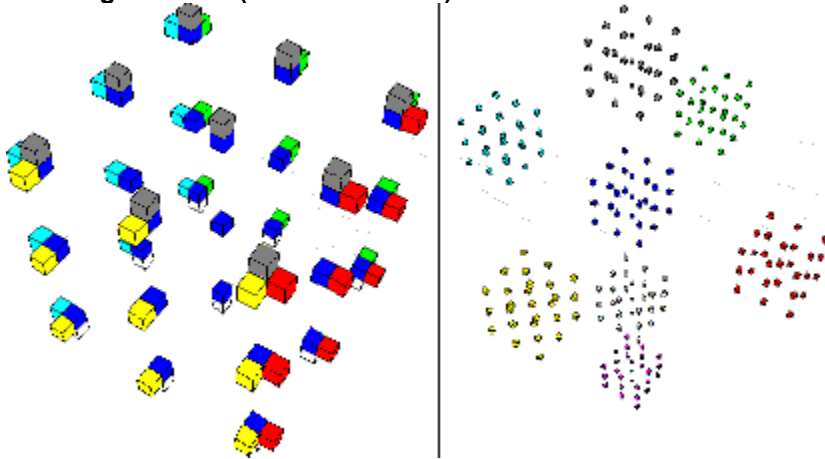
The Shift Forward button moves you to the region in front of the one you're currently looking at. This does not change the Rubick's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubick's Cube.

Shift Down button (Custom toolbar)



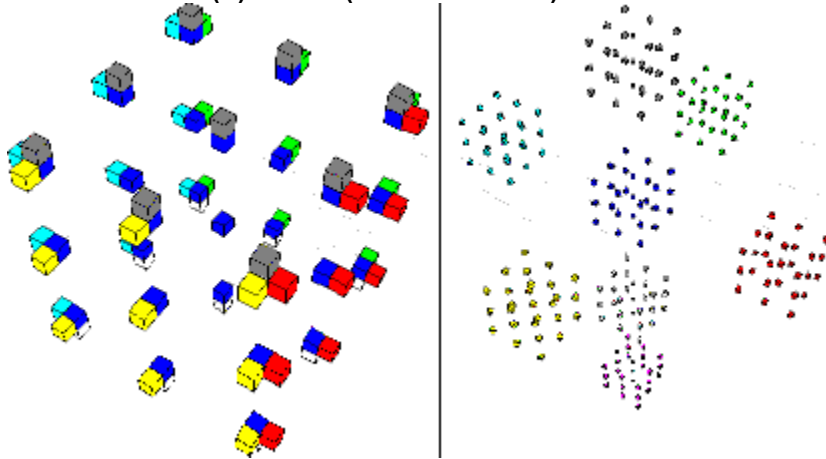
The Shift Down button moves you to the region below the one you're currently looking at. This does not change the Rubick's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubick's Cube.

Shift Right button (Custom toolbar)



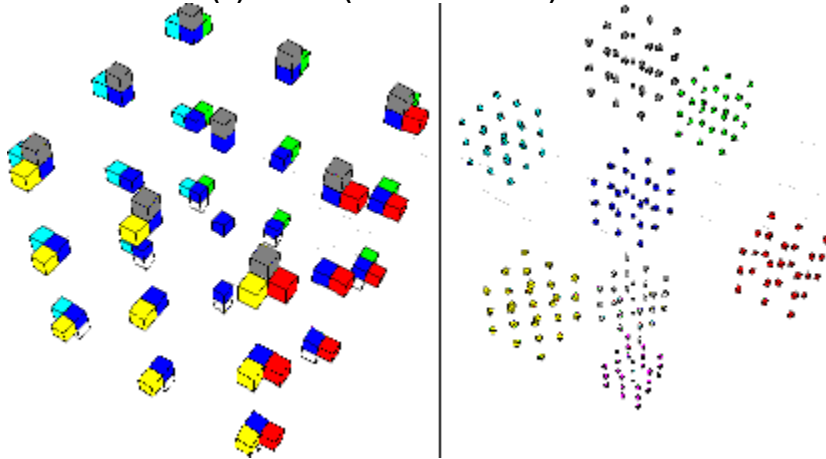
The Shift Right button moves you to the region right of the one you're currently looking at. This does not change the Rubick's Hypercube, it just changes which part of it you are looking at. It is similar to looking at a different side of an ordinary Rubick's Cube.

Shift Clockwise (Y) button (Custom toolbar)



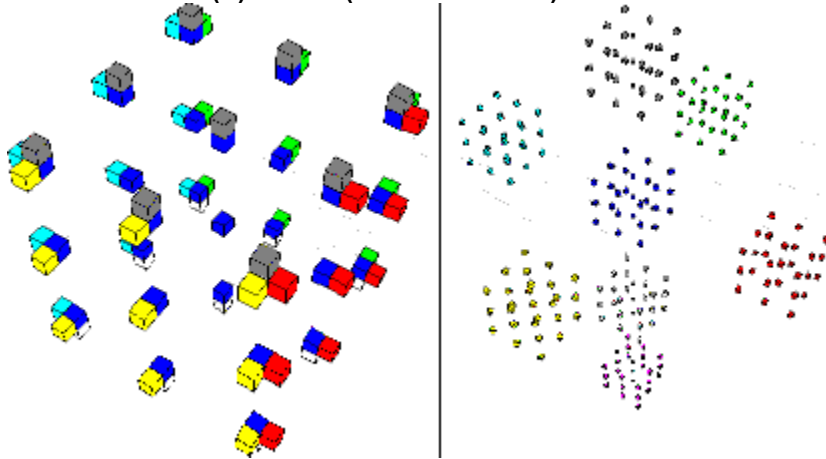
The Shift Clockwise (Y) button shifts the entire Rubick's Hypercube clockwise about the y-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Shift Clockwise (Z) button (Custom toolbar)



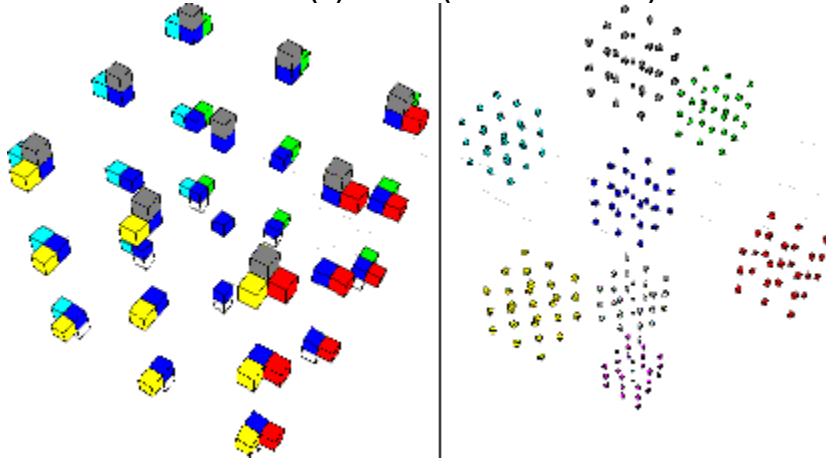
The Shift Clockwise (Z) button shifts the entire Rubick's Hypercube clockwise about the z-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Shift Clockwise (X) button (Custom toolbar)



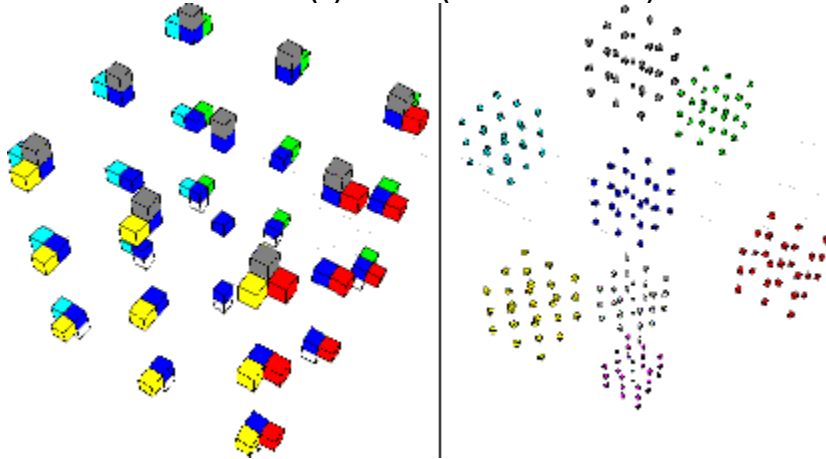
The Shift Clockwise (X) button shifts the entire Rubick's Hypercube clockwise about the x-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Shift Counterclockwise (Y) button (Custom toolbar)



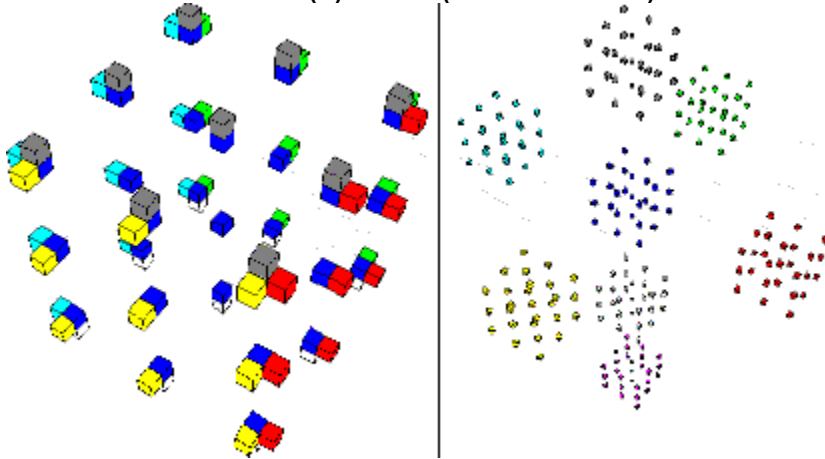
The Shift Counterclockwise (Y) button shifts the entire Rubick's Hypercube counterclockwise about the y-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Shift Counterclockwise (Z) button (Custom toolbar)



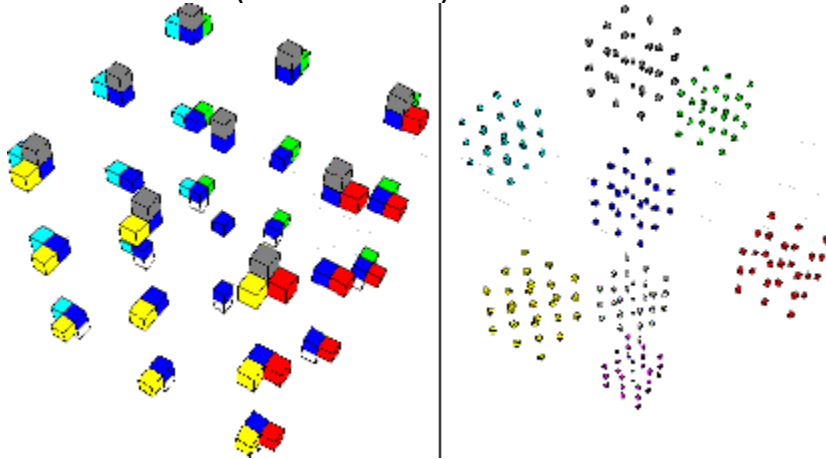
The Shift Counterclockwise (Z) button shifts the entire Rubick's Hypercube counterclockwise about the z-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Shift Counterclockwise (X) button (Custom toolbar)



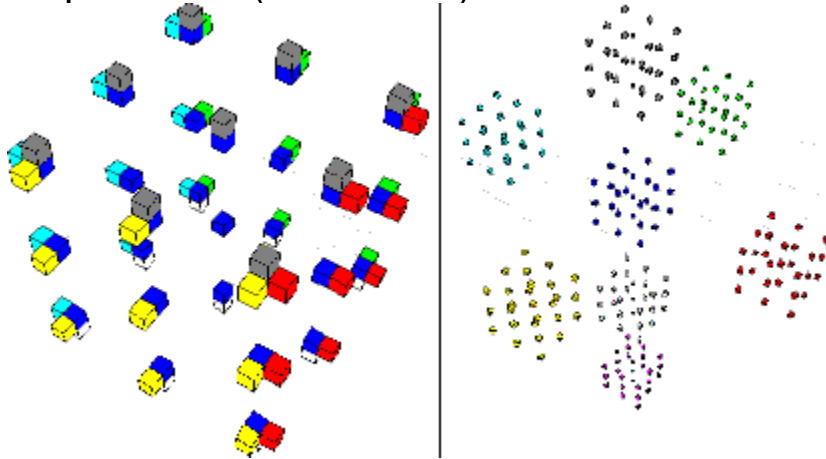
The Shift Counterclockwise (X) button shifts the entire Rubick's Hypercube counterclockwise about the x-axis. This does not change the Rubick's Hypercube, it just changes your view of it. It is similar to looking at an ordinary Rubick's Cube from a different angle.

Animation button (Custom toolbar)



The Animation button turns animation on or off. Unless you have a slow processing speed, and you think you can solve the Rubick's Hypercube faster without animation, it is recommended you leave the animation on. It makes it easier to keep track of your moves. Also please note that if you are in Full View mode, there will never be animation. To see the animation, it is recommended you stay in the One Region View mode, and only use the Full View mode occasionally to view your progress in solving the Rubick's Hypercube.

Perspective button (Custom toolbar)



This button turns perspective on and off. Some people find it easier to see where the cubes are without perspective turned on. Others prefer the perspective because it gives them a better perception of depth.

Help Topics command (Help menu)

Click this button to display a list of topics you can receive help on.

Switch Version command (Game menu)

The switch version command allows you to switch between the hard and the easy version of Rubick's Hypercube. For information about the difference between the harder and the easier version, see [Versions](#).

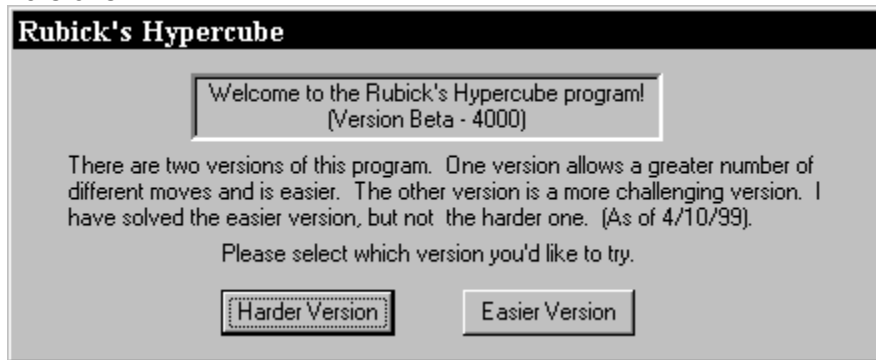
Change Name command (Game menu)

When Rubick's Hypercube starts up, it asks you for your name. If you ever need to change that name for any reason, use the Change Name command in the Game menu. If you solve the Rubick's Hypercube and decide you want your name listed in a high scores table, this is the name that will appear in that table.

Create High Scores File command (Game menu)

Now, with version 5200+, you can create a high scores file. This can be done at any point in the game. This is a file that is encrypted and if you email it to the author of this program at berglunb@pop.rose-hulman.edu, he will decrypt the information and you can have your name appear on the high scores table.

Versions.



There are two versions of Rubick's Hypercube available, an easier version and a harder version. The difference between the versions is in the type of moves you are allowed to do. In the easier version, you are allowed to rotate every section in the current region, in the harder version, you can only rotate an entire region at a time. Both versions are guaranteed solvable because the program internally scrambles the Rubick's Hypercube, starting from a perfectly solved Rubick's Hypercube using the same moves that you are allowed to do. In the harder version, the custom toolbar does not have as many buttons. There are more Direction of Rotation buttons, but no Side to be rotated buttons, because the program does not need to know which section you want to rotate -- you must rotate the entire region. You can switch between versions using the Switch Version command in the Game Menu. You should take note that the Rubick's Hypercube is rescrambled when you switch the version.

Definitions.

Rubick's Hypercube uses certain ways of referring to things, such as a 'section' of the Hypercube, a 'region' of the Hypercube, or the directions up, down, left, right, etc. For the definition of a term used in this help file, click the appropriate link below.

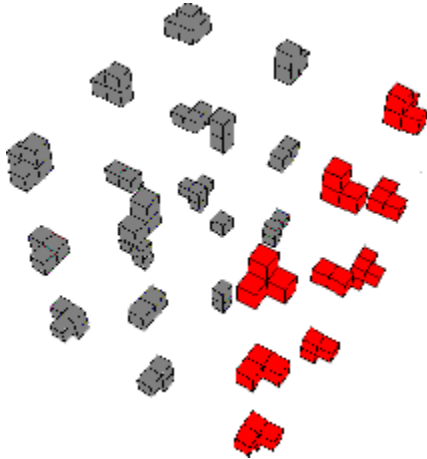
[Section](#)

[Region](#)

[Pieces](#)

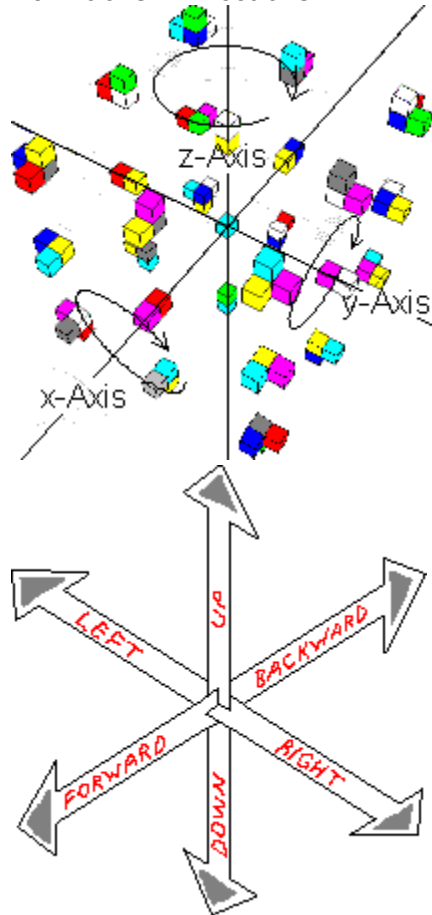
[Directions](#) (such as right, left, up, down, etc.)

Definitions: Section



A section of the Rubick's Hypercube is a certain group of pieces that can be rotated. An example of a section is shown in red above. A section may contain 21 cubes or 30 cubes, and always contains exactly 9 pieces. In the harder version of this program, no sections are rotated, only entire regions, which contain 81 cubes (27 pieces).

Definitions: Directions



The coordinate system in Rubick's Hypercube is set up according to the standard right-handed system, with the z-axis pointing up, the x-axis pointing down and to the left, and the y-axis pointing down and to the right. The curved arrows show the direction of clockwise rotation around each of these axes. The six directions in Rubick's Hypercube are: up, down, left, right, forward, and backward. These are shown on the right. When we say the middle section with respect to the y-axis, we mean the section in between the left and right sections. The middle section with respect to the x-axis is the section between the front and back sections, and the middle section with respect to the z-axis is the section between the top and bottom sections. A good way to remember which middle section is which is to remember that the x-axis will go perpendicular through the center of the middle section (x), etc.

Definitions: Region

A 'region' of the Rubick's Hypercube is similar to a side of an ordinary Rubick's Cube. It contains 27 colored cubes. There are a total of 8 regions in the Rubick's Hypercube, similar to the 6 sides of an ordinary Rubick's Cube. When you view just one region, you are actually seeing a little bit more. It shows not only the cubes that are in one region (a total of 27), but also all of the cubes connected to these cubes (for a total of 81 cubes). This is so that pieces do not get split up when you view them, you see 27 complete pieces. When you look at these cubes, you will notice there is a 3x3x3 array of cubes in the middle, and to each face of the outside cubes that is facing outward, there is 'glued' another cube. This is the cube that is connected 'around the corner' in the 4th dimension.

Definitions: Pieces

A piece of the Rubick's Hypercube is the 4-d equivalent to one of the small cubes that make up an ordinary Rubick's Cube. The Rubick's Hypercube contains a total of 80 pieces. Much like the cubes of a Rubick's Cube can have different numbers of colored faces based on their position, so the pieces of the Rubick's Hypercube can have different numbers of colored cubes based on their position. Below is a list of the different types of pieces. (Of course, all pieces have 8 cubes, but some of them are facing the inside of the Rubick's Hypercube and are hidden from view, just like all cubes in a Rubick's Cube have 6 faces, but not all of them are colored, because some of them face the inside of the Rubick's Cube)

Piece	Name	Number of colored cubes in piece	Total number of these pieces in Rubick's Hypercube
--------------	-------------	---	---

	Center Piece	1	8
--	--------------	---	---



	Face Piece	2	24
--	------------	---	----



Edge Piece 3 32



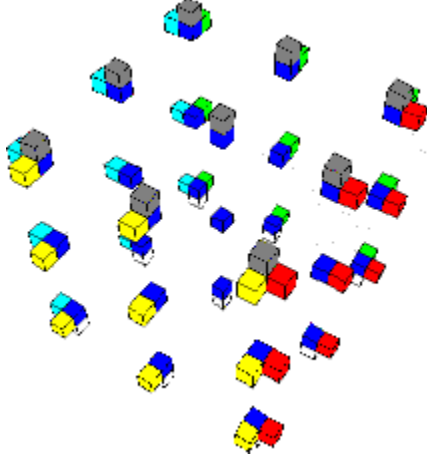
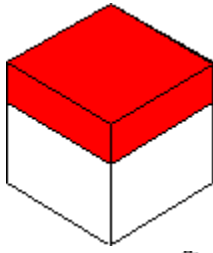
Corner Piece 4 16



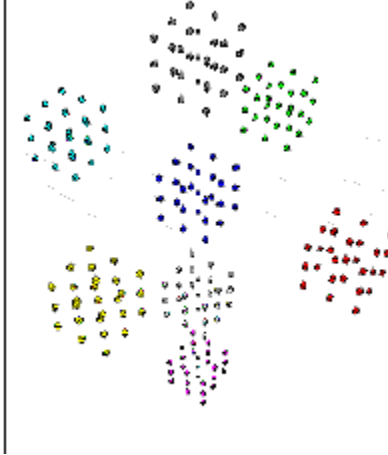
*note: the single colored cube of a center piece is often called a center cube.

Indicators

The indicators are little pictures in the left side of the Rubick's Hypercube window that show current conditions, such as which side you have selected and your location within the Rubick's Hypercube. Click on the links below for more help on a particular indicator.

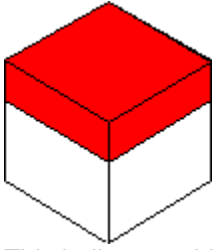


Side Selected Indicator



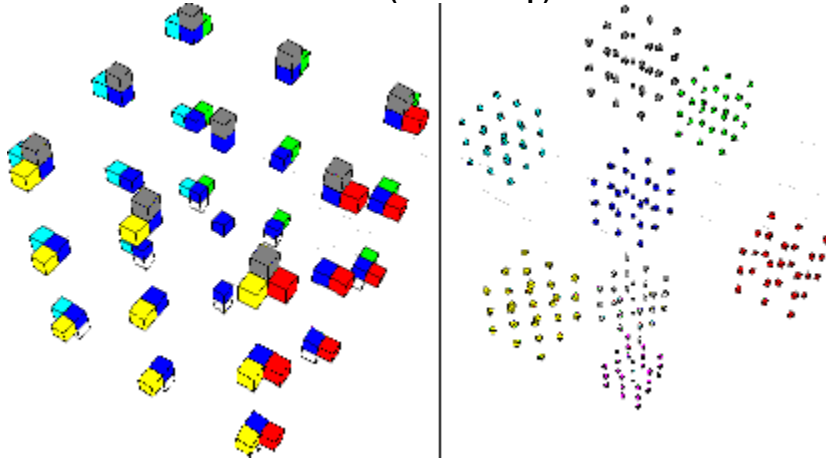
Location Indicator

Indicators: Side selected



This indicates which section of the Rubick's Hypercube is currently selected. You can use the side to be rotated buttons on the custom toolbar to change which section is currently selected. This indicator will not appear when you are in hard mode.

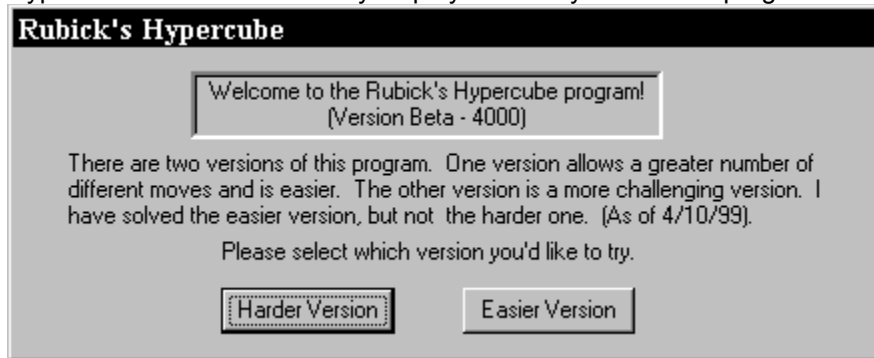
Indicators: Location Indicator (Center Map)



This indicates which region you are in. The reason this program only shows you one region of the Rubick's Hypercube at a time is that most people find that viewing the entire Rubick's Hypercube all at once is too confusing. If you wish to see the entire Rubick's Hypercube, use the Full View button on the custom toolbar. The colors of the cubes correspond to the colors of the center cubes of each region of the Rubick's Hypercube, and so because it is a map of the center cubes, it can also be called a Center Map. You'll notice that the color of the cube in the center of the location indicator matches the color of the cube in the center of the region of the Rubick's Hypercube you're looking at.

Switching between hard and easy versions of Rubick's Hypercube.

The version selector dialog box allows you to switch between the hard and the easy version of Rubick's Hypercube. It is automatically displayed when you start the program.



You can also switch between hard/easy versions after starting the program. For more information, see the [Switch version command](#).

Solving the Rubick's Hypercube.

The Rubick's Hypercube is solved when every region contains cubes of all the same color. Another way of phrasing this is that every cube adjacent to a center cube is the same color as the center cube, because the center cubes do not change their position relative to each other. Rubick's Hypercube will display a message congratulating you if you solve the Rubick's Hypercube.

Contacting the Author of Rubick's Hypercube.

To report problems, ask questions, or if you just want to contact the author of this program, he can be reached via email at: **berglunb@pop.rose-hulman.edu**

Dockbar.

The dockbar is a place where you can place the toolbar. The toolbar then merges into the dockbar and then becomes part of the window. You can also float the toolbar. This makes the toolbar appear in a window of its own, apart from the main program window. If you click the "x" in the corner of the toolbar, it will disappear. To make it reappear, you will need to use the Toolbars command in the View menu.

*Note: You may need to use this command twice to make the toolbars all reappear.

Rubick's Hypercube File Type.

By default, Rubick's Hypercube saves your files as ".rhc" files. This extension identifies a Rubick's Hypercube file and distinguishes it from other file types. You can also set Rubick's Hypercube as the default program to open files of this type, allowing you to open ".rhc" files just by double clicking on them.

*note: topics 90 and 91 should link to the same page
topics 92, 93, and 94 should link to the same page
topics 106, 107, 108, and 109 should link to the same page

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>
	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>	<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>	<u>37</u>
	<u>38</u>	<u>39</u>	<u>40</u>	<u>41</u>	<u>42</u>	<u>43</u>	<u>44</u>	<u>45</u>	<u>46</u>	<u>47</u>	<u>48</u>	<u>49</u>
	<u>50</u>	<u>51</u>	<u>52</u>	<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>
	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>	<u>71</u>	<u>72</u>	<u>73</u>
	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>
	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>	<u>91</u>	<u>92</u>	<u>93</u>	<u>94</u>	<u>95</u>	<u>96</u>	<u>97</u>
	<u>98</u>	<u>99</u>	<u>100</u>	<u>101</u>	<u>102</u>	<u>103</u>	<u>104</u>	<u>105</u>	<u>106</u>	<u>107</u>	<u>108</u>	<u>109</u>
	<u>110</u>	<u>111</u>	<u>112</u>	<u>113</u>	<u>114</u>							

No Help Available

No help is available for this area of the window.

No Help Available

No help is available for this message box.

