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description: History of the 3OP blindfold solving method for the Rubik's Cube.

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import AnimCube from "@site/src/components/AnimCube";

import ReactPlayer from 'react-player'

import ImageCollage from '@site/src/components/ImageCollage';

# 3OP

<AnimCube params="config=../../ReconstructionConfig.txt&initmove=D' B' F R' F2 U F L2 D2 B' U2 R2 D' L2 F R' D' F U L' F U' R B2 U'&move={Scramble: D' B' F R' F2 U F L2 D2 B' U2 R2 D' L2 F R' D' F U L' F U' R B2 U'}{Orient UFR + UFL: z' U' R' U R U' R' U - L' - U' R U R' U' R U - L - z}z'U'R'URU'R'UL'U'RUR'U'RULz.{Orient D corners: x2 z' - U' R U R' U' R U R' - L' - U' R U R' U' R U R' - L' - U' R U R' U' R U R' - L2 - z x2}x2z'U'RUR'U'RUR'L'U'RUR'U'RUR'L'U'RUR'U'RUR'L2zx2.{U + D edge 8 flip: x - d D r R d D r R d D r R - x'}x d D r R d D r R d D r R x'.{Orient BL + FL + FR + DF: z' R - M U M U M U M U - R' z}z' R M U M U M U M U R' z.{UF -> BR -> DF: U' D z' R' U R' U' R' U' R' U R U R2 z D' U}U'Dz'-R'UR'U'R'U'R'URUR2-zD'U{UF -> DR -> DB: F2 x2 U' - R' U R' U' R' U' R' U R U R2 - U x2 F2}F2x2U'-R'UR'U'R'U'R'URUR2-Ux2F2{UF -> UR -> FL: L' U2 R2 U' R' U' R U R U R U' R U2 L}L'U2-R2U'R'U'RURURU'R-U2L{UF <-> FR, UL <-> BL: URUL-RLU2R'L'F'B'U2FB-L'U'R'U'}URULRLU2R'L'F'B'U2FBL'U'R'U'{UFL -> DFL -> UBL: D2 R2 U' R B' R F2 R' B R F2 R2 - U R2 D2}D2R2U'-RB'RF2R'BRF2R2-UR2D2{UFL -> UFR -> DBR: D B2 R B' R F2 R' B R F2 R2 B2 D'}DB2-RB'RF2R'BRF2R2-B2D'{UFL -> DFR -> UBR: D' R2 D2 B2 R B' R F2 R' B R F2 R2 B2 D2 R2 D}D'R2D2B2-RB'RF2R'BRF2R2-B2D2R2D" width="600px" height="400px" />

\*\*Example solve from Shotaro Makisumi\*\*

## Description

\*\*Creator:\*\* [Richard Carr](CubingContributors/MethodDevelopers.md#carr-richard), [Olly Hayden](CubingContributors/MethodDevelopers.md#hayden-olly)

\*\*Created:\*\* ~2002

\*\*Steps:\*\*

1. Orient corners and edges separately.

2. Permute corners and edges separately using three-cycles.

[Click here for more step details on the SpeedSolving wiki](https://www.speedsolving.com/wiki/index.php?title=3OP)

## Original Development (Richard Carr)

Around 2001 to 2002, Richard Carr developed a blindfold solving method that involved first separately orienting all corners and edges [1]. The corners are then permuted using simple one move setups in combination with a corner three cycle algorithm executed on the U layer. Carr’s method was placed on Jessica Fridrich’s website.

<ImageCollage

images={[

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{ src: require("@site/docs/BlindfoldSolving/img/3OP/Carr2.png").default}

]}

/>

## Expanded Development (Olly Hayden)

In 2002, Olly Hayden presented a similar method on his website [2]. The method contains the same general steps as Carr’s method. The primary difference is in the permutation setup moves and algorithms. In Hayden’s development, pieces are moved to the U or D layer using the group `U, D, F2, B2, R2, L2`. After the setup moves, a permutation algorithm is used to cycle the corners, then the setup moves are undone. A complete guide with better algorithms was later developed by Shotaro Makisumi [3].

<ImageCollage

images={[

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{ src: require("@site/docs/BlindfoldSolving/img/3OP/Makisumi.png").default}

]}

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## Discussion Between Carr and Hayden

In August 2002, Carr and Hayden had a conversation comparing the difference in the permutation styles [4, 5, 6]. Carr stated that he had considered the way as described on Hayden’s site, but found it difficult.

<ImageCollage

images={[

{ src: require("@site/docs/BlindfoldSolving/img/3OP/Carr3.png").default},

{ src: require("@site/docs/BlindfoldSolving/img/3OP/Hayden2.png").default},

{ src: require("@site/docs/BlindfoldSolving/img/3OP/Carr4.png").default}

]}

/>

## Earlier Proposal (Jessica Fridrich)

On March 11, 1998, Wei-Hwa Huang asked the Cube Lovers mailing group if there were any techniques for blindfold solving [7]. Jessica Fridrich responded by suggesting that it may be possible to first orient all pieces, preserving their permutation, then permute all pieces, preserving their orientation [8].

![](../img/BlindfoldSolvingOrigins/Fridrich.png)

## References

# References

|  |  |
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| [1] | R. Carr, "Blindfold cubing," 2002. [Online]. Available: http://www.ws.binghamton.edu/fridrich/Richard/BC.html. |
| [2] | O. Hayden, "Blindfold Cubing," February 2002. [Online]. Available: https://web.archive.org/web/20020221054757/http://homepage.ntlworld.com/angela.hayden/cube/blindfold\_frontpage.html. |
| [3] | S. Makisumi, "A 3-Cycle Guide to 3x3x3 Blindfold Cubing," 1 January 2008. [Online]. Available: https://www.cubefreak.net/bld/3op\_guide.php. |
| [4] | R. Carr, "Re: [Speed Solving Rubik's Cube] Blindfold," Speed Solving Rubik's Cube Yahoo Group, 16 August 2002. [Online]. |
| [5] | O. Hayden, "Re: [Speed Solving Rubik's Cube] Blindfold," Speed Solving Rubik's Cube Yahoo Group, 19 August 2002. [Online]. |
| [6] | R. Carr, "Re: [Speed Solving Rubik's Cube] Blindfold," Speed Solving Rubik's Cube Yahoo Group, 19 August 2002. [Online]. |
| [7] | W.-H. Huang, "Blindfold Cube-solving," Cube Lovers, 11 March 1998. [Online]. |
| [8] | J. Fridrich, "Re: Blindfold Cube-solving," Cube Lovers, 11 March 1998. [Online]. |