

5x5 Solve Analysis: Jack Tiemeyer

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General Format: Hi Jack, I really enjoyed watching the solves. Definitely a lot of good stuff, but just as many things you can improve on. I'll be breaking down this report into the four main stages of the solve: first 2 centers, last 3 centers, first 8 edges, last 4 edge (and give a short ramble on your 3x3 stage). For each stage, I will first provide an analysis where I will share your strengths, weaknesses, methods to capitalize on strengths and improve on weaknesses and ideas/references on how to do so. I will then take each of your solves and suggest specific improvements (mainly move choices) to get you started and thinking in the right direction on your improvement. At the end of the report, I will provide several links to online resources that will directly help you with your personal improvement and many of these resources will be referenced throughout the plan. As a general tip I'll constantly be asking you to watch walkthroughs and timed solves of the fastest speed cubers throughout the analysis, with a specific focus on what I identify to be your weaknesses. Keep this in mind as you look through the analysis and the references.

First 2 Centers: Your inspection use seems generally effective. What makes me think this is that on each solve, you plan out and execute your first two bars with efficiency and fluidity. However, both efficiency and fluidity are missing largely on your third bar. After you finish your first two bars, you frantically search around the cube for your third bar and then attack it piece by piece. I'll provide better third bar solutions in the move choice section, but it doesn't seem like the knowledge of how to make a good third bar is the issue here. Rather, it's the *transition*. Ideally, you be able to do your first two bars "blindfolded" and track your third bar as you are solving the first two. Give this a shot (blindfolded 2 bars) and see how well you fare. If it's relatively successful, start hand scrambling your cube and make an effort to track carefully your third bar as you *slowly* execute your solution to the first two (sighted), and then build up your speed. Of course, you may pause before your second center, but this isn't nearly as harmful since you're looking for one piece usually and it's easier to be efficiency about than 3. If the blindfolded experiment isn't as successful, then attempt the same tracking exercise, but instead of only tracking the third bar, turn even slower and while you are executing your first two

centers, shift your focus to the third bar. This practice technique of slow turning with heavy focus on tracking will be a recurring theme in the report. Generally, you want to know the locations of at least two of the pieces of the third bar before you solve it, and make sure you find all 3 pieces before performing any moves so you can have a better solution. Also a general tip – try to make more use of the empty slot in the first center (adjust D layer) instead of doing triggers to connect pieces each time. Do a couple untimed solves with this in mind and you should see how it plays out.

Your second center is definitely a strength. You're quick to find pieces and your move choices are usually strong. However, you do tend to rotate quite a bit at this step. This is expected, since you're pairing centers on the E-slice and inserting them into the U-layer. You can technically do this with only z, z' rotations and wider R moves. Though I wouldn't exactly recommend this in solves, trying it out as a drill will get you thinking in the right direction. So start by doing some untimed solves using only R moves (including 4R) and z rotations. Also, get comfortable insert blocks into the second center while it's on the R/L face using $U' R^2 U/U L' U$ etc. This will help you flow better between inserting and building blocks. A lot of the "which rotation should I do" component is something that you need to gauge. The fastest way to pick up on this is to watch complete 5x5 solves from some of the top solvers (sub50s basically do this perfectly – I'll link some of these). Focus on their rotation choices and try to emulate some of those in your solves. In general, I'd recommend untimed practice for this part of your solve, with a consistent focus on rotation minimizing. As a timeline, once you've understood *how* to solve in fewer rotations better, focus more on *when* to use these new techniques.

Solve specifics:

- Solve 1: - Insert last green bar with $U^2 L'$ instead of $L' U^2 L$. Seems small but this thought process adds up. You made this mistake quite a few times.
- Messed up pre-solve 2: - Hold the cube with the same grip to find your last two pieces instead of repeatedly rotating and fumbling. Align the D face before you solve the bar with $(D) R U R^2$
- Solve before last one with centers only: - For your second center keep the same hand position as you look for pieces. Pause and plan out what to do and use your built up knowledge from the untimed practice on your second center to approach it effectively.

- Solve 5 had solid move choice for first 2 centers. The pauses should go away as you familiarize yourself w/ slower turning practice and less rotations.

Last 3 Centers: There's absolutely no reason to do triggers to insert pairs of pieces on your third center. Just like what I recommended on the first center: adjust the layer of the third center directly and use R moves to put the piece in. As a follow up, keep the third center in the D layer. You should more or less memorize the orientation of the third center, but if you need to check then just do an x 'rotation' while *keeping the same hand position* (something to keep in mind more generally as well). As a result, you will be able to lookahead better for your next pair, and you'll cut down on pauses and have fewer rotations. This lookahead part shouldn't be too difficult once you're comfortable with the new hand position and move choices recommended. To better understand how to pull this off – watch some walkthroughs recommend for the “removing triggers” aspect, and complete solves to see how to deal with the third center in the D layer (in general do both of these each time focusing on something different from the report). You choose good options for pieces generally, which is a clear strength.

For your fourth center, you of course do need to do triggers since you have to constantly fix the third center. However, your choice of triggers causes you to rotate excessively, and as a result you lose flow of the solve. Kind of like the third center, at this stage hold your fourth center on the D layer. Most of your trigger choices should involve R U or #R U moves, and occasionally and R D trigger. There's never a reason to hold the fourth face out of the D layer and do R U moves on that face etc. You should adjust the orientation of the face using D moves, which you can do using a regripless rotation described earlier. I believe you will pause much less after implementing these techniques since you can track pieces in front of you, but if not, then try to better *memorize* the orientation of the face you are solving so you can focus exclusively on lookahead better. Untimed solves will help a lot here – try looking at the face once and then making the next couple pairs for as long as possible before looking at the face again.

Last two centers – this is always the hardest part of the solve to make efficient, but once you do so times drop heavily. I'll be giving you a bunch of examples in the solve specific section here, but in general for this stage, get your hands on as many top solves and walkthroughs as possible. Mentally document each new idea you learn and play around with the puzzle to see if you can generalize the case. I'm going to link Meep's last bar cases in the resources – I wouldn't

recommend memorizing per se, but rather internalizing the move choices for some of the cases and *figuring out the rest yourself* (note these never involve rotations). As a general rule you should never do more than one trigger per pair on the first two bars, which you don't follow some of the time. Also, if you need to do an F move to insert a pair into the F face, you don't need to regrip to do so – keep your left hand in the same position as you will flow better that way. Your general hand position is correct here, so good job on that.

Solve Specifics:

- Solve 1: You should have inserted the orange 3x1 with a U 2R to form a “T”. Then use D moves to orient the last center-edge to insert with 2R2 U 2R2. For the white center, insert the last pair with 3R U' 3R' to avoid a rotation. For last white bar, do 2R U' 2R' U 2R2 U2 2R2 to avoid rotation and for better flow. Last center: F U 2R' F 2R2 U 2R' U' 2R U2 2R'.
- Solve 2: Second blue bar F2 2R' F 3R2 much faster.
- Solve 3: First blue bar: U' 2R' F 2R U 2R. And no need for first 'R' when inserting last blue bar. Also in that case I would have paired up the last green pair before finishing my 4th center and then got a 2gen case – that's quite advanced but something to think about for sure. But in your case: last green pair do R U R' no need for F moves and rotations.
- 41 second center pre solve 5: do last bar with 2R U' 2R' U 2R U2 2R' – similar to earlier case.
- Solve 5: Solid move choice on this one generally. Just use more R U moves and fewer L turns and rotations – check out walkthroughs with this in mind.

First 8 Edges: This is the most important part of a 5x5, and probably the hardest to master. For starters – stop slicing you 2D moves and instead do a 2D move (including the D layer) with your ring finger. This will allow you to flow better. For the flipping algorithm, don't regrip and instead use your thumb for the F' move. At your speed, I'd also recommend solving all the edges into one layer before moving to the next. However, in order to not compromise on flow, insert edges into the D layer with R' D R with the empty slot in front. If you're having a really hard time with the first *four* edges, filter white/yellow edges for the first *four*. This will decrease your rotations drastically and will as a result improve your lookahead a ton. Once you're near the 1:00

territory you may want to start doing both layers, but a gradual transition then isn't hard to do. You do a good job of finding premade edges, so keep doing that! As I mentioned during centers, *practice looking around the cube without changing hand position*. This is probably the most important tip I can give you here. As a result, you will fumble less, and be able to lookahead in a smoother fashion. To understand how to do this better, watch fast solvers and see how they look for pieces around the cube (Feliks or Bill Wang probably your best bets). Also – look at Kevin's Tuesday Tip (to be linked) on back inserts and start implementing those. As a practice drill, I'd recommend doing untimed slow solves, where you turn very slowly during F8E but do not pause at all. Choosing good options is important, but it's something you're clearly good at so for now focus more on doing what you see and minimizing pauses and once you're comfortable start to pick better options again. During untimed solves, also practice seeing all three edge pieces before solving the edge as another drill. Unfortunately, this is the least technical part of the solve (solve specifics wouldn't help much here), and the most improvement really just comes from focused practice and better recognition, but the tips in here will help a bunch!

Last 4 Edges: First of all, it's excellent that you're taking risks using cycles. Many procrastinate on this before it's too late and becomes very difficult, but you're doing a great job. You do them at appropriate times as well. However, you do tend to rotate quite a bit: I'd recommend using R U R2 y' to set up into cycle position, and then you have everything in the U and F layers. If you need to slice-flip-slice, you can insert the corresponding edge into FL or FR and perform it there rather than fumbling around looking for it. Only if you *immediately* see an opportunity for an M' U2 M insert (either the case itself or everything is unsolved), do it at the start by performing a z rotation first and then using x rotations to get to the target piece. However, once you do R U R2 to set up to cycles, you can just solve the case by inserting and doing an E slice cycle. So, for now as a rule of thumb I would start you L4E with an R U R2 y' so you basically never have to rotate. Since you're good with cycles I'm not worried that you'll be inefficient with this set up. However, make sure to do a fair number of untimed solves so you can familiarize yourself and best approach your move choices within this set up, which may be a bit different from what you're currently doing. Remember to insert edges with (R/L) (U/U'/U2) (R'/L') when in the cycle position (post R U R2 set up). Also, I'd recommend getting on last 2 edge algorithms as soon as possible, and I'll link Meep's site for those in the references. You basically want to force

a good last 2 edge case by using cycles, which can save you much more time than you may think. This is something you're going to have to play around with a bit – so I'd recommend watching top solvers' walkthroughs to get a better sense of it. When you're closer to the 1:00 region you may want to consider more pre – R U R2 cases, at which point you should look at good walkthroughs to decide when to do it. Also, don't forget to implement “rotations without regrips” that I've been talking about throughout the analysis at this stage. That would definitely help you here.

Solve Specifics:

- Solve 1 was actually perfect in terms of moves (except L' instead of R U R' for the last cycle set up). Great job! However, like I said, the rotations were largely unnecessary at many points, so get used to cycle position.
- Solve 2 and 3: You got a bit lucky there so I can't complain about the moves, but same issue with the rotations. You could have done an R2 instead of a flipping set up for the second edge on the second solve, however.
- Last solve: Could have done a very fast last two edge algorithm which would've saved you about 5 seconds.

3x3 Stage: Obviously this part improves best from 3x3 practice, but in general you do a very good job of using more RUF moves than you would on 3x3. Try avoiding wide moves though, and for your hand size you may want to wrist turn you're A Perm D2 moves. To improve here, I suggest watching some fast solves and see how the solvers choose to approach their 3x3 stage move choices.

References:

5x5 algorithms: <https://meep.cubing.net/5x5.html>

Tuesday Tips:

https://www.youtube.com/watch?v=2PAjYCzzuso&list=PLjUDKtvFU6ciyTvv_2RextBE_tbHd3Ruu

5x5 Feliks walkthroughs: <https://www.youtube.com/watch?v=kCIF6ZgcM8k>

5x5 Kevin walkthroughs: https://www.youtube.com/watch?v=8wcxkCIXK_k

Tymon, JPerm and Nahm have some as well, but not as relevant as the first 2

5x5 Bill Wang good angle solves: <https://www.youtube.com/watch?v=6d0p-sZC-Pg>

5x5 Feliks good angle solves: <https://www.youtube.com/watch?v=pWbcfE24KSM&t=58s>

5x5 Max good angle solves: https://www.youtube.com/watch?v=0Ldz_sIBIHk

5x5 Nahm good angle solves: <https://www.youtube.com/watch?v=1SdwhnGvHs4>

Conclusion: Overall, you're making solid progress and it's clear you're putting in a lot of work. Follow the tips in this report and see where they take you. Ask me if any questions/clarifications. I think the biggest issue for you is rotations, hand positioning and hence flow, which is something you'll need to consciously work out before implementing in solves – a general technique. Once you feel you've pushed hard on most of the ideas in the report, message me for your (free) lesson. Good luck!