An In-Depth Comparison of US Chess Swiss pairings and FIDE Dutch System Swiss Pairings

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Acknowledgments

The example in this paper is taken from pages 65 through 92 of the 2014 FIDE Arbiters' Manual, which in turn is taken from a paper entitled “Mastering the Dutch” written by FA Mario Held available at http://pairings.fide.com/documents/99-mastering-the-dutch.html. The sample tournament worked through in that paper is a remarkably good demonstration of FIDE Dutch system Swiss pairing rules.

Introduction

In this paper, we will work through the pairings for a five round Swiss tournament with fourteen players:

Pairing Number	Name	Title	Rating
1	Alice	GM	2600
2	Bruno	IM	2500
3	Carla	WGM	2400
4	David	FM	2400
5	Eloise	WIM	2350
6	Finn	FM	2300
7	Giorgia	FM	2250
8	Kevin	FM	2250
9	Louise	WIM	2150
10	Marco	CM	2150
11	Nancy	WFM	2100
12	Oskar		2100
13	Patricia		2050
14	Robert		2000

We can already note one difference between US Chess rules and FIDE rules in this table. According to US Chess rules, players with equal ratings are assigned pairing numbers randomly. FIDE specifies that players are ranked first by score, then by title (GM, IM, WGM, FM, WIM, CM, WFM, WCM, untitled), and then alphabetically. Note that Carla (3) and David (4) have equal ratings, but Carla's WGM title takes precedence over David's FM title. Giorgia (7) and Kevin (8) have the same title (FM), so they are sorted alphabetically. WIM Louise (9) and and CM Marco (10) are sorted by title, as are WFM Nancy (11) and Oskar (12).

For the rest of this paper, we will only refer to players by pairing numbers.

Notation

In this paper, we will vary from the notation for color preference used in the FIDE Arbiters' Manual and the original paper by FA Held. In the original paper, the notation “w” was used to indicate the player had a weak color preference for white (needs white for alternation) when pairing odd-numbered rounds, but that the player has a strong color preference for white (needs white for equalization) when pairing even-numbered rounds. The notation “B” indicates the player has an absolute color preference for black (to avoid either having black in three consecutive rounds or having three more blacks than whites). The author finds the round-dependent meaning of “w” and “b” confusing. We will therefore use the notation for due color that is used by the two major pairing programs used in the United States, SwissSys and WinTD. In this notation, “w” and “b” indicates a player has a mild color preference (needs the color for alternation); “W” and “B” indicates a player has a strong color preference (needs the color for equalization); “WW” and “BB” indicates a player has an absolute color preference.

We also need a notation to indicate a player's floats.

↑	The player had an upfloat in the previous round.
↓	The player had a downfloat in the previous round.
-↑	The player had an upfloat two rounds ago and no float in the previous round.
-↓	The player had a downfloat two rounds ago and no float in the previous round.
↑↓	The player had a downfloat two rounds ago and an upfloat in the previous round.
↓↑	The player had an upfloat two rounds ago and an upfloat in the previous round.

Round 1

For the first round, US Chess pairing rules and FIDE Dutch system pairing rules are the same. We assume that the higher rated player receives white on board one. So, the pairings are 1-8, 9-2, 3-10, 11-4, 5-12, 13-6, and 7-14.

Assume that the higher rated players all win their game, except the game 11-4 is drawn.

Round 2

The one point score group consists of these players (with their color preference): {1B, 2W, 3B, 5B, 6W, 7B}. The one-half point score group includes {4W, 11B}. The zero point score group includes {8W, 9B, 10W, 12W, 13B, 14W}.

Note: Player 12 has previously informed the arbiter that he will be unable to play the second round, so he will receive a zero point bye (unplayed round), as the tournament in question does not offer half point byes.

US Chess pairings

In the one point score group, we have four players with color preference B and two players with color preference W. Thus, one player will not receive due color. The difference in ratings between players 1 and 2 is 100, as is the difference between players 2 and 3. The difference in ratings between players 5 and 6 is 50, as is the difference between players 6 and 7. Thus, the director will make an arbitrary choice to either transpose players 4 and 5 or players 5 and 6 to improve color allocation, leading to either 5-1 2-7 6-3 or 6-1 2-5 7-3. (While the two possible transpositions have equal differences, an experienced director would likely choose the latter pairings, correcting the color problem on the higher boards in the score group. It is reasonable to assume that the higher rated players will be in higher score groups as the tournament progresses. The score groups closer to the extremes later in the tournament are likely to be smaller than score groups closer to the middle of the crosstable, and it is generally harder to correct color problems in smaller score groups.)

The two players in the one half point score group have already met, so they will be paired against two players from the zero point score group. The difference in ratings between players 8 and 9 is 100 points, which satisfies the 200 point limit for transpositions made for equalization. So, the director will pair 9-4 and 8-11. This leaves players 10W, 13B, and 14W to pair (remember, player 12 is unpaired for this round). The director will pair 10-13 and assign the bye to player 14.

FIDE pairings

The pairing logic for FIDE is quite similar to the logic for US Chess rules. The one point score group is a *homogeneous* score bracket (all players have the same score) comprising six players. The number of pairings P to be made is 3. There are four players due black and two due white, so the number of players X who will not receive due color in optimal pairings is the value of P minus the lesser of the number of players due white and the number of players due black. In this case, X = 3 – 2, or 1.

We divide the one point score group into S1 = {1B, 2W, 3B} and S2 = {5B, 6W, 7B}. We then pair 1 with 5, 2 with 6, and 3 with 7, giving three color allocation problems. Because X equals 1, these pairings are not acceptable. We must try the permutations of (5, 6, 7) **in the following order** to produce pairings that satisfy the constraint:

- (5, 6, 7)
- (5, 7, 6)
- (6, 5, 7)

- (6, 7, 5)
- (7, 5, 6)
- (7, 6, 5)

The transposition (5, 7, 6) of S2 produces the pairings 5-1, 2-7, 6-3, with one color allocation issue. Thus, we are done pairing the one point score group.

The one half point score group contains {4W, 11B}. These players are *incompatible* because they have already met. (A player is *incompatible* with a score group is that player has already met all the other players in the score group.) It is therefore impossible to make any pairings in this score group, and we must give both players a downfloat to the next score group.

The zero point score group contains the players {8W, 9B, 10W, 13B, 14W} (remember, player 12 is not to be paired for this round). When we float the two players from the half point score group down, we create a *heterogeneous* score group. To pair the heterogeneous score group, we put players {4W, 11B} in S1, and we set S2 = {8W, 9B, 10W, 13B, 14W}. We set P = 2 (the number of players downfloated). As the number of players due white is 4 and the number due black is 3, we set X = 0. (Whenever the calculation of X produces a negative value, we set X to zero.) This means we must produce two pairings with no color allocation problems. The first pairings we try are 4 with 8 and 11 with 9, but those yield two color problems. We must apply transpositions, again in a very specific order which affects the bottommost possible players in S2 and leaves as many of the topmost players in S2 as possible unaffected. It is clear that altering the order of players 10, 13, and 14 will make no difference, so the first transposition we try that does make a difference is (9, 8, 10, 13, 14). That does give us two pairings with no color issues, so we pair 4-9 and 8-11. We also note that players 4 and 11 have received a downfloat, while players 8 and 9 have received an upfloat.

Once we have made these pairings, we have a homogeneous *remainder* score group containing {10W, 13B, 14W}. Without belaboring the point, P = 1, X = 0, and the pairing 10-13 is immediate. We give player 14 the bye **and record the downfloat** for player 14.

We now have the following pairings and results:

White	**Result**	**Black**
5	1-0	1
2	1-0	7
6	½-½	3
4	1-0	9
8	0-1	11
10	1-0	13
14	BYE	

The crosstable after the second round is:

1	W 8	B 5	1
2	B 9	W 7	2
3	W 10	B 6	1 ½
4	B 11	W 9 ↓	1 ½
5	W 12	W 1	2
6	B 13	W 3	1 ½
7	W 14	B 2	1
8	B 1	W 11 ↑	0
9	W 2	B 4 ↑	0
10	B 3	W 13	1
11	W 4	B 8 ↓	1 ½
12	B 5	----	0
13	W 6	B 10	0
14	B 7	BYE ↓	1

Round 3

Our score groups (including due color and float information) are now:

- 2.0: {2b, 5BB}
- 1.5: {3w, 4b↓, 6b, 11w↓}
- 1.0: {1w, 7w, 10b, 14W↓}
- 0.5: {}
- 0.0: {8b↑, 9w↑, 12W, 13w}

US Chess pairings

The pairing 2-5 for the 2.0 score group is immediate.

In the 1.5 score group, the natural pairings are 3-6 and 11-4. However, players 3 and 6 met in the second round, and players 4 and 11 met in the first round. The director might try transposing players 6 and 11, but this leads to two color allocation problems. Making an interchange of player 4 from the top half and player 6 in the bottom half yields the pairings 3-4 and 11-6, with no players meeting again and no color allocation problems.

In the 1.0 score group, there are three players due white and one player due black, so there must be at least one color allocation problem. The natural pairings are 1-10 and 14-7, but players 7 and 14 met in the first round. Transpose players 10 and 14 to produce the pairings 14-1 and 7-10, with no players meeting again and one color alternation problem (the best we can do).

Finally, in the zero point score group, there are three players due white and one due black, so again there will be at least one color allocation problem. The natural pairings 12-8 and 9-13 have no players meeting a second time and one color alternation problem, so there is no available improvement.

FIDE pairings

In the 2.0 score group, S1 = {2b}, S2 = {5BB}, P = 1, there are two players due black and none due white, so X = 1. The pairing 2-5 has one color allocation problem, so we are done.

In the 1.5 score group, S1 = {3w, 4b↓}, S2 = {6b, 11w↓}, P = 2, there are two players due white and two due black, and X = 0. Players 3 and 6 have already met, and players 4 and 11 have already met. Thus, the pairings 3-6 and 11-4 are not allowed. We must try transpositions of S2, but the only transposition is (11, 6). Pairing 3 with 11 and 4 with 6 produces two color issues, but X is zero. So, with all posssible transpositions of S2 failing to produce acceptable pairings, we must try an interchange between S1 and S2 and restart the pairing process. The first exchange we try is to switch player 4 from S1 and player 6 from S2. We then sort S1 and S2, so that S1 = {3w, 6b} and S2 = {4b↓, 11w↓}. The pairings 3-4 and 11-6 have no players meeting a second time and no color issues, so we re done.

In the 1.0 score group, S1 = {1w, 7w}, S2 = {10b, 14W↓}, P = 2, there are three players due white and one due black, and X = 1. The pairings 1-10 and 14-7 are unacceptable because players 7 and 14 have already been paired in the first round. Therefore, we apply the transposition (14, 10) to S2. The pairings 14-1 and 7-10 do not have any players meeting a second time and one color allocation, so we are done.

In the 0.0 score group, S1 = {8b↑, 9w↑}, S2 = {12W, 13w}, P = 2, there are three players due white and one due black, and X = 1. The pairings 12-8 and 9-13 satisfy the constraints.

The US Chess and FIDE pairings are identical for this round. The pairings and results for the third round are:

White	Result	Black
2	½-½	5
3	½-½	4
11	0F-1F	6
14	0-1	1
7	1-0	10

White	Result	Black
12	½-½	8
9	1-0	13

The crosstable after the third round is:

1	W 8	B 5	B 14	2
2	B 9	W 7	W 5	2 ½
3	W 10	B 6	W 4	2
4	B 11	W 9 ↓	B 3	2
5	W 12	W 1	B 2	2 ½
6	B 13	W 3	X ↓	2 ½
7	W 14	B 2	W 10	2
8	B 1	W 11 ↑	B 12	½
9	W 2	B 4 ↑	W 13	1
10	B 3	W 13	B 7	1
11	W 4	B 8 ↓	F	1 ½
12	B 5	----	W 8	½
13	W 6	B 10	B 9	0
14	B 7	BYE ↓	W 1	1

Note that the FIDE rules require the forfeit win for player 6 to be treated as a downfloat. The corresponding forfeit loss for player 11 is not treated as an upfloat.

Round 4

The score groups are now:

- 3.0: {}
- 2.5: {2BB, 5B, 6b↓}
- 2.0: {1WW, 3B, 4W-↓, 7B}
- 1.5: {11w-↓}
- 1.0: {9B-↑, 10W, 14b-↓}
- 0.5: {8W-↑, 12b}
- 0.0: {13WW}

Player 11 has adequately explained the reason for his forfeit in the third round, so he remains in the tournament.

US Chess pairings

In the 2.5 score group, players 2 and 5 have already met in the third round. So, the pairing 6-2 is immediate, and player 5 is the odd player dropped to the next score group. Player 5 has already been paired with player 1 in the second round. Player 3 is also due black. Player 4 is due white, and player 4 is within the 200 point limit (compared to player 1) for transpositions to improve color equalization. The director thus pairs 4-5. Players 1 and 3 have not yet met, so the director also pairs 1-3 and treats player 7 as the odd player dropped to the 1.5 score group. Players 7 and 11 have not met, so the pairing 11-7 is immediate. In the 1.0 score group, players 9 and 10 have not met, so the director pairs 10-9 and treats player 14 as the odd player to drop to the 0.5 score group. Players 14 and 8 have not met, so the director pairs 8-14, leaving the pairing 13-12 (which is acceptable, as players 12 and 13 have not met). The US Chess pairings are therefore 6-2, 4-5, 1-3, 11-7, 10-9, 8-14, 13-12.

FIDE pairings

In the 2.5 score group, S1 = {2BB}, S2 = {5B, 6b↓}, P = 1, there are three players due black and none due white, and X = 1. Pairing players 2 and 5 is unacceptable for two reasons. First, players 2 and 5 have already been paired in the third round. Second, player 6 had a downfloat in the previous round and may not have another downfloat. We must therefore try the transposition (6, 5) of S2. The pairing 6-2 with player 5 receiving a downfloat satisfies the pairing criteria, so this score group is done.

The downfloat for player 5 creates a heterogeneous score group, so we set S1 = {5B} and S2 = {1WW, 3B, 4W-↓, 7B}. Here, P = 1 and X = 0. Pairing players 1 and 5 is not allowed, as these players were paired in the second round. Therefore, we must apply transpositions to S2 in a specific order. None of the transpositions (1, 3, 7, 4), (1, 4, 3, 7), (1, 4, 7, 3), (1, 7, 3, 4), or (1, 7. 4, 3) resolve the problem. Next, we try the transposition (3, 1, 4, 7). Players 3 and 5 are both due black, but X = 0, so this pairing is not acceptable Again, none of the transpositions (3, 1, 7, 4), (3, 4, 1, 7), (3, 4, 7, 1), (3, 7, 1, 4), or (3, 7, 4, 1) do anything to fix this problem. The next transposition we must try is (4, 1, 3, 7). Players 4 and 5 have not yet been paired, and they are due opposite colors. So, we pair 4-5, and we have a homogeneous remainder score group of {1WW, 3B, 7B} to pair. We set S1 = {1WW} and S2 = {3B, 7B}. Here, P = 1, there is one player due white and two due black, and X = 0. The pairing 1-3 is acceptable, and 7 is eligible for a downfloat, as the player has had no float in the previous two rounds.

The downfloat for player 7 produces another heterogeneous score group, so we set S1 = {7B} and S2 = {11w-↓}. Players 7 and 11 have not been paired previously. Player 11 had a downfloat two rounds ago and no float in the previous round, so player 11 is eligible for an upfloat in this round. The arbiter thus pairs 11-7.

In the 1.0 score group, we set S1 = {9B-↑} and S2 = {10W, 14b-↓}. Here, P = 1, there are two player due black and one due white, and X = 0. While players 9 and 10 have not been paired in a previous round, player 14 had a downfloat two rounds ago and is not eligible to receive a downfloat in this round. We try the transposition (14, 10) of S2, but pairing 9 and 14 creates one color problem, which is not acceptable because X = 0. As we have no more transpositions available, we must make an interchange and start over. The first interchange we must try is to switch player 9 in S1 and player 10 in S2. This gives S1 = {10W}, S2 = {9B-↑, 14b-↓}. Again, we can't give player 14 a downfloat, so we apply the transposition (14, 9) to S2. Players 10 and 14 have not yet been paired, and player 9 is eligible for a downfloat (having had an upfloat two rounds ago and no float in the previous round). So, the arbiter pairs 10-14.

The downfloat of player 9 creates another heterogeneous score group, so we set S1 = {9B-↑} and S2 = {8W-↑, 12b}. Here, P = 1, two players are due black, one is due white, and X = 0. But we cannot pair players 8 and 9 because player 8 received an upfloat two rounds ago. We cannot pair players 9 and 12 because they are both due black, but X = 0. Transposing S2 does not help. Also, this is a heterogeneous score groups, and interchanges do not apply to heterogeneous score groups.

It appears we have reached an impasse and cannot pair this score group. When this happens, we relax the pairing restrictions, starting with the lowest priority restrictions (floats). We must relax the restrictions on floats in a specific order.

1. Allow players who received an upfloat two rounds ago to receive an upfloat.
2. Allow players who received an upfloat in the previous round to receive an upfloat.
3. Allow players who received a downfloat two rounds ago to receive a downfloat.
4. Allow players who received a downfloat in the previous round to receive a downfloat.

We restart the pairing procedure with S1 = {9B-↑} and S2 = {8W-↑, 12b}. We still have P = 1 and X = 0. Because we are now allowing players who received an upfloat two rounds before to receive an upfloat, pairing players 8 and 9 is allowed, and there is no color conflict. So, the arbiter finally pairs 8-9 and gives player 12 a downfloat.

The downfloat of player 12 produces a heterogeneous score group with S1 = {12b} and S2 = {13WW}. Players 12 and 13 have not yet been paired, the colors are compatible, and there are no float issues. So, we pair 13-12.

Finally, the pairings and results for round 4 are:

White	Result	Black
6	0-1	2
4	½-½	5
1	1-0	3

White	Result	Black
11	1-0	7
10	½-½	14
8	½-½	9
13	1-0	12

The crosstable after the fourth round is:

1	W 8	B 5	B 14	W 3	3
2	B 9	W 7	W 5	B 6	3 ½
3	W 10	B 6	W 4	B 1	2
4	B 11	W 9 ↓	B 3	W 5 ↑	2 ½
5	W 12	W 1	B 2	B 4 ↓	3
6	B 13	W 3	X ↓	W 2	2 ½
7	W 14	B 2	W 10	B 11 ↓	2
8	B 1	W 11 ↑	B 12	W 9 ↑	1
9	W 2	B 4 ↑	W 13	B 8 ↓	1 ½
10	B 3	W 13	B 7	W 14	1 ½
11	W 4	B 8 ↓	F	W 7 ↑	2 ½
12	B 5	----	W 8	B 13 ↓	½
13	W 6	B 10	B 9	W 12 ↑	1
14	B 7	BYE ↓	W 1	B 10	1 ½

Round 5

The score groups are now:

- 3.5: {2w}
- 3.0: {1b, 5WW↓}
- 2.5: {4b↑, 6BB-↓, 11B↑}
- 2.0: {3w, 7w↓}
- 1.5: {9w↓, 10b, 14W}
- 1.0: {8b↑, 13b↑}
- 0.5: {12W↓}

US Chess pairings

Player 2 is the only player in the 3.5 score group, so he must be paired against an opponent from a lower score group. Player 2 has not been paired against player 1 yet, and the two players are due opposite colors, so the director pairs 2-1. This leaves player 5 as the odd player to drop to the next score group. Players 4 and 5 have already met in the third round. Player 5 has not yet been paired against player 6, and they are due opposite colors, so the director would normally pair 5-6. However, players 4 and 11 have already met in round 1, so pairing 5 and 6 leaves no way to pair the rest of the 2.5 score group. The director thus pairs 5-11 and 4-6. Players 3 and 7 have not yet met, so the 2.0 score group is paired as 3-7. Players 9 and 10 have not yet met and are due opposite colors, so the director pairs 9-10 and drops player 14 down. Player 14 has not been paired against player 8 yet, and the colors work, so the director pairs 14-8. This leaves players 12 and 13, who have already met. So, instead, the director tries pairing 14-13 (who have not yet met), leaving players 8 and 12, who have also already met.

Because player 12 (the sole player in the 0.5 score group) has already been paired against all the players in the 1.0 score group, player 12 must be paired against an opponent with at least 1.5 points. Player 12 has not yet been paired against player 14, but if we pair these two players, there will be a color equalization problem. (Players 8 and 13 have not been paired yet, and there will be an unavoidable color alternation problem in that score group as both players are due black.) To avoid the color equalization problem, the director goes back and undoes the 9-10 pairing. Players 9 and 14 have not yet been paired, and if the director pairs 14-9, there is a color alternation problem. Players 10 and 12 have not yet been paired, the colors work, and the difference in rating between players 10 and 14 is 150, which is within the 200 point transposition limit for correcting color equalization problems. Thus, the pairings on the last three boards are 14-9, 12-10, and 13-8. (Remember: when both players have an equal claim to due color, the director refers first to the color history of both players and assigns the opposite colors to what the players had in the most recent round in which there is a difference. Player 8's color history is BWBW, and player 13's is WBBW. The most recent round in which there is a difference is round 2, so player 13 receives white and player 8 receives black. Only if the color histories are identical does the director then assign due color to the higher ranked player (first by score, then by rating).)

So, the US Chess pairings for the final round are 2-1, 5-11, 4-6, 3-7, 14-9, 12-10, and 13-8.

FIDE pairings

As the 3.5 score group contains only one player, no pairings can be made in that score group, and player 2 must be given a downfloat. That gives us a heterogeneous score group containing players 1, 2, and 5. Player 5 has already been paired against both players 1 and 2. So, player 5 is *incompatible* with the score group and must be given a downfloat, as it is impossible to pair player 5 within the score group. (The fact that player 5 had a downfloat in the previous round does not matter. The prohibition against pairing players more than once has topmost priority and overrides the ban on consecutive identical floats.) This leaves us with S1 = {2w} and S2 = {1b}, so the arbiter immediately pairs 2-1. (There is no issue with floats, as neither player has received a float in the previous two rounds. Even if there were an issue with floats, there are no transpositions of S2 available, so the arbiter would simply end up relaxing the constraints on floats until the two players are paired.)

As player 5 has been given a down float (being incompatible with the score group), we now have a heterogeneous score group with S1 = {5WW↓} and S2 = {4b↑, 6BB-↓, 11B↑}, with P = 1 and X = 0. Players 4 and 5 have already been paired, and the transposition (4, 11, 6) of S2 does not help. The next transposition to try is (6, 4, 11). Players 5 and 6 have not yet been paired, and they are due opposite color, so the arbiter pairs 5-6, leaving the homogeneous remainder score group {4b↑, 11B↑}, for which P = 1 and X = 0. However, players 4 and 11 have already been paired, so we can make no pairings in the remainder score group.

When we can not pair a remainder score group in a manner that satisfies the pairing constraints, we must terminate pairing the remainder score group, go back to the heterogeneous score group, and restart the pairing process from the next transposition to try. That transposition is (6, 11, 4), which leaves us with the same problem of a remainder score group of players 4 and 11. We then try the transposition (11, 4, 6) of S2, giving S1 = {5WW↓} and S2 = {11B↑, 4b↑, 6BB-↓}. This does not work because player 11 had an upfloat in the previous round and cannot receive another upfloat. The final transposition of S2, (11, 6, 4), does nothing to solve the problem. Thus, no transposition of S2 allows us to successfully pair the heterogeneous score group.

Because this is a heterogeneous score group, we do not attempt interchanges between S1 and S2. Instead, we start relaxing the pairing criteria. The first step is to relax the restriction on players receiving an upfloat who had an upfloat two rounds before. Loosening that restriction has no effect on the above analysis, and we still cannot pair the score group. So, the next step is to relax the restriction on players receiving an upfloat who had an upfloat in the previous round. This time, in the above analysis, we can pair players 5 and 11, leaving the homogeneous remainder group {4b↑, 6BB-↓}. Here, P = 1, X = 1, and players 4 and 6 have not yet been paired. So, the arbiter pairs 4-6.

We now pair the 2.0 score group, with S1 = {3w} and S2 = {7w↓}. We have P = 1 and X = 1, and players 3 and 7 have not yet been paired. Players 3 and 7 both have a mild color preference for white (needed for alternation), and both players have identical color history. So, the arbiter gives due color to the higher ranked player and pairs 3-7.

Turning our attention to the 1.5 score group, we have S1 = {9w↓} and S2 = {10b, 14W}. P = 1 and X = 0. Players 9 and 10 have not yet been paired, and player 14 has not had any float in the previous two rounds. So, the arbiter pairs 9-10 and gives player 14 a downfloat. This produces the heterogeneous scoregroup S1 = {14W}, S2 = {8b↑, 13b↑}, with P = 1 and X = 0. Before we start trying to make pairings, we note that both players in S2 have had an upfloat in the previous round. If we were to proceed with a full analysis, we would conclude that transpositions do not allow us to pair the score group, and relaxing the restriction on giving players an upfloat who received an upfloat two rounds earlier also does not help. So, we immediately accept that we must relax the constraint on giving players an upfloat who received an upfloat in the previous round. That allows us to pair 14-8 and give player 13 a downfloat. This leaves us trying to pair S1 = {13b↑} and S2 = {12W↓}, but these players have already been paired.

We must now backtrack to the last score group paired (which was the heterogeneous score group with S1 = {14W}, S2 = {8b↑, 13b↑}) and try again with a different pairing. As a reminder, we had eased the restriction on players receiving two consecutive upfloats, and we had not yet made any transposition to S2. We now try the transposition (13, 8). We pair 14-13 (who have not yet been paired) and give player 8 a downfloat, producing the heterogeneous score group S1 = {8b↑}, S2 = {12W↓}. As players 8 and 12 have already been paired, they too are incompatible.

Now we have a serious problem. No matter what we do, we can not pair the heterogeneous score group with S1 = {14W} and S2 = {8b↑, 13b↑} in a way that allows us to pair the lowest score bracket of {12W↓}. When we reach a situation where we can not pair the last score group, we resolve the situation by backtracking. More specifically, we give up our attempt to pair the next to last (penultimate) score group and merge the next to last score group and the last score group into one heterogeneous score group, where S1 contains the penultimate score group and S2 contains the lowest score group. In the current situation, this gives us S1 = {14W, 8b↑, 13b↑} and S2 = {12W↓}. (The reader should pay attention to the ordering of the players in S1. The correct ordering is (14, 8, 13), not (8, 13, 14). Players are ordered first by score and only then by pairing number.)

When we have a heterogeneous score group with more players in S1 than in S2, we are supposed to treat the score group as though it were homogeneous. This means that we divide the score group into even halves, with the higher ranked players in S1 and the lower ranked players in S2. It also means that we may apply interchanges between S1 and S2 to try to make pairings that satisfy the pairing criteria. In the current case, that yields S1 = {14W, 8b↑} and S2 = {13b↑, 12W↓}, with P = 2 and X = 0. Instead of systematically trying transpositions and interchanges, we can observe that the only player with whom player 12 has not yet been paired in this score group is player 14, leaving players 8 and 13 to be paired. The color histories of players 12 and 14 are identical; player 8 has had BWBW, while player 13 has had WBBW. (Note carefully: under US Chess rules, when comparing color history, we leave unplayed rounds where they are in the history; under FIDE Dutch system rules, we move unplayed rounds to the front of the player's color history, effectively compressing the played rounds. So, although player 14 and player 12 have both had BxWB, we must compare them as though they have xBWB.) So, we pair 14-12 and 13-8.

In order to accept the pairings 14-12 and 13-8, we have skipped many steps. Note that there are two color allocation issues, but X = 0. Thus, we have had to relax many of the pairing criteria, in the following order:

1. Relax the restriction against giving an upfloat to a player who received an upfloat two rounds before.

2. Relax the restriction against giving an upfloat to a player who received an upfloat in the

previous round.

3. Relax the restriction against giving a downfloat to a player who received a downfloat two rounds before.

4. Relax the restriction against giving a downfloat to a player who received a downfloat in the previous round.

5. Increase X by 1 and restart the pairing procedure. If we still cannot pair the score group, continue increasing X by 1 until either we can pair the score group or X is greater than P.

To finally arrive at the pairings 14-12 and 13-8, we had to increase X twice, until we had P = 2 and X = 2.

So, the FIDE pairings for the final round (and results) are:

White	Result	Black
2	0-1	1
5	1-0	11
4	½-½	6
3	1-0	7
9	½-½	10
14	1-0	12
13	½-½	8

Summary of pairing differences

- In round 1, the US Chess and FIDE pairings are identical.

- In round 2, the US Chess and FIDE pairings may be the same or may differ. For the US Chess pairings, the director has an arbitrary choice of which transposition to make in the top score group. As explained in the text, an experienced director is likely to choose the transposition that causes the US Chess and FIDE pairings to differ.

- In round 3, the US Chess and FIDE pairings are identical.

- In round 4, the US Chess and FIDE pairings are different owing to float considerations.

- In round 5, the US Chess and FIDE pairings are different owing to the manner in which backtracking is specified in the FIDE Dutch system pairing rules. (Once the arbiter has given player 14 a downfloat, the arbiter does not revisit that decision unless it is impossible to pair the remaining players with player 14 having a downfloat.)

Final observations

The sample tournament does not demonstrate the use of the pairing parameter Z. In even numbered rounds, Z represents how many strong color preferences (a color needed for equalization) cannot be met. The parameter X represents how many color preferences in total cannot be met, so Z is always less than or equal to X. The parameter Z was added to the Dutch system pairing rules in 2013. In the 2017 proposed revision, Z will be computed and used for all rounds, whether even- or odd-numbered.