Etude 13 Two Tales

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A League Table

Team	Played	Won	Lost	Drawn	For	Against
A	1	0	1	0	1	2
B	1	0	1	0	0	5
C	2	1	1	0	7	4
D	2	1	1	0	2	2
E	2	2	0	0	5	2

(Blue = worked out results, Black = given results

B can't have won a game (won = 0) because they haven't scored any goals and the game that they lost would have had to have a score of 5 - 0. There are only 2 teams to have scored at least 5 goals, team C and team E. If team E had played B and won 5-0 they wouldn't have any more for goals to be able to win the other game that we know they won so E can't have played B. Therefore the only option for B is that they played against C.
B 0 - C 5
Knowing that C has only played 2 games we can fill out their row with the win against B and no draws(won = 1, drawn = 0). We can also fill out B with 0 draws and 1 played as there is no other team for them to draw with(drawn = 0, played = 1). It also means that for the game C lost, the score would have been 4 -2 against them and the only other team to have scored at least 4 goals is team E. Therefore we know that C definitely played E.
C 2 - E 4
This leaves E with only 1 for goal and no against goals. This means that we know E can't lose any more games and we can fill out their row fully with that information(played = 2, lost = 0). We know B had no more against goals scored and E has just played C and so won't verse them again. This leaves the options for E's 1 - 0 game to be A or D. If E played A and won 1-0, that would leave A's goals being 1 for and 1 against but that would mean that they would either have to lose another game (which they can't) or draw a game (which they also can't). This leaves the 1-0 game to be played by E against D.
E 1 - D 0
This increases D's losses by 1 (lost += 1) and leaves their for and against goals being 2 for and 1 against. The only other team that they could play is team A, who happen to have 2 against and 1 for which matches perfectly with D's. this means that D had to have played A and won 2 - 1.
D 2 - A 1.
Knowing that there are no draws (which would be the only possible result given the scores) it allows us to finish the table with D playing 2 and losing 1 (played = 2, losses = 1) and A playing 1 and winning none (played = 1, won = 0)
With the table now full, we can confidently say that the League Commissioner is correct.

Hats, Hats, Hats

For C and D to know, they would both have to be sitting at the back so that they could see everyone elses hat
6 hats: BBB WWW
5 people: A B C D E
Example positions with hats: (back) 5B 4B 3B 2W 1W (front)
If you were in position 1 you would never know what colour hat you were wearing because the only clues that you could get are verbal ones of people knowing what hat they're wearing. This means that whoever was there would be quiet meaning that A or E would have had to have been there.
Pos 1 = A or E
Knowing that there was a pause, it means we can assume that the hats were slightly mixed because there would have been no pause if any of the people at the back saw 3 of the same colour in front of them. For example: (back) 5B 4W 3B 2B 1W (front) If you were in position 5 you wouldn't know what hat you were wearing because seeing all the people in front of you you would see that you have a 50/50 chance of wearing a black or white hat. This means that the person would never know and would stay quiet. This means that it would have to be A or E sitting at the back.
Pos 5 = A or E
Now that we know A and E are at either end, we can start thinking about the other positions. Taking into account the brief pause, being in position 4 we know now that 5 could see an even mix of hats in front of them and couldn't pick, if we can see at least 2 of the same colour in front of us then we know that we have to be the opposite and we would know what hat we're wearing. But 2 people said they know at the same time after the pause, this means that in position 3 they could also see 2 people with the same colour and would know that 5 paused and so would know that their hat would be the opposite of the 2 in front of them e.g. (back) 5B 4B 3B 2W 1W (front). The people in positions 4 and 3 would have had to be C and D as they were both the ones to speak at the same time after the pause.
Pos 4 = C or D
Pos 3 = C or D
Now the final position that we haven't looked at would be position 2. We know that B said they knew after the two that talked at the same time. And we can work out that this meant the B was in position 2 because for them both to say something after the pause then it would mean that the first 2 would have to be the same colour and being in position 2 you could see that you would have to be the same colour as position 1.
Pos 2 = B
So finally the ordering would be (back) (E or A), (C or D), (C or D), (B), (E or A) (front)
If we assumed that they kept their ordering then from back to front they would be E,D,C,B,A but it says that not all chair labels matched the names of the persons sitting on them so from back to front the orders could be A,D,C,B,E or E,C,D,B,A or A,C,D,B,E