WSDC 2015 Draw

1. Basics

This grid is based substantially on the grid structure which was developed by Simon Quinn and Christopher Erskine for WSDC 2010 and has been implemented at WSDC in the intervening years by Simon Quinn. Credit also to Derek Lande for inspiring and writing much of the analytics coding in 2013. Any errors present in either this explanation or in the attached grid structure are, however, the responsibility and fault of Paul Lau alone. I apologies in advance if any such errors exist.

Reading the grid: Each cell represents a debate. The first number represents the round in which the debate will occur. There is then a 2 letter code that refers to the position of the left team in debating the top team. For example, Team A1 will be Opposition against Team A2 in Round 8, an unprepared round.

[SHEET NAME] indicates the sheet that reflects the changes, adjustments or discussion point referred to in the explanation.
- Solid black bullet points list distortions or imbalances arising from the draw. All other lists are for other purposes.

Groups refer to the ranked groups (A, B, C, D, E, F, G and H).

Pools refer to groupings of teams made by the grid (The first pool is A1, H1, D1, E1, C6, F1, B1, G6).

Type of debate refers to whether a debate is of a prepared motion or an unprepared motion.

2. Criteria

These are the criteria that the draw should satisfy as far as possible, roughly in order of how easy it is to achieve not priority

	General Statement	Ideal Position	Notes
1	Every team has the same number of debates	Every team has 8 debates, 1 in each round	Column EM indicates how many debates a team has, ideally 8. Columns EC-EK count if a team has a debate in Rounds 1-0
2	Every team has the same number of prepared and impromptu debates	Every team has 4 each of prepared and impromptu debates	Column FC and FD indicate the number of prepared and impromptu debates respectively, ideally both 4
3	Every team debates as proposition and opposition the same number of times	Every team debates 4 times each as proposition and opposition	Column EZ and FA indicate the number of debates as proposition and opposition respectively, ideally both 4
4	Every team faces opponents of a similar strength and difficulty	Every team faces 1 opponent from each of groups A-H	Column EO-EV count how many times a team faces opponents from a certain group. Column EX summarizes this to represent the overall strength of the opponents faced. 36 represents 1 from each A-H, a higher number represents more high-seed opponents and a lower number represents more low-seed teams.
5	Every team has fair balance between type of debate and side of the debate	Every team has 2 each of Prepared proposition, Prepared opposition, Unprepared proposition and Unprepared opposition	Column FF-FI count number of debates in each combination of type and side, ideally all 2. In other words, this criteria aims to avoid a team having 4 Prepared debates as proposition and 4 Unprepared debates as opposition
6	Every team has fair balance between type of debate and strength of opponent	2 Prepared debates against A-D teams, 2 Prepared debates against E-H teams, 2 Unprepared debates against A-D teams, and 2 Unprepared debates against E-H teams	Column FN and FO indicate how many times a team faces an A-D opponent in a prepared and unprepared debate, ideally both 2. It is assumed that imbalances in E-H opponents faced is simply mirrored in the A-D imbalance. The exception is where a team faces more or less than 4 A-D teams, whose occurrence is indicated in column FM. In other words this criteria aims to avoid a team having 4 Prepared debates

			against their 4 higher-seeded teams and 4 Unprepared debates against their 4 lower-seeded teams
7	Every team has fair balance between side of the debate and strength of opponent	2 Proposition debates against A-D teams, 2 Proposition debates against E-H teams, 2 Opposition debates against A-D teams, and 2 Opposition debates against E-H teams	Column FK and FL indicate how many times a team faces an A-D opponent as proposition and opposition, ideally both 2. It is assumed that imbalances in E-H opponents faced is simply mirrored in the A-D imbalance. The exception is where a team faces more or less than 4 A-D teams, whose occurrence is indicated in column FM. In other words this criteria aims to avoid a team facing A-D teams only ever as Proposition and E-H teams only ever as opposition
8	Draw as a whole does not create sub-pools	The debates are spread as evenly and randomly across the whole grid. If A1 and A2 face each other at some point, they face different B-H teams.	At current we are only able to check this by visually examining the grid as a whole to see the extent of distribution of modules around the grid
9	Every team has debates on both sides in a given day	In any given day 1 debate is as proposition and 1 as opposition	Column HL-HO indicates whether a team has the same side in a given day/pair of rounds. 1 indicates 2 different sides, 0 indicates a repeated side
10	Teams do not need to change venues during the day	Modular structure[1] remains intact	Relevant only for R1 and R2 for WSDC 2015 Singapore. At present, this requires a visual examination about the extent to which the grid's modularity has been altered

3. The 52 team draw

The nearest multiple of four to 53 is to build a 52 team draw. I have taken a generic 48 team draw [48 team] and extended it to 52 teams [52 team].

52 teams gives us 4 sets of 13, AB represents the first 13 teams, CD represents the second 13 teams, EF represents the third 13 teams and GH represents the final 13 teams. For reasons related to the cannibal round (see later), groups B, C, F and G have 7 teams, whilst A, D, E and H have 6 teams.

This requires us to list teams in the grid slightly differently to reflect these new sets (AHDECFBG rather than AHBGCFDE).

Due to the cannibal round (see later), pools 1, 2, 6 and 7 are listed with an additional difference (emphasis added):

- Rather than   A1, H1, D1, E1, C1, F1, B1, G1
  They are listed: A1, H1, D1, E1, **C6**, F1, B1, **G6**
- Rather than   A6, H6, D6, E6, C6, F6, B6, G6
  They are listed: A6, H6, D6, E6, **C1**, F6, B6, **G1**

- Rather than   A2, H2, D2, E2, C2, F2, B2, G2
  They are listed: A2, H2, D2, E2, **C7**, F2, B2, **G7**
- Rather than: C7, F7, B7, G7
  They are listed: **C2**, F7, B7, **G2**

The extension to 52 teams creates the following distortions:

- C1, F6, B5, G5 face 2 C and 2 F teams in place of 2 A and 2 H teams.
- B6, G1, C5, F5 face 2 B and 2 G teams in place of 2 D and 2 E teams.

This is tolerable for two reasons. First, an extension to 52 teams adds a B, C, F and G team to the draw, making it inevitable we will have 56 debates involving B, C, F and G teams, as indicated in the totals at the top of column EO-EV. Second, the distortion does not affect the overall strength of the opponents that those teams face. Column EX shows that the overall strength of opponents faced remains 36 despite the distortions because they cancel/balance each other.

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[1] The modular structure means that blocks of 4 debates are clumped together, creating sets of 4 teams that debate within the set of 4 over the course of the two rounds on any given day. Provided those 4 teams are at the same venue and the modular structure remains, the need to change venues is eliminated in so far as venues accommodate multiples of 4 teams.

4. The 52 team cannibal rounds

Round 3 and 8 present a difficulty because these are rounds where teams debate other teams within their own 13 team set, but 13 being an odd-number would leave the 13th team without an opponent. I therefore drew on the adjustment made for WSDC 2010 which had a 56 team base. The fuller explanation is as follows courtesy of Simon Quinn and Christopher Erskine:

> *With 56 teams there are eight groups of seven teams. This works cleanly for every round except for the round where teams debate against a team from their own group. In that round, six of the seven teams in each group will have an opponent, but the seventh team will not.*
>
> *However, when we looked closely at the rankings, we found that there was very little to distinguish the seventh-ranked team in a group from the first-ranked team in the next group.[2]*
>
> *Therefore, if we ensure that the team in Pool A without an opponent from that group is the team ranked either sixth or seventh, and that the team in Pool B without an opponent from that group is the team ranked either eighth or ninth, we can arrange for those two teams to meet each other. That ensures that those two teams debate against a team of similar standard, even though the opponent is actually in the adjoining group.*
>
> *To do this, we must restrict the choice of teams to fill those positions. This is unfortunate, because it slightly reduces the randomness of the draw. However, we believe this is a small price to pay to ensure that the draw for the seeded teams is as fair as we can make it. And, of course, all the other positions are drawn randomly, so it is only three debates out of the entire competition where the choice of teams is restricted.*

[52 team cannibal (1)] Adapting this to a 52 team draw, this means in Rounds 3 and 8 the teams at the bottom of set AB and EF face teams from the top of set CD and GH respectively. This will restrict the choice of teams to fill those positions, but I think is a reasonable trade-off, and affects only four debates out of 104 in the entire tournament. This generates the following distortions[3]:

- C1, C2 face an additional B team instead of a C team
- B6, B7 face an additional C team instead of a B team
- F6, F7 face an additional G team instead of a F team
- G1, G2 face an additional F team instead of a G team

As Simon Quinn and Christopher Erskine noted in their explanation in 2010, this affects the draw in the following way (with adjustments in square brackets to reflect its application to a 52 team draw:

> *For Groups [B and F], the draw will begin by randomly selecting [two] of the [fifth-,] sixth- and seventh-ranked teams in their group. Th[ese] team will be the team[s] that debates against the highest-drawn team[s] from the next group (that is, the teams will be assigned to position ["B6", "B7", "F6" and "F7"] respectively). For Groups [C and G], the draw will begin by randomly selecting [two] of the first-, second-[and third-]ranked teams in the group; these teams will be assigned to ["C1", "C2", "G1" and "G2"] respectively. Having done that, they will then draw the remaining teams out of a hat to be assigned to the remaining team codes for their group in the anonymous draw.*

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[2] The affected B and C teams have a range of 5.00 to 5.33 average wins, and 14.00 to 16.33 average judges. The 7th B team and the 1st C team have identical average wins and are separated by just 0.67 average judges. The 5th B team and the 3rd C team are separated by 0.33 average wins and 1 average judge.
The affected F and G teams have a range of 1.00 to 3.00 average wins, and 5.00 to 9.33 average judges. Although this is a comparatively wider range, this is consistent with the greater range of groups F and G. Moreover, half of the affected F and G teams have missed at least 1 of the last 3 WSDCs, reducing the utility of the averages in and of themselves.
[3] These are distortions uniquely arising from Round 3 and 8. For C1, F6, B6 and G6, these distortions will be in addition to those inherent in a 52 team draw and noted above.

[52 team cannibal (2)] A second set of distortions is that 4 teams (F6, G1, F7 and G2) have imbalances in (i) the type and side of debate and (ii) side of debate and strength of opponent. We can eliminate this by adjusting the side that G1 and G2 will debate in Round 1 and 2, and then chase this around the draw until it folds onto F6 and F7 respectively.

This results in these teams debating on the same side in a given day:

- D1, E1, C6, F1, A2, H2, B2, G7, D3, E3, C3, F3, A4, H4, B4, G4, A6, H6, B6, G1, D5, E5, C5, F5, C2, F7 debate on the same side on Day 1 and 4 (Rounds 1, 2, 7, 8)
- D1, E1, C6, F1, D2, E2, C7, F2, D3, E3, C3, F3, D4, E4, C4, F4, D6, E6, C1, F6, D5, E5, C5, F5, C2, F7 debate on the same side on Day 2 and 3 (Rounds 3, 4, 5, 6)

The first set of distortions will be eliminated after we make logistical adjustments to Days 1 and 4 so that Day 1 is all prepared debates and Day 4 is all unprepared debates.

The second set of distortions is undesirable, particularly as it affects half of all teams. Nevertheless, I do not think this distortion is so significant as to vitiate the draw. Whilst some teams might have debaters specifically assigned to certain roles for prepared and unprepared debates and therefore be required to debate twice in one day, it is no generally uncommon for debaters to debate twice in a day regardless of whether a team debates on the same side or not. More generally, the need for teams to debate on different sides in a given day certainly is desirable but I think of lesser priority.

5. The AH Adjustment [52 team AH]

Currently A and H teams face each other in Round 7. We remove this unhelpful pairing by breaking up the pairing of E and H in Round 7 so that A faces E rather than H and H faces D rather than A. As a result:

- A teams face an additional E team rather than H team
- E teams face an additional A team rather than D team
- H teams face an additional D team rather than A team
- D teams face an additional H team rather than E team

Additional adjustments to Round 7 are needed in order to balance things for the purpose of the logistical adjustments to be made later. Though undesirable, this distortion has been minimised as teams are from adjacent groups:

- C6, C7 faces an additional G team rather than F team
- F1, F2 faces an additional B team rather than C team
- B1, B2 faces an additional F team rather than G team
- G6, G7 faces an additional C team rather than B team

6. The 53 team draw [53 team R0]

We extend the draw to 53 teams by adding H7 to the bottom and then construct Round 0 based on the method used in WSDC 2013 by Simon Quinn:

> We need eight 'rotatable teams'. For this, I have chosen the seven teams assigned to Group H (i.e. teams H1 to H7), as well as team [G7].

> In each round, one of the rotatable teams has a bye. For simplicity, I have assigned H1 to have a bye in Round 1, H2 to have a bye in Round 2, and so on. G[7] has its bye in Round 8. In each case that a team has a bye, its position in The Grid is taken by the added team, H7 (except, of course, in Round 7, when H7 would anyway be assigned to the bye.)

> Each of the rotatable teams then meets another rotatable team in Round 0. These teams are paired so as to preserve the balance across Proposition and Opposition and prepared and impromptu motions.

This generates the following strength imbalances:

- H1 faces an additional H team instead of a B team
- H2 faces an additional H team instead of a G team

- H3 faces an additional H team instead of a F team
- H4 faces an additional G team instead of a C team
- H5 faces an additional H team instead of a E team
- H6 faces an additional H team instead of a D team
- H7 faces an additional G team instead of a A team
- G6 faces an additional H team instead of a G team
- G7 faces an additional H team instead of a G team

The imbalance is tolerable. First, it is inevitable with the addition of a 53rd team that some imbalances will arise. Second, in so far as the 9 teams have opponents of a differing strength, it is always the case that they have an easier draw, and it seems fair that G and H teams are given this leeway that arises inevitably from an extra H team being added to the mix.

By convention and given the number of pre-released motions, Round 0 is composed of 4 impromptu rounds. This means:
- H1 and H5 have 5 unprepared debates and only 3 prepared debates, 3 unprepared Opposition debates and only 1 prepared Opposition debate
- H3 and H7 have 5 unprepared debates and only 3 prepared debates, 3 unprepared Proposition debates and only 1 prepared Proposition debate

Finally, H1, H4, H6 and H7 will face only 3 opponents from groups A-D and 5 opponents from groups E-H. This accounts for the distortions to balance between (i) type of debate and strength of opponent and (ii) side of the debate and strength of opponent.

7. Logistics Adjustments [53 team logistics]

There are two logistical issues that need to be resolved. First, Round 1 and 2 must both be prepared debates whilst Round 7 and 8 must both be unprepared debates. Second, there are venue restrictions for day 1. Days 2, 3, and 4 are unaffected as Singapore has helpfully arranged for a single central venue either in the 2nd round of a day or for both rounds.

The least disruptive solution appears to be to swap all of the debates that would have occurred during Round 2 (unprepared) with those of Round 7 (prepared), satisfying the first issue. The debates themselves do not change, the only operative difference being that a debate that would have happened in Round 2 now happens in Round 7, and vice-versa.

On the second logistical issue, the grid generates the following sets of team who must be in the same venue for day 1:
- (4) C6, G6, A6, E6
- (4) C7, G7, A3, E3
- (4) F2, B2, H3, D3
- (6) A1, E1, C1, G1, F5, B5
- (7) H1, D1, F6, B6, C5, G5, H7
- (8) H2, D2, F3, B3, C4, G4, A5, E5
- (8) A4, H4, D4, E4, C2, F7, B7, G2
- (12) F1, B1, A2, E2, C3, G3, F4, B4, H6, D6, H5, D5

This is compatible with the hosting arrangements that the convenors have indicated in the following manner:

School A: 7 teams	3 debates	7 teams
School B: 10 teams	5 debates	6 teams + 4 teams
School C: 12 teams	6 debates	8 teams + 4 teams
School D: 12 teams	6 debates	8 teams + 4 teams
School E: 12 teams	6 debates	12 teams

8. Final Grid [53 team FINAL]