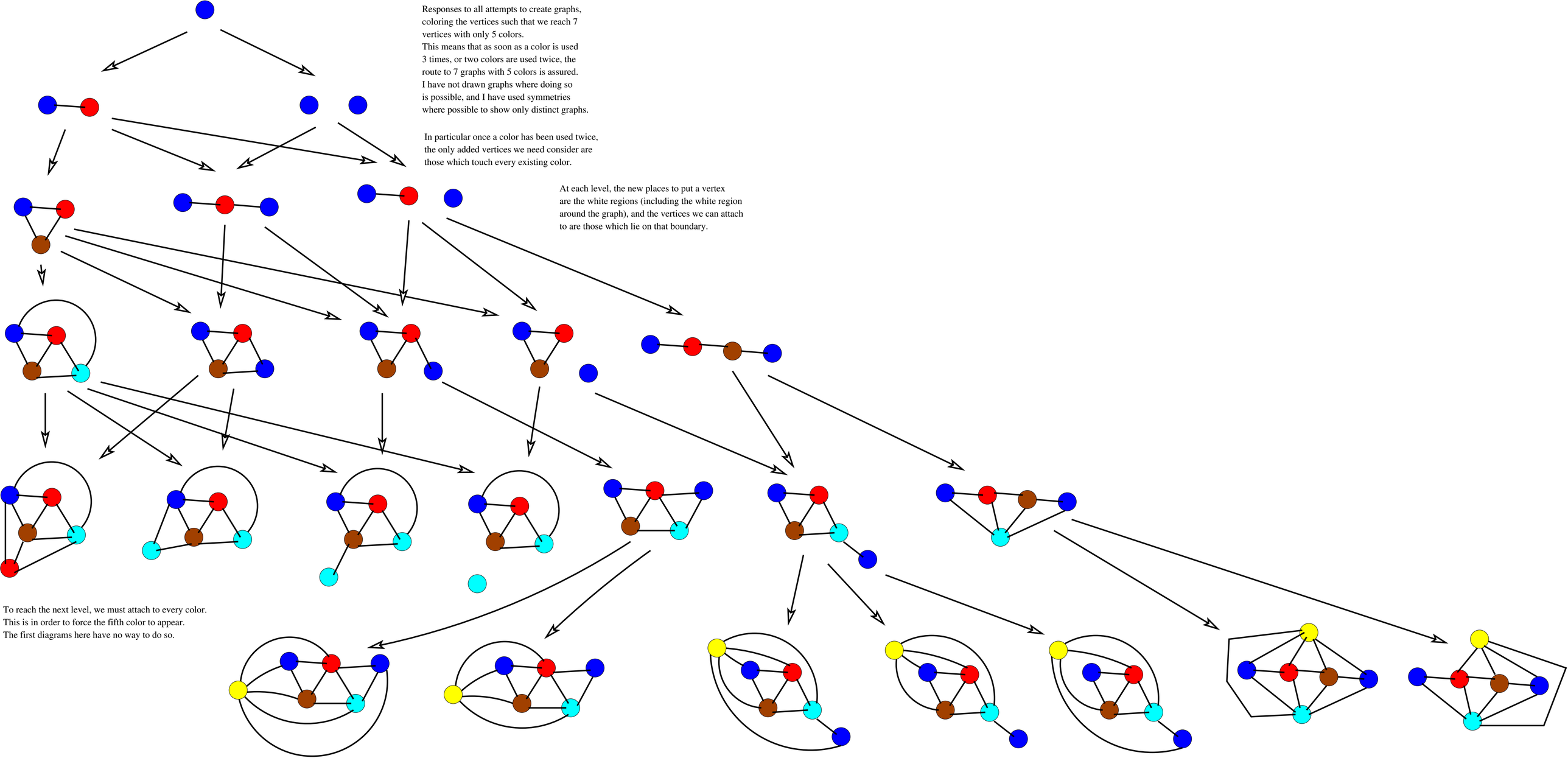
Responses to all attempts to create graphs, coloring the vertices such that we reach 7 vertices with only 5 colors.
This means that as soon as a color is used 3 times, or two colors are used twice, the route to 7 graphs with 5 colors is assured.
I have not drawn graphs where doing so is possible, and I have used symmetries where possible to show only distinct graphs.

In particular once a color has been used twice, the only added vertices we need consider are those which touch every existing color.

At each level, the new places to put a vertex are the white regions (including the white region around the graph), and the vertices we can attach to are those which lie on that boundary.



To reach the next level, we must attach to every color.
This is in order to force the fifth color to appear.
The first diagrams here have no way to do so.

None of these remaining possibilities have a way to attach the final 7th vertex to all five colors present.
Therefore there is no way to force 6 colors in 7 moves.