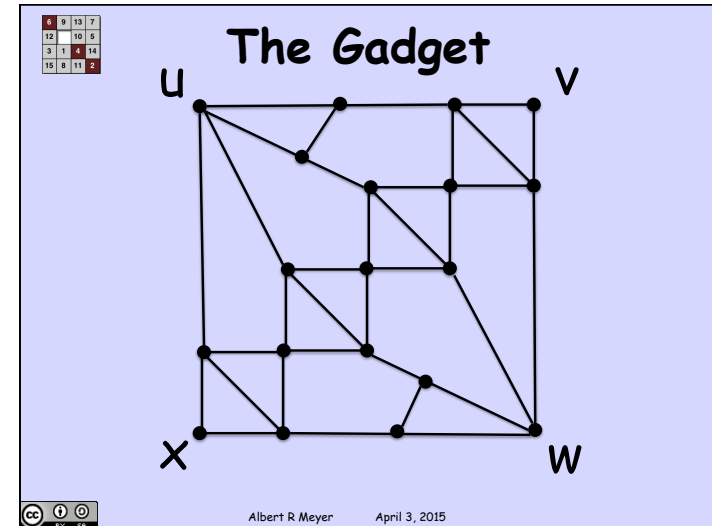


6	9	13	7
12	10	5	
3	1	4	14
15	8	11	2

3-Color Planar Crossover Gadget


(due to Larry Stockmeyer
ACM SIGACT News
July 1973, pp 19-25)

 Albert R Meyer April 3, 2015




6	9	13	7
12	10	5	
3	1	4	14
15	8	11	2

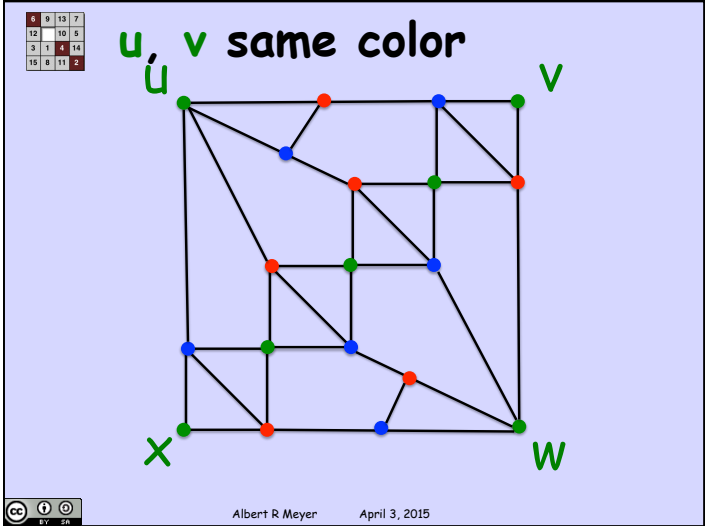
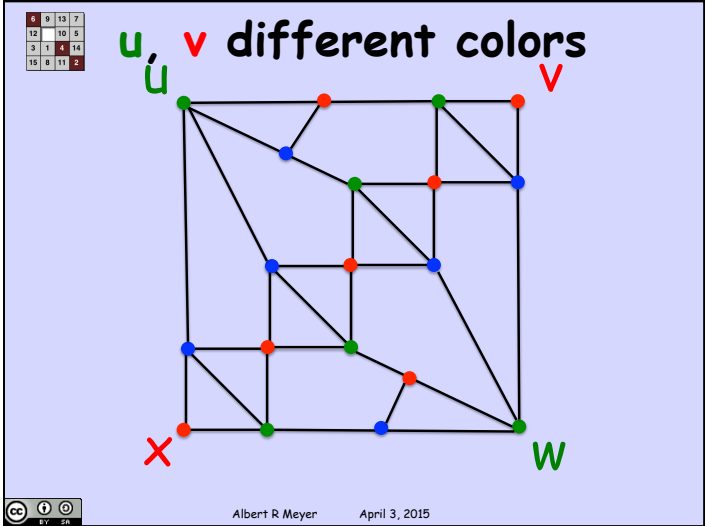
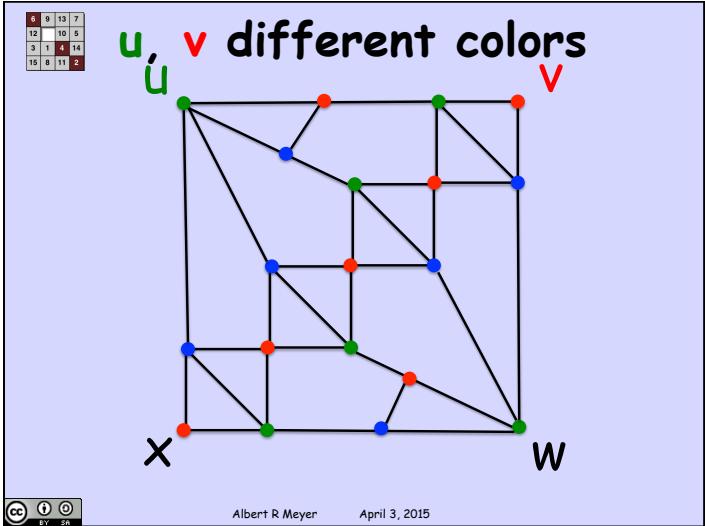
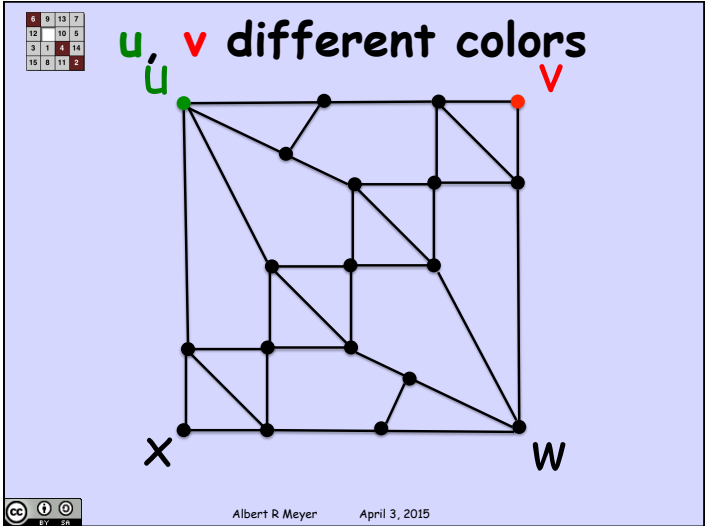
- Any assignment of colors to **u** and **v** can be extended to a 3-coloring of the gadget

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6	9	13	7
12	10	5	
3	1	4	14
15	8	11	2

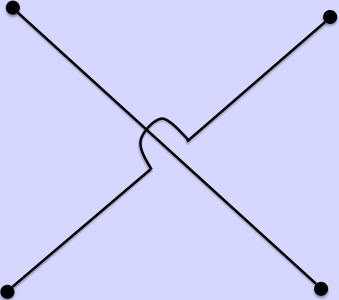
- Any assignment of colors to **u** and **v** can be extended to a 3-coloring of the gadget
- In any 3-coloring, the colors of **u** and **w** are the same, and the colors of **v** and **x** are the same


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6	9	13	7
12		10	5
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15	8	11	2

Replace each edge crossing

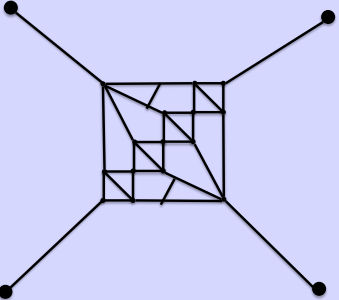





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6	9	13	7
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...with a gadget






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**...to get a planar graph
that is 3-colorable iff
the original graph is
3-colorable**



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