Visualizing Data: NCAA Big East Football

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Spectral Rankability

Algorithm 1 Spectral Rankability of Graph Data Γ.

function $[r] = \text{specR}(\Gamma)$:

$n \leftarrow$ the number of vertices in Γ

$d \leftarrow$ the out-degree of the vertices in Γ

$L \leftarrow$ graph Laplacian of Γ

$e \leftarrow$ eigenvalues of L

$s = \{n-1, n-2, \ldots, 0\}$

$r = \frac{\mathcal{H}(d,s)+\mathcal{H}(e,s)}{2(n-1)}$, where $\mathcal{H}$ denotes the Hausdorff distance

return

Connectivity Rankability

Algorithm 2 Connectivity Rankability of Graph Data Γ.

function $[r] = \text{connR}(\Gamma)$:

$n \leftarrow$ the number of vertices in Γ

$L \leftarrow$ graph Laplacian of Γ

$\alpha = \min_{x \in S} x^T L x$, where $S = \{x \in \mathbb{R}^n : x \perp e, \|x\| = 1\}$

$\beta = \max_{x \in S} x^T L x$, where $S = \{x \in \mathbb{R}^n : x \perp e, \|x\| = 1\}$

$\tilde{\alpha} \leftarrow$ related quantity for perfect dominance graph

$\tilde{\beta} \leftarrow$ related quantity for perfect dominance graph

$r = \frac{|\alpha - \tilde{\alpha}| + |\beta - \tilde{\beta}|}{2n}$

return

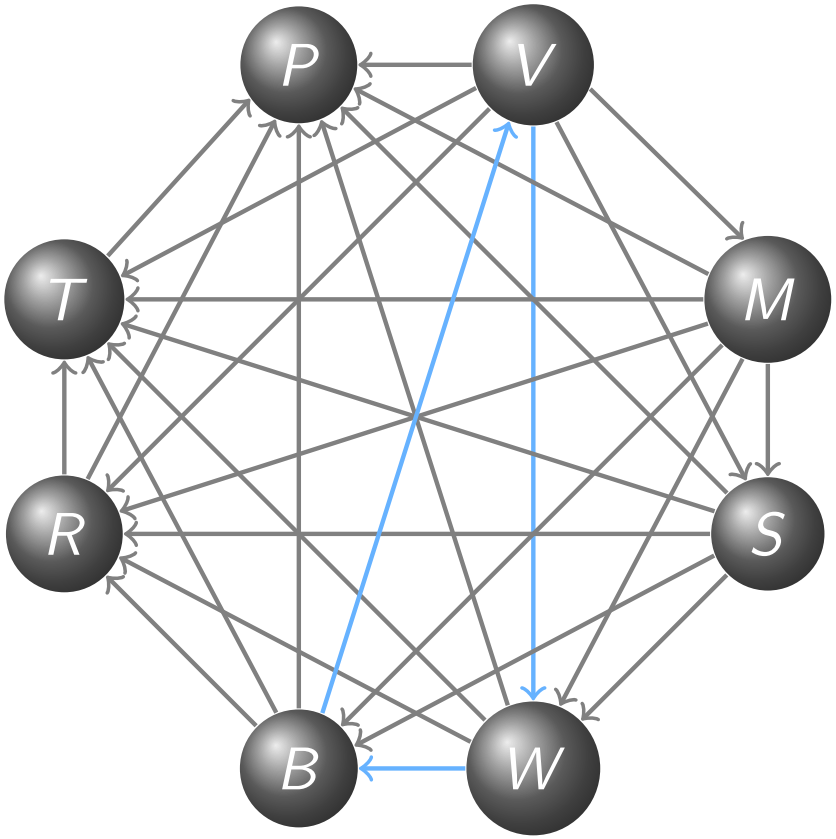
Snapshot of Results

Year	specR	connR	Year	specR	connR
1995	0.143	0.043	2004	0.339	0.168
1996	0.143	0.043	2005	0.162	0.013
1997	0.185	0.069	2006	0.195	0.100
1998	0.183	0.062	2007	0.316	0.169
1999	0.143	0.058	2008	0.195	0.099
2000	0.143	0.002	2009	0.143	0.049
2001	0.143	0.001	2010	0.292	0.166
2002	0.143	0.005	2011	0.286	0.149
2003	0.143	0.049	2012	0.286	0.163

Most Rankable

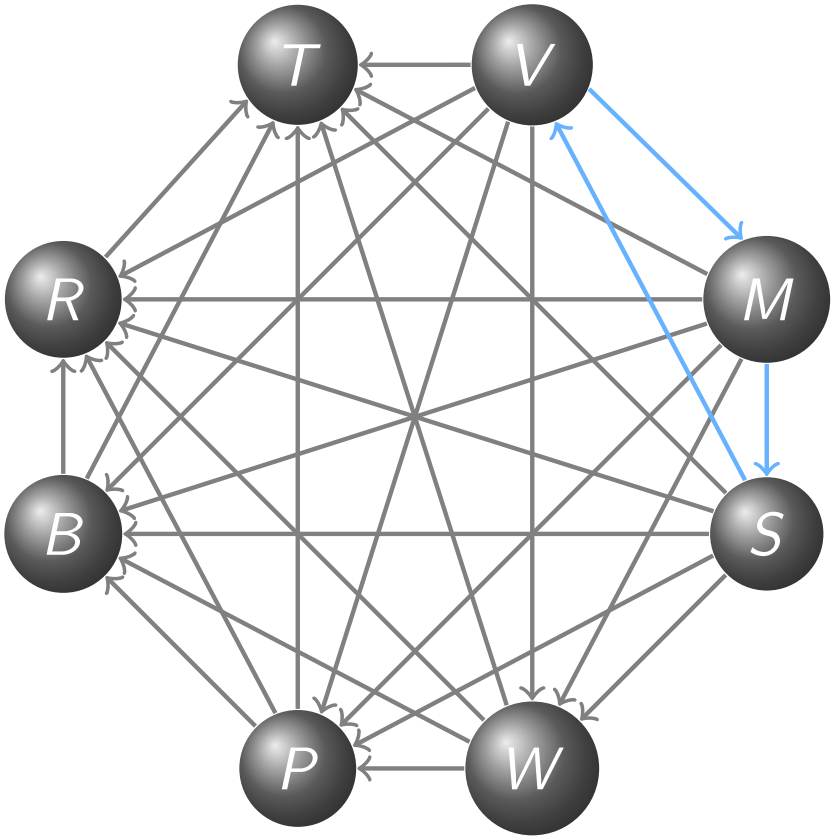
Least Rankable

Year 1995



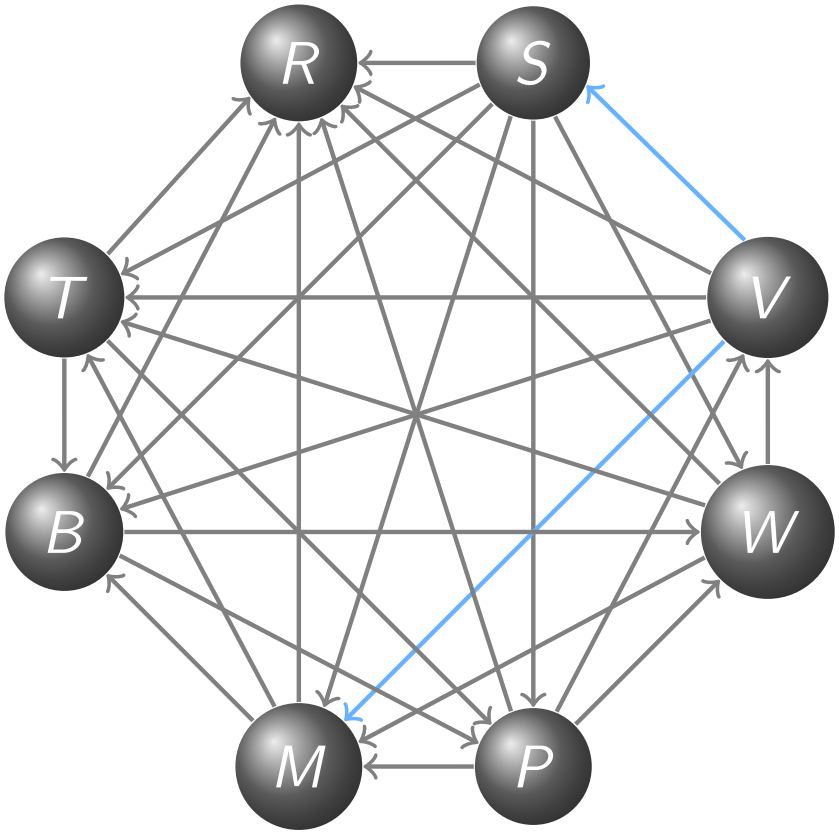
Cycle of length 3

Year 1996



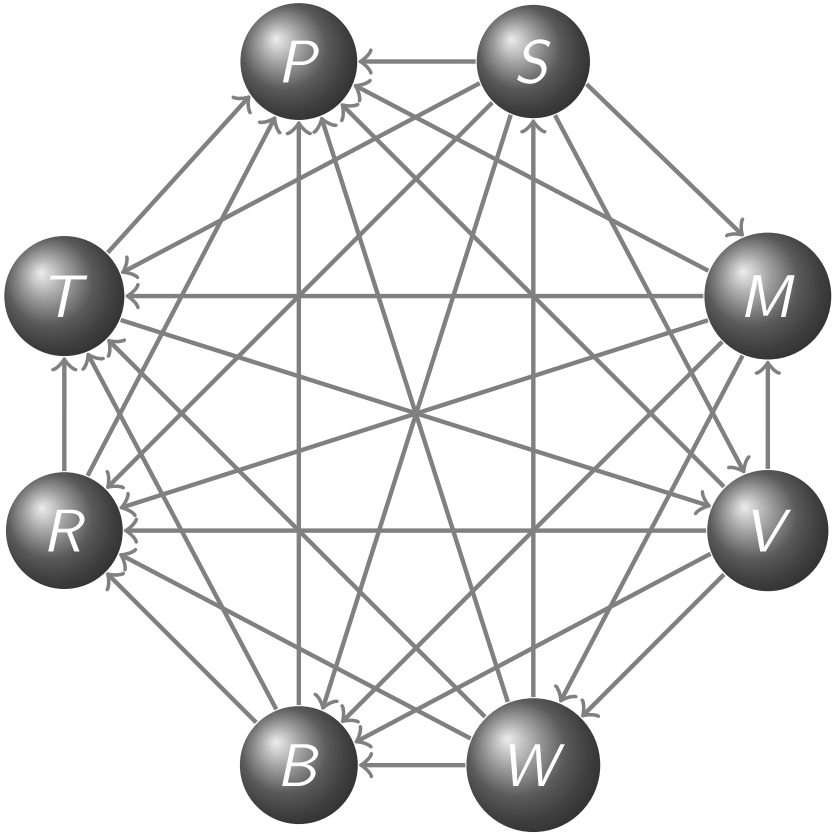
Cycle of length 3

Year 1997



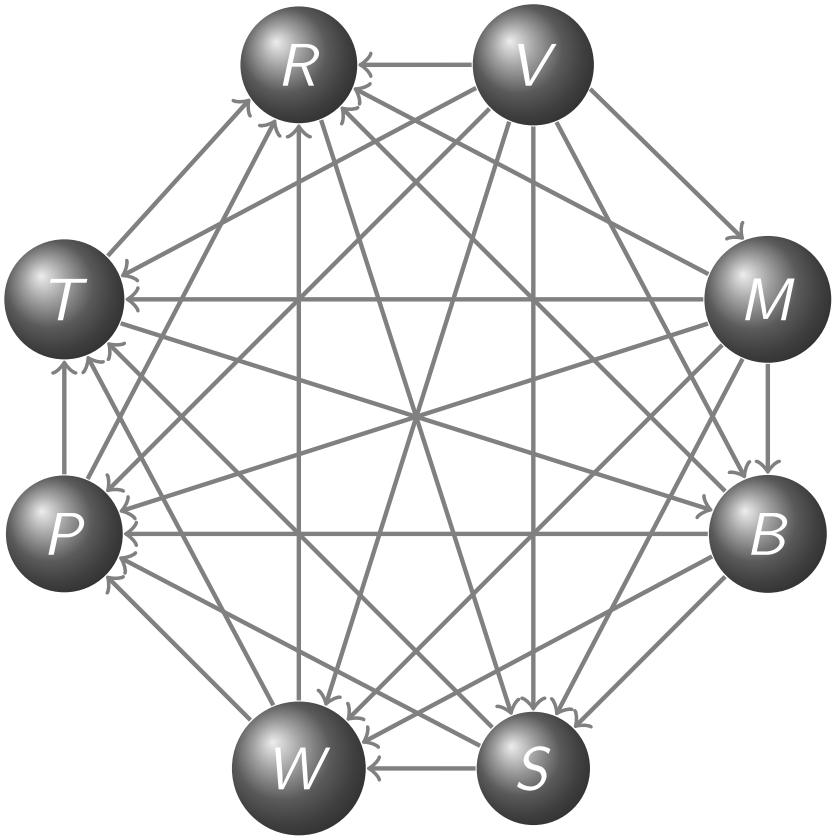
Cycle of length 3

Year 1998



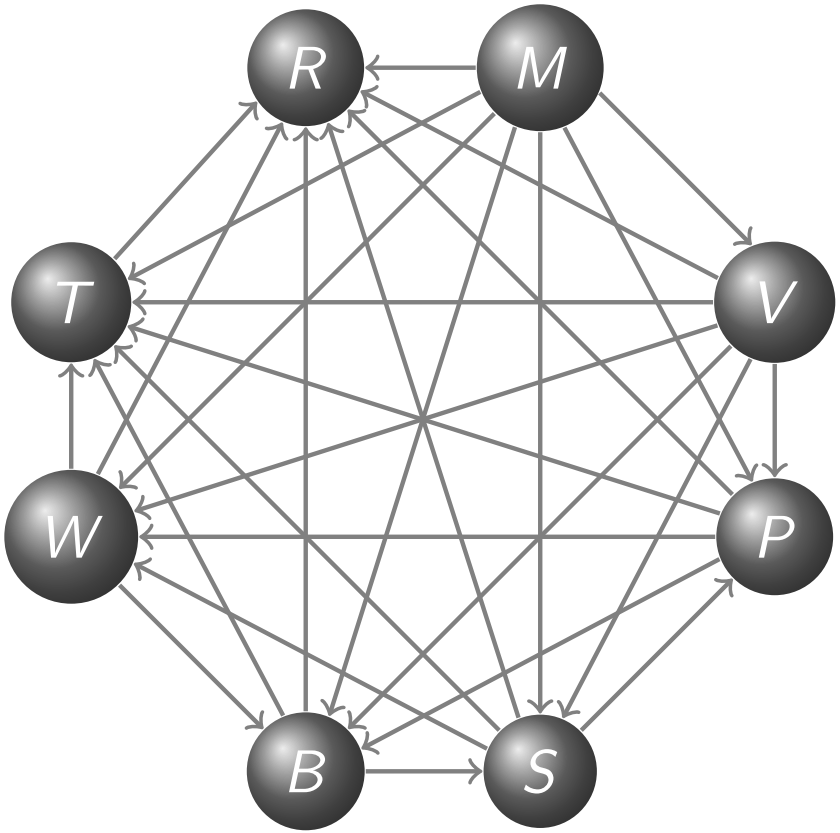
Cycle of length 3

Year 1999



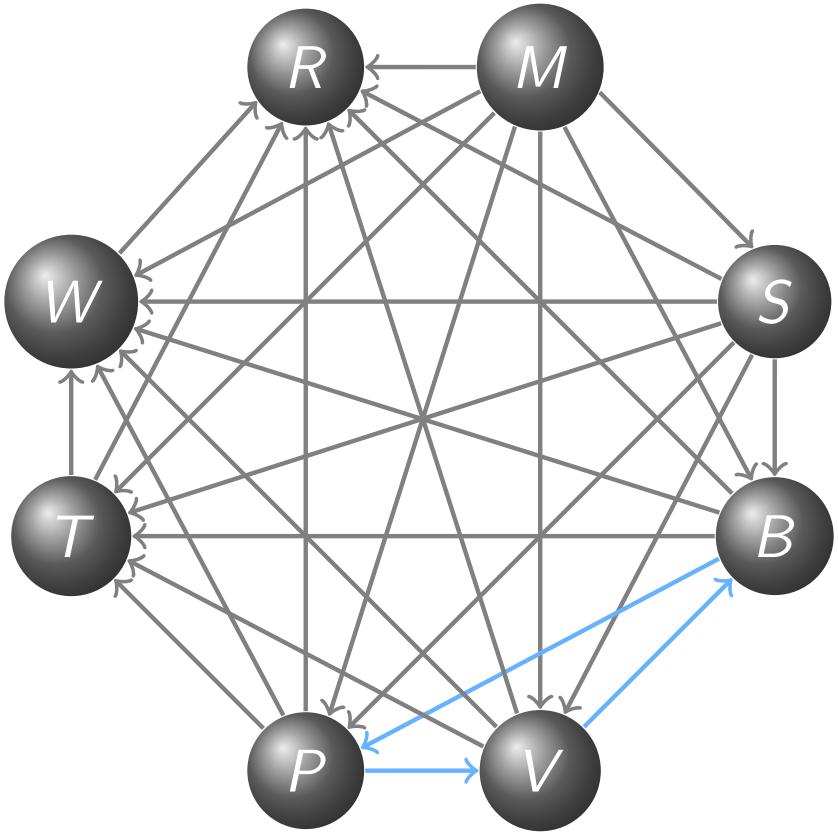
Cycle of length 3

Year 2000



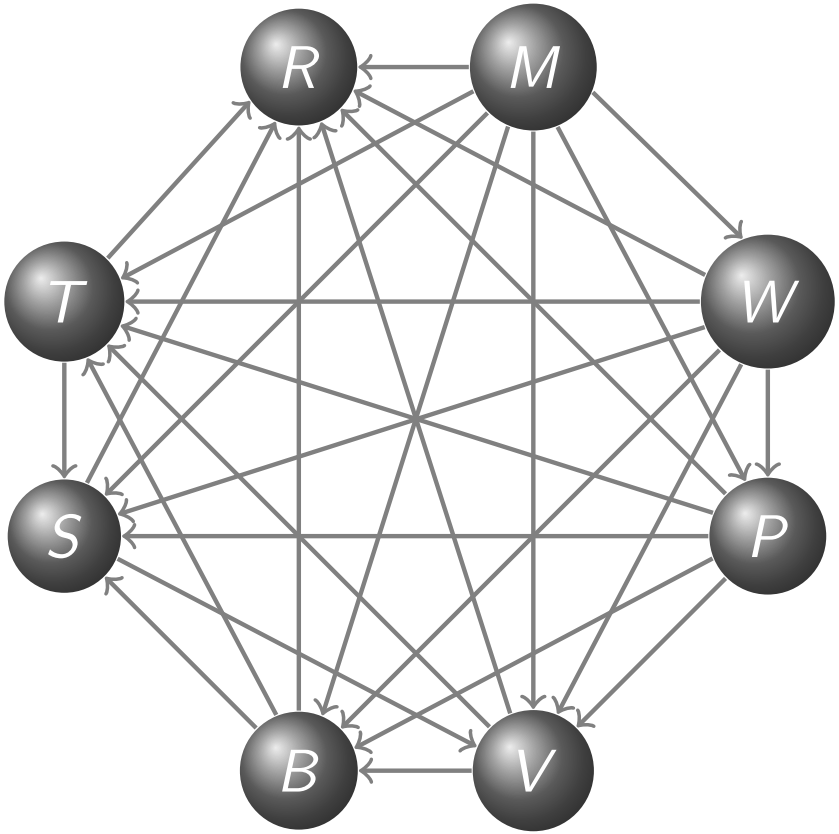
Cycle of length 3

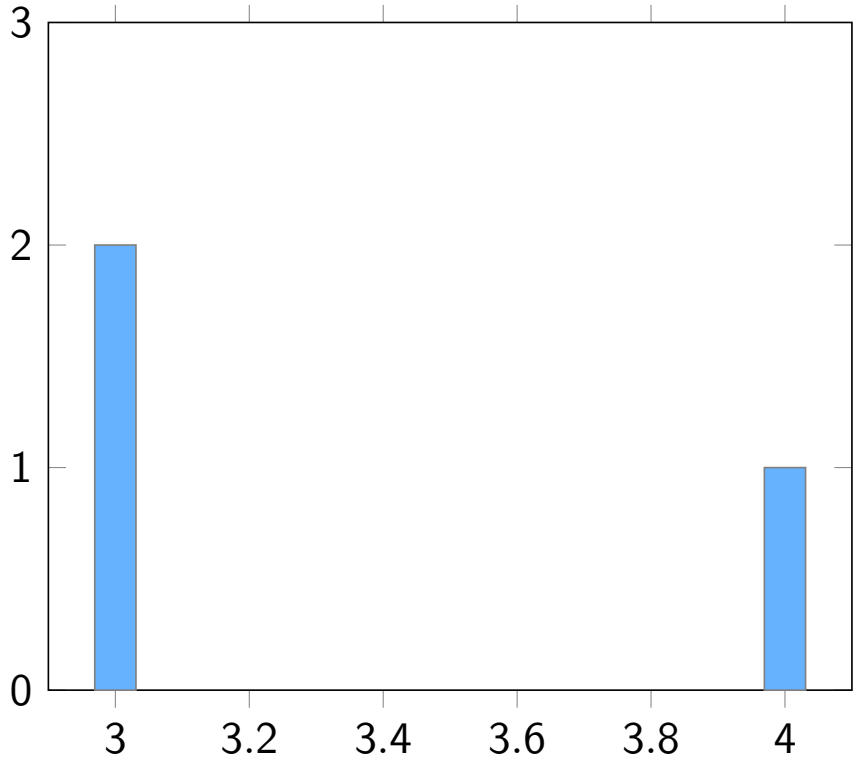
Year 2001



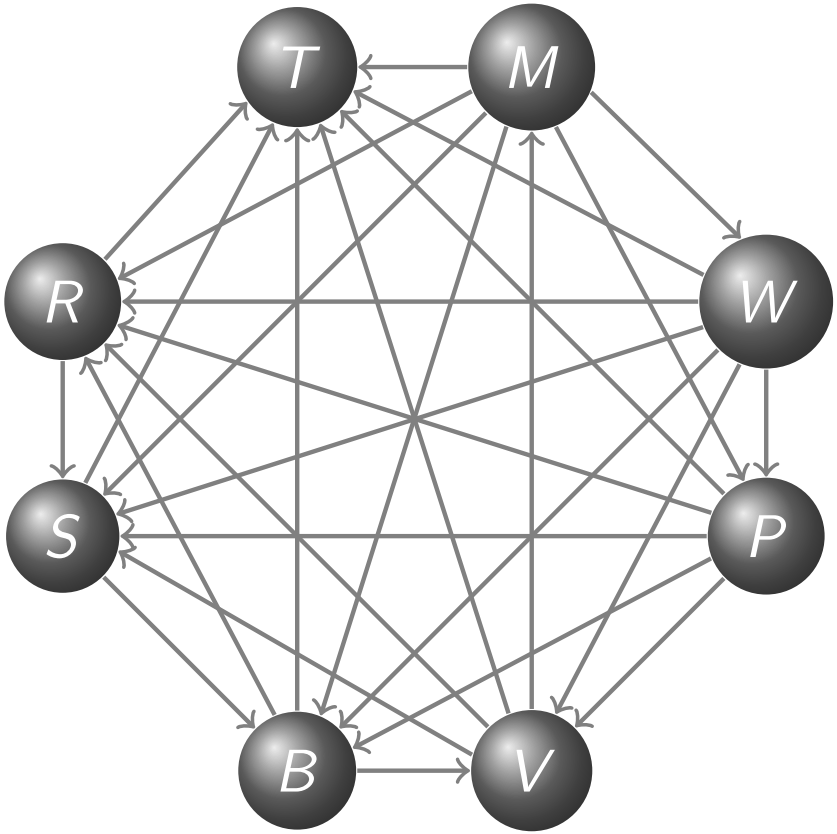
Cycle of length 3

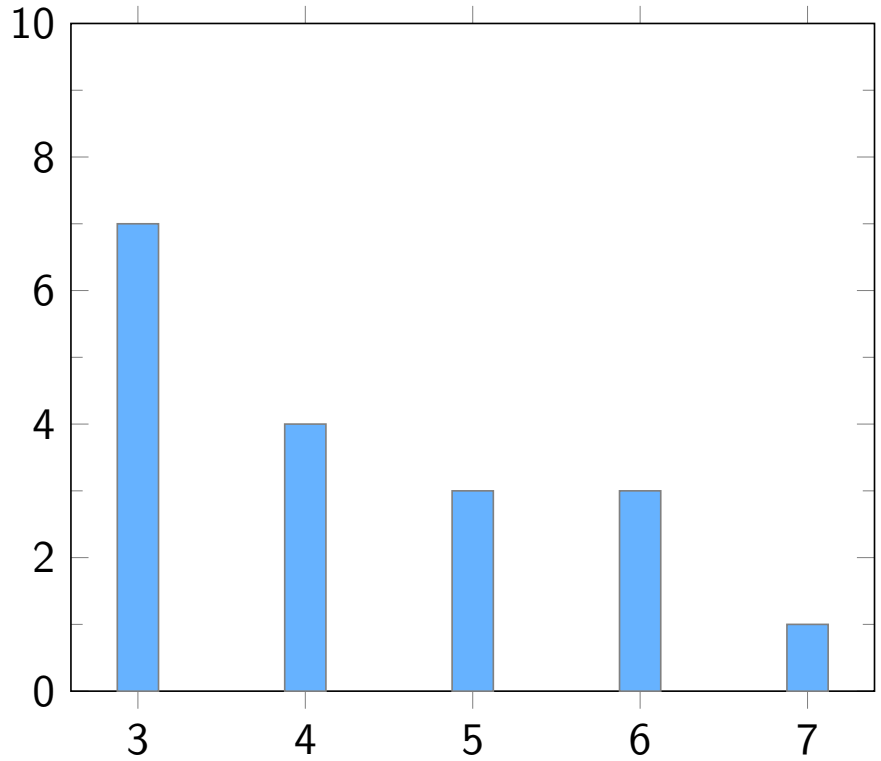
Year 2002



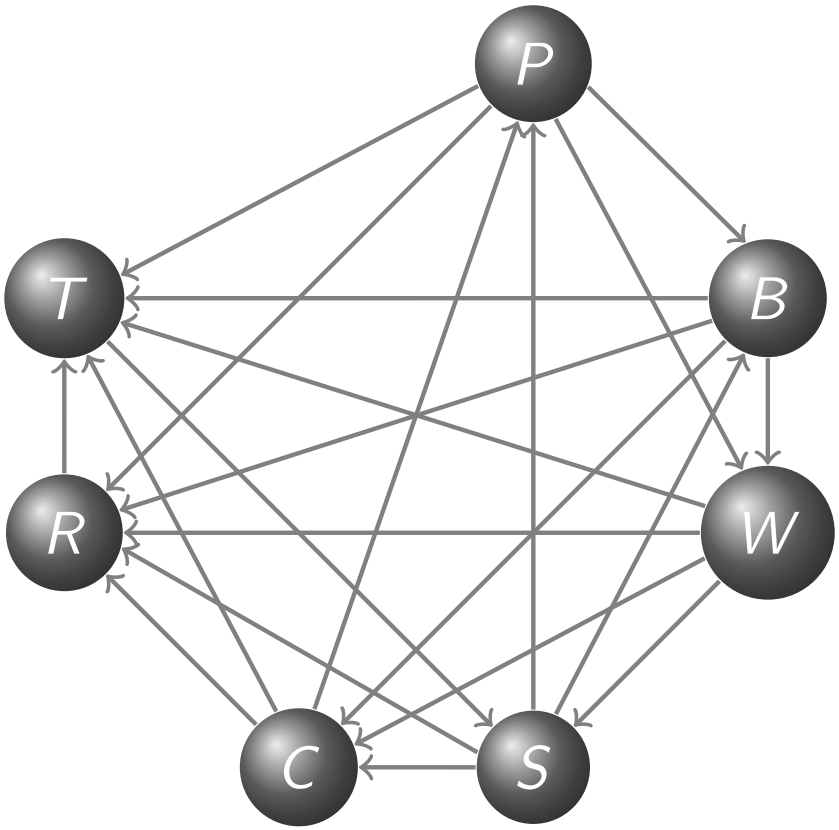


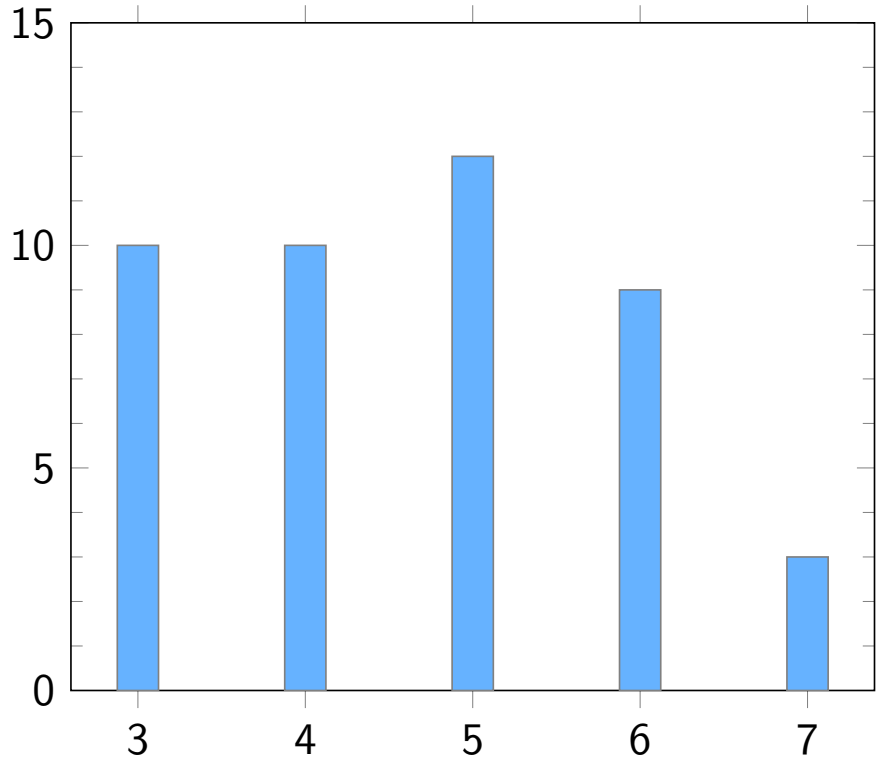
Year 2003



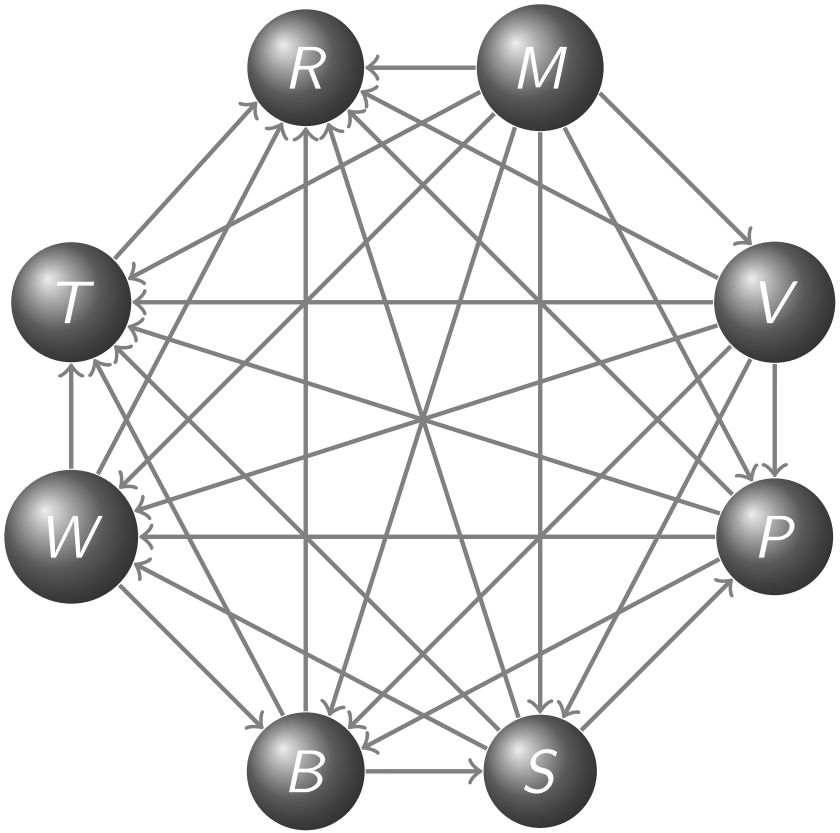


Year 2004



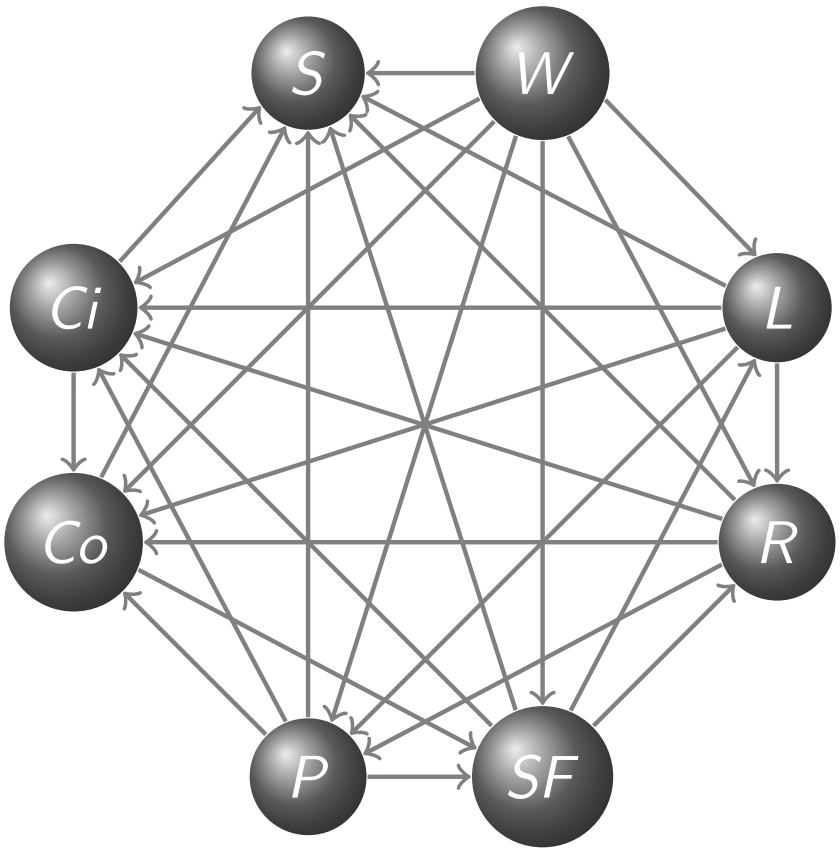


Year 2000

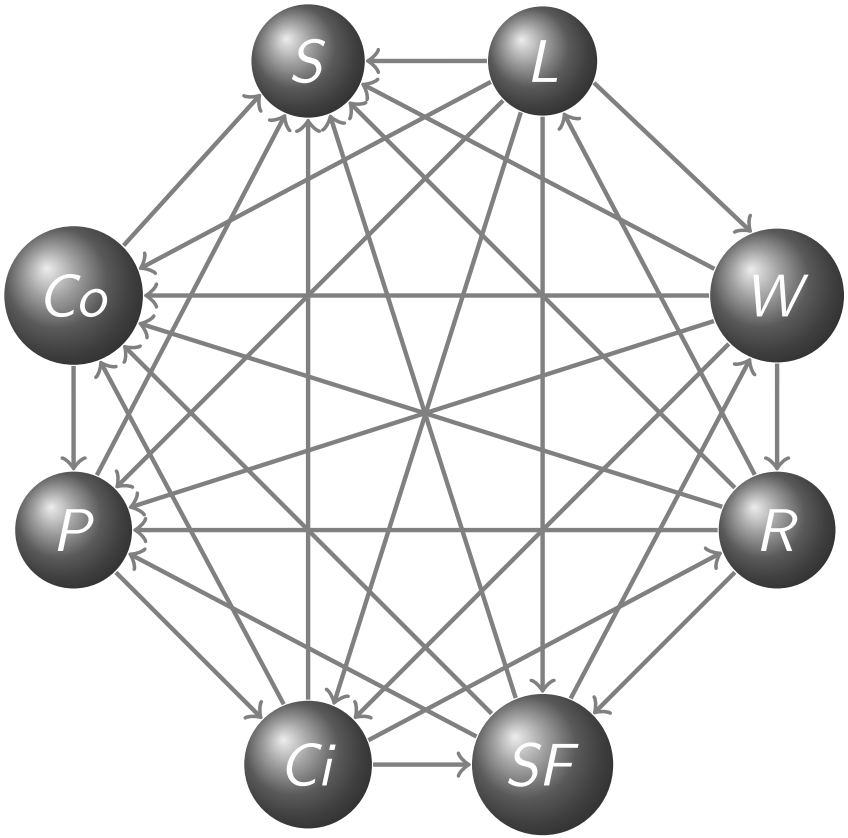


Cycle of length 3

Year 2005



Year 2006



Year 2007