The Historic Development of Network Visualization

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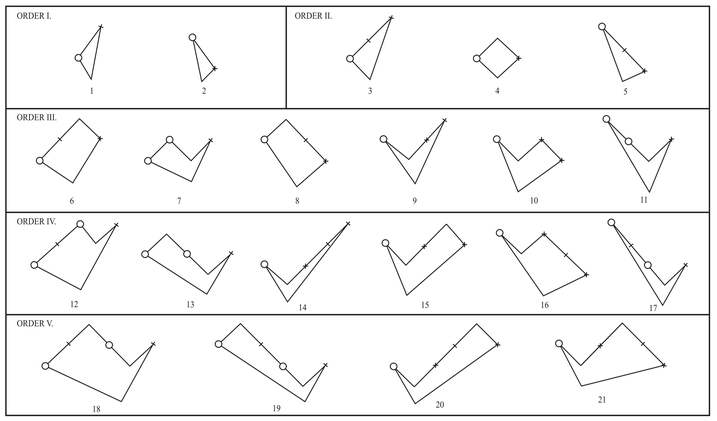
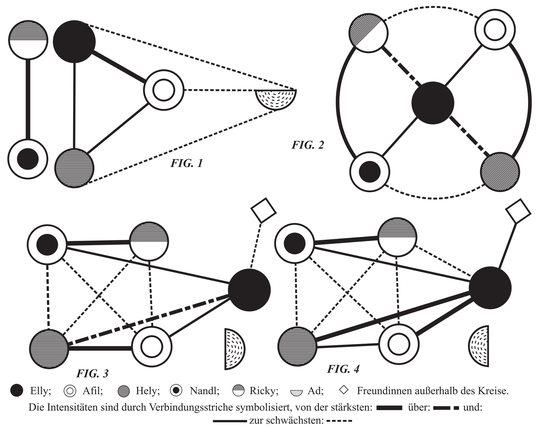
Nodes, Links, Shapes, Size

Macfarlane, 1883
Analysis of Relationships of Consanguinity and Affinity



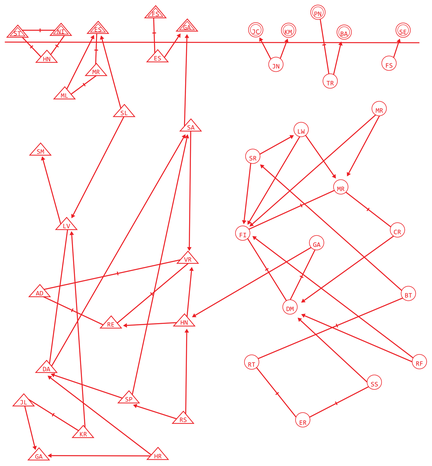
British marriage prohibition. Males (+), females (o). Earlier generations are placed higher on the page. The lowest point is the prohibited offspring.

Bernfeld, 1922
Vom Gemeinschaftsleben der Jugend



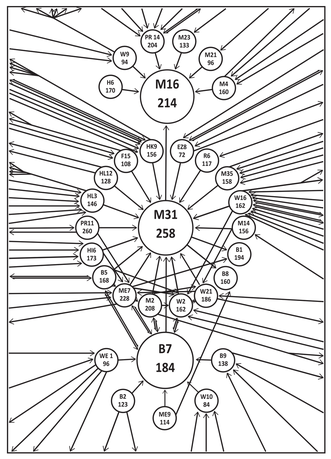
A circle of girl friends. Four figures show different relations. Line thickness represents intensity.

Moreno, 1934
Who Shall Survive



Class structure, 5th grade. Girls (circles) and boys (triangles). Links show two best friends. Top line defines group border.

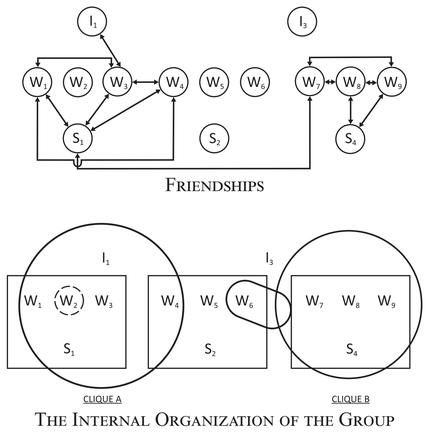
Lundberg & Steele, 1938
Social Attraction-Patterns in a Village



Most important friendships in the village. Number is socio-economic status. M31 = "Lady Bountiful".

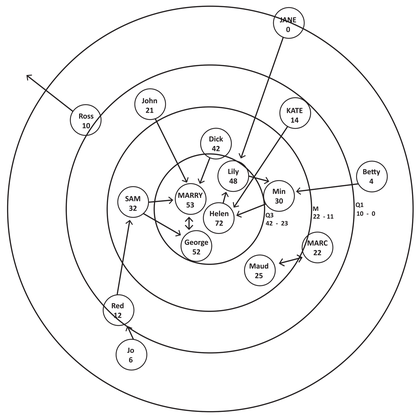
Substance-Based Layout

Roethlisberger et al., 1939
Management and the Worker



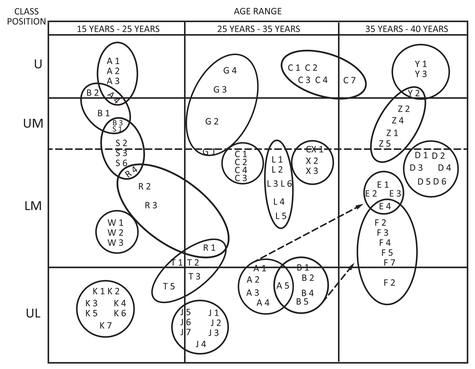
Observed friendship ties and cliques in a factory. Position reflects the location of their workspace.

Northway, 1940
A Method for Depicting Social Relationships Obtained by Sociometric Testing



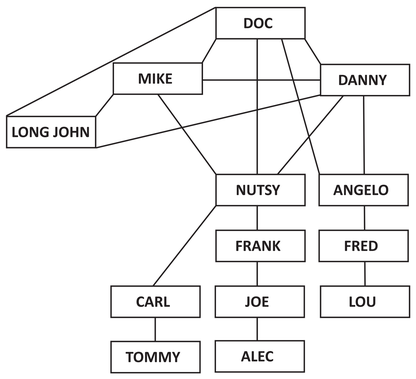
Targeted diagram showing scores of acceptability and predominating choices in a social group.

Davis et al., 1941
Deep South: A Social Anthropological Study of Caste and Class



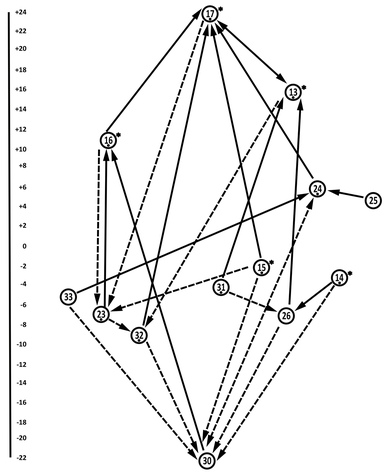
Subgroups and their overlaps. Arrangement in terms of both social class and age reveals groups.

Whyte, 1943
Street Corner Society



Corner boys and lines of influence. Positions of boxes indicate relative status.

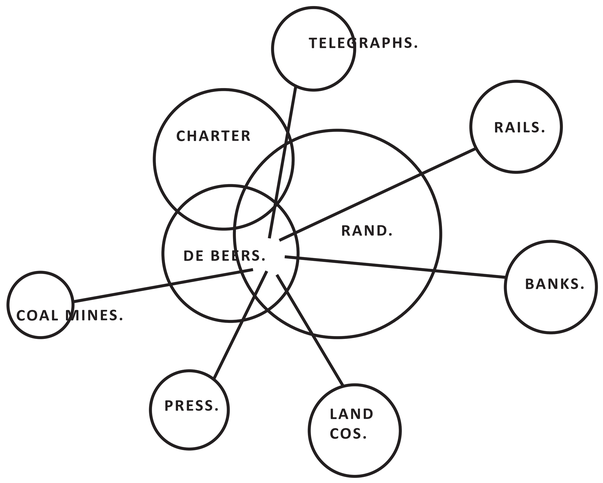
Sampson, 1968
A Novitiate in a Period of Change



Influence. Position of novices on y-axis shows sum of received positve (solid) and negative (dashed) choices.

Two-Mode Networks

Hobson, 1884
The Evolution of Modern Capitalism; A Study of Machine Production



Corporation by director data. Interlocking corporate directorates showing the inner ring of South African finance.

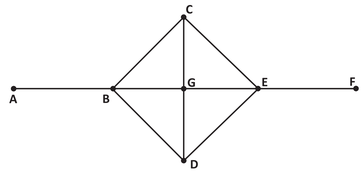
Davis et al., 1941
Deep South: A Social Anthropological Study of Caste and Class

Names of Participants of Group I	(1) 6/27	(2) 3/2	(3) 4/12	(4) 9/26	(5) 2/25	(6) 5/19	(7) 3/15	(8) 9/16	(9) 4/8	(10) 6/10	(11) 2/23	(12) 4/7	(13) 11/21	(14) 8/3
	Code Numbers and Dates of Social Events Reported in *Old City Herald*													
1. Mrs. Evelyn Jefferson	×	×	×	×	×	×		×	×					
2. Ms. Laura Mandeville	×	×	×		×	×	×	×						
3. Ms. Theresa Anderson		×	×	×	×	×	×	×	×					
4. Ms. Brenda Rogers	×		×	×	×	×	×	×						
5. Ms. Charlotte McDowd			×	×	×		×							
6. Ms. Frances Anderson			×		×	×		×						
7. Ms. Eleanor Nye					×	×	×	×						
8. Ms. Pearl Oglethorpe						×		×	×					
9. Ms. Ruth DeSand					×		×	×	×					
10. Ms. Verne Sanderson							×	×	×			×		
11. Ms. Myra Liddell								×	×	×		×		
12. Ms. Katherine Rogers								×	×	×		×	×	×
13. Mrs. Sylvia Avondale							×	×	×	×		×	×	×
14. Mrs. Nora Fayette						×	×		×	×	×	×	×	×
15. Mrs. Helen Lloyd							×	×		×	×	×		
16. Mrs. Dorothy Murchiso								×	×					
17. Mrs. Olivia Carleton									×		×			
18. Mrs. Flora Price									×		×			

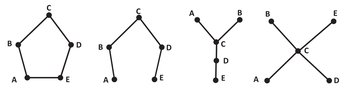
A group of women in Old City, 1936 – Group I. Women participating at social events. Rows and columns were rearranged to show groups.

Metric Development

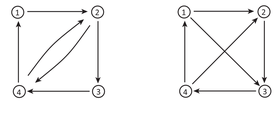
Bavelas, 1948
A Mathematical Model for Group Structures



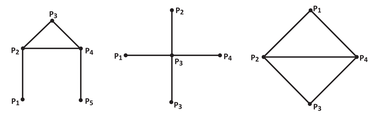
Leavitt, 1951
Some Effects of Certain Communication Patterns on Group Performance



Shimbel, 1953
Structural Parameters of Communication Networks



Freeman, 1979
Centrality in Social Networks: Conceptual Clarification



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