Table 1.11: Graph Distances for the Florentine Marriage Tie

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Acciaiuoli	1	0															
Albizzi	2	2	0														
Babadori	3	2	2	0													
Bischeri	4	4	2	3	0												
Castellani	5	3	3	1	2	0											
Ginori	6	3	1	3	3	4	0										
Guadagni	7	3	1	3	1	3	2	0									
Lamberteschi	8	4	2	4	2	4	3	1	0								
Medici	9	1	1	1	3	2	2	2	3	0							
Pazzi	10	3	3	3	5	4	4	4	5	2	0						
Peruzzi	11	4	3	2	1	1	4	2	3	3	5	0					
Pucci	12	.	.	.	.	.	.	.	.	.	.	.	0				
Ridolfi	13	2	2	2	2	2	3	2	3	1	3	2	.	0			
Salviati	14	2	2	2	4	3	3	3	4	1	1	4	.	2	0		
Strozzi	15	3	3	2	1	1	4	2	3	2	4	1	.	1	3	0	
Tornabuoni	16	2	2	2	2	3	3	1	2	1	3	3	.	1	2	2	0

the Guadagni family ranks second with a score of 23 while the Strozzi family is far from being a central family with a score of 3. Four other families are more central than the Strozzi family on this alternative centrality measure.

We have pointed out that choosing a centrality measure carefully is an important issue. However, there are a number of issues that we have glossed over. If comparisons are made between graphs of different sizes, it is important to regonize that centrality measures we have discussed depend on the number of vertices in the network. One fix for the problem of having the Pucci family as an isolate is to drop that family and recompute all of the measures. This is problematic as the original and modified matrices would have a different number of vertices. This points to a more general issue. If, for example, we wanted to know if the Tornabuoni family is more or less central in the marriage network than vertex g in Figure 1.5 network, we cannot provide an adequate answer using only the information we have presented. These scores are affected by the sizes of the networks which means we cannot compare the scores directly in a meaningful way. To do this, the centrality scores must be normalized to take into account the different sizes of the networks. Freeman (1977, 1978) provides ways of doing this for all three centrality measures.

Given our discussion thus far, there is yet another question we cannot answer fully. Is the Florentine network more or less centralized than the