Poet-Composer Collaborations in Egyptian Song:
A Social Network Analysis Approach to Egypt's Musical History

Michael Frishkopf, Professor of Ethnomusicology (michaelf@ualberta.ca   http://frishkopf.org/   http://cce.ualberta.ca/)

UNIVERSITY OF ALBERTA

THE CANADIAN CENTRE FOR ETHNOMUSICOLOGY

---

1. Introduction: Aim and Database

The aim of the research is to apply social network analysis to a large database of song recordings played on Egyptian State Radio, in order to reveal structures and trends in Arabic music that would otherwise remain invisible. Specifically, we seek to interpret patterns in the creative collaborations between poets and composers that lie at the heart of Arabic music.

Arabic music centers on sung poetry; instrumental music is uncommon except as prelude, interlude, or background. The singer is thus primary, and identified with his or her songs. However while a limited amount of improvisation is possible the bulk of performance comprises precomposed songs, prepared in advance by a poet, and a composer. Most Arabic music recordings are instantiations of precomposed songs.

The database comprises 18,591 rows, each representing a single song recording, with columns containing song title, and names of singer, composer, and poet. Multiple rows corresponding to the same song may be covers by different singers, or different recordings by one singer. After data cleaning, and removal of duplicate rows (identical title, poet, and composer), each of the remaining rows in the reduced database represents a distinct song, a collaboration between a poet and a composer (who are nearly always different people, and contemporaries). The database represents 12,523 songs, 1593 poets, and 739 composers, most Egyptian-born. Due to missing data, there are only 5834 fully documented songs.

NB: Please follow sections in numeric sequence. Zoom in to view networks. Click links to learn more. My sincere thanks to Yasser Abdel-Latif for his invaluable assistance in data cleaning and sampling.

---

2. Egyptian Song and Radio

Since the advent of recorded music in the Arab world in 1904, **Egyptian song—**music produced in and broadcast from Egypt—has been central in the region due to Egypt's high population, political/economic influence, and status as entertainment hub. Non-Egyptian artists often migrated to Egypt, recorded there, or relied on Egyptian media. Modern Egyptian music has been produced and defined by a sequence of media technologies: phonograms (1904), private radio (1920s), musical films (1932), State Radio (1934), television (1960), cassettes (mid 1970s), computers, CDs, and satellite TV (1990s), mobile phones and wide band internet (2000s) (see Frishkopf 2010 and its Introduction). These technologies evolved in conjunction with political and economic developments to define three main musical recording eras, as shown in the following table.

Recorded music era (click for exx)	Music recording	Music System	Dominant Music Media	Political Economy
1. Classic song (to 1945)	Singer & small ensemble, recorded live in studio	Low capacity, decentralized, private-public mix	**Discs**, radio, film	European colonial capitalism; nominal constitutional monarchy
2. Modern song (1945-1970s)	Singer & large orchestra, recorded live in concert or studio	High capacity, centralized, state controlled, national	**RADIO**, film, TV	Arab Socialism; totalitarian statist economy
3. Pop song (1970s-present)	Singer & small band, multitrack production	High capacity, decentralized, free-market, transnational	**Cassette** and subsequent digital media technologies	Free-market transnational capitalism, authoritarian democracy

Since its founding in 1934 (and subsequent banning of private radio stations) **Egyptian State Radio** has both represented and strongly shaped Arabic music. Radio enabled much longer songs than were possible on phonograms of the day (cylinders, 78s, later LPs, 45s), which thereafter declined until the advent of cassettes in the 1970s. State Radio broadcasted live concerts, recorded new songs, and even produced music with in-house talent. After Egypt's 1952 revolution, President Nasser extended Radio's span across the Arab world, generating the first truly pan-Arab music, and drawing pan-Arab talent to Egypt. Radio content was filtered by state listening committees based on aesthetic as well as political and social criteria. While State Radio has remained prestigious, its conservative aversion to newer youth-oriented styles characterizing the Pop era (e.g. *sha`bi, shababi, mahraganat*), along with the subsequent rise of private and transnational broadcast channels and internet media, reduced its significance from the 1980s onwards. Analyzing this database of Egyptian Radio recordings reveals new aspects of Arabic music history, as well as the history of Egyptian State Radio itself.

---

3. The Network: An Overview

The network is two-mode, weighted, and undirected, comprising 2332 nodes: 1593 representing poets, and 739 representing composers. (An individual functioning as both poet and composer is represented by two different nodes.) In a preliminary unweighted network, each documented song corresponds to one of 5834 lines linking the song's poet and composer. I converted the unweighted network to a weighted one, in which line weights represent the number of song collaborations, ranging from 1 to 114 (from the prolific duo, Mohamed Abdel Wahab and Hussein al-Sayyid). Node degree in the unweighted network is the artist's song output; node degree in the weighted network is the artist's number of collaborators. Networks were analyzed using Pajek.
NB: While gender was not included in the formal analysis, we noted very few female names among composers or poets.

---

4. Connectivity

Poet:composer ratio: The network contains just over twice (2.16 times) as many poets as composers; hence average degree (whether songs, or collaborators) of composers is about double that of poets. This appears to reflect the greater musical specialization of song composers in a poetry-centric society; poets may produce non-song poetry, and are more likely to be amateurs than are composers. As musicians, composers are closer to the music system, including singers, who request songs from them directly; composers typically request text from an available poet, rather than the other way around.
Line weights: Many collaborations are weak (nearly 70% amount to a single song), and many artists are weakly connected (57% have just one collaborator, and 51% have just one song). The strong portion of the network is relatively small; considering collaborations of at least 10 songs, it comprises just 131 artists, of whom 66% are connected in a single large component and the rest in smaller components of 2-4 nodes each.
Sampling: After preliminary analysis 74 poets and 70 composers were selected from among the most important artists, adding year of birth and era (at age 20) as node attributes: 54 from Classic, and 45 from each of Modern and Pop. Total song output, number of collaborators, and average weight (songs/collaborator) vary, dropping in the Pop era. This is likely for two reasons: (a) incomplete data on younger artists, and (b) Radio's aversion to new popular styles emerging on cassette era productions.

Average:	Songs/artist	Collaborators/artist	Songs/collaborator
Classic	133	39	3.9
Modern	109	31	3.4
Pop	27	10	2.5

Scatterplot (sample): # songs vs. birth year (with polynomial trend line)

Scatterplot (sample): # collaborators vs. birth year (with polynomial trend line)

---

5. An information theory approach

Since an artist's songs are not typically equiprobably distributed among collaborators, songs per collaborator may underestimate connectivity. Thus we defined an information theoretic node degree as 2^B where $B = \sum -p_i \log_2(p_i)$ bits, where p is the fraction of songs created with each collaborator. However the outcome is the same: less collaboration in Pop.

collaborators, using information theoretic measure

songs per information-theoretic # collaborators

---
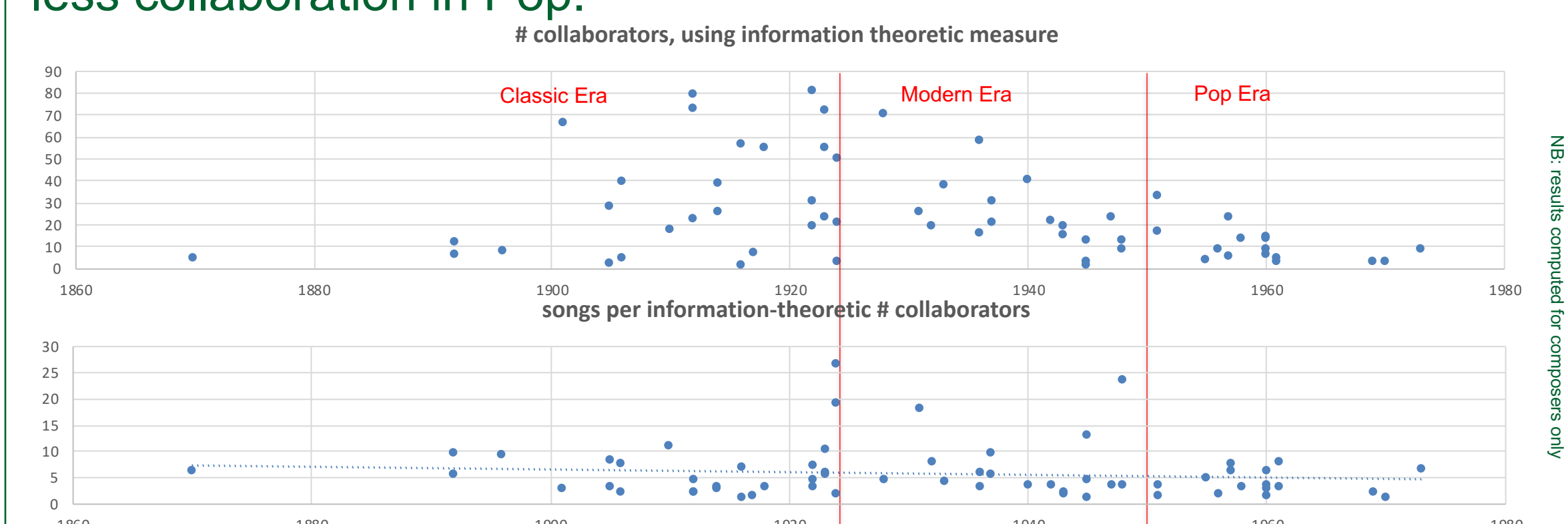
6. Strong collaboration network

SNA enables enumeration of the 20 most productive collaborations in the Egyptian Radio collection. These link in a 29 node subnetwork: 13 Classic (yellow), 14 Modern (green), 2 Pop (red). (P=poet, C=composer; birth years are inscribed in nodes.). A number of prolific pairs emerge, connected in three larger components centered on influential artists. One is entirely Classic, centered on poet Ahmed Ramy (a) and composer Mohamed Abdel Wahab (b). A second straddles Classic and Modern eras, centering on Mohamed al-Mugi (c). The third is entirely Modern, centered on Baligh Hamdi (d). Smaller components include the Lebanese Rahbani brothers (e; classic) and a trio of Egyptian composers centered on Egyptian poet and Radio personality Omar Batisha (f).


---
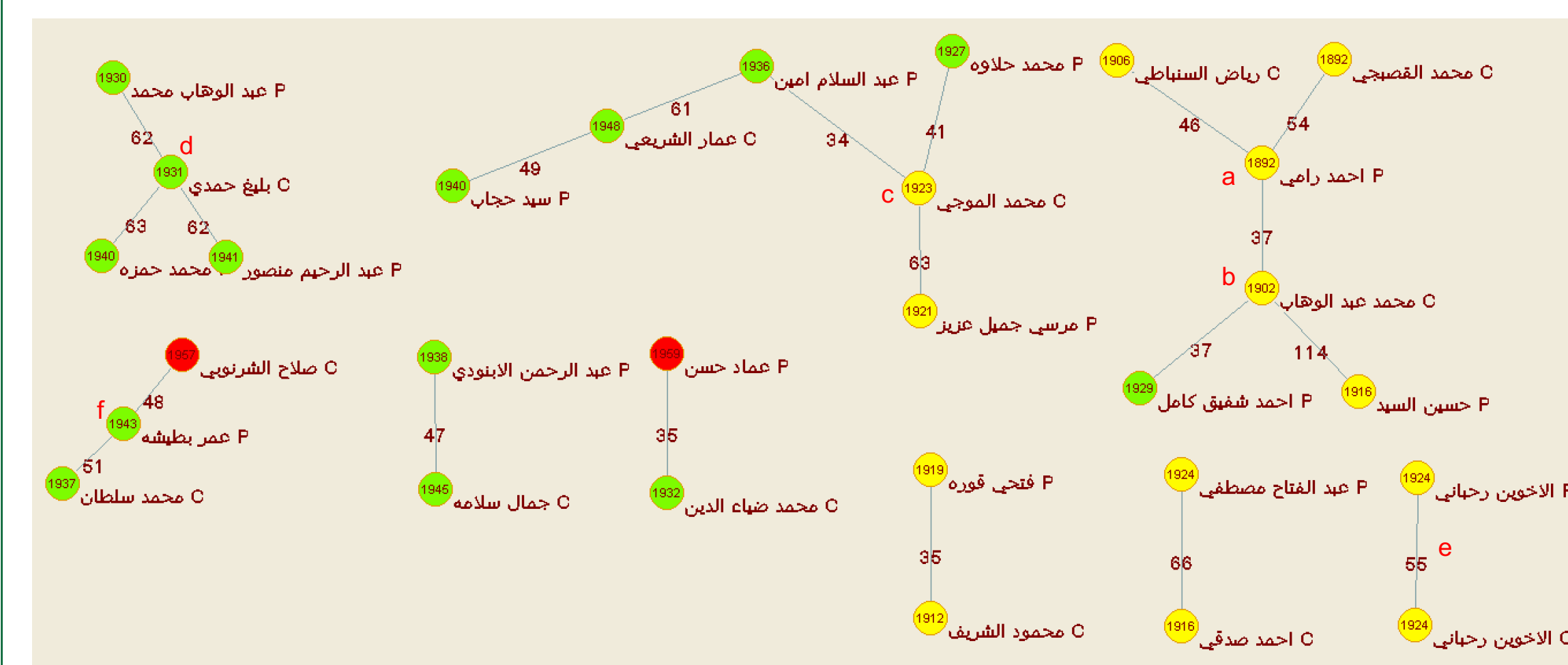
7. M-slices

Removing lines with weight < M helps reveal core network structure. For M < 21 a single large component emerges, combining eras, but M=21 differentiates two large components, one mainly Classic, the other mainly Modern (centered on the same artists, a,b,c,d), each with a cohesive 2-core (not shown). Eigenvalue centrality identifies the most important 10 nodes among the Classic and Modern artists (but no Popular) in these two clusters, including b,c,and d. A Popular era component never appears at any value of M.

---
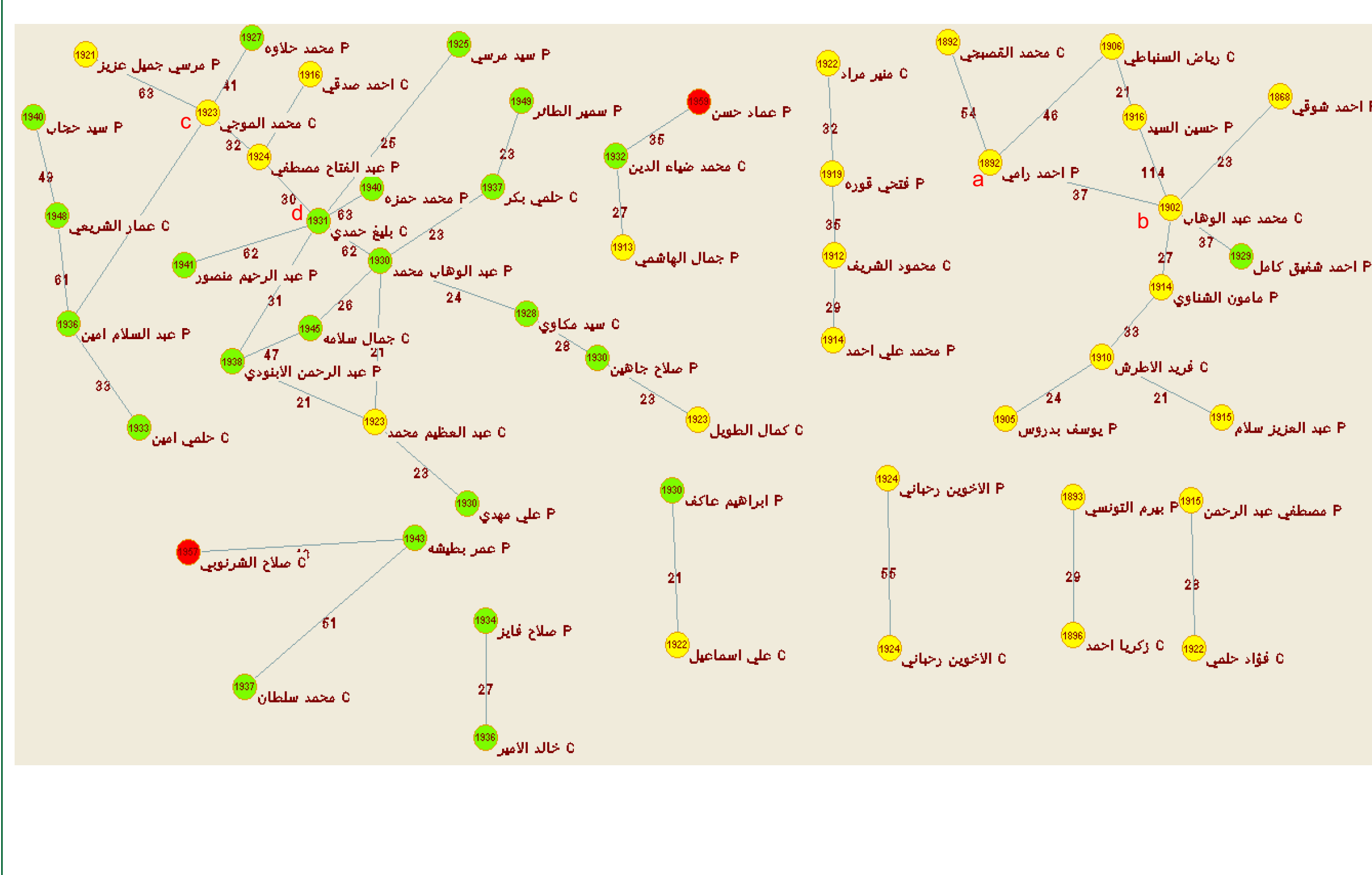
8. Communities

I ran Louvain community detection on the 10-slice, i.e. after removing lines indicating only moderate collaboration. The two large communities strikingly separate Classic (left) and Modern (right), with few, relatively isolated, Pop era nodes embedded in both.

---
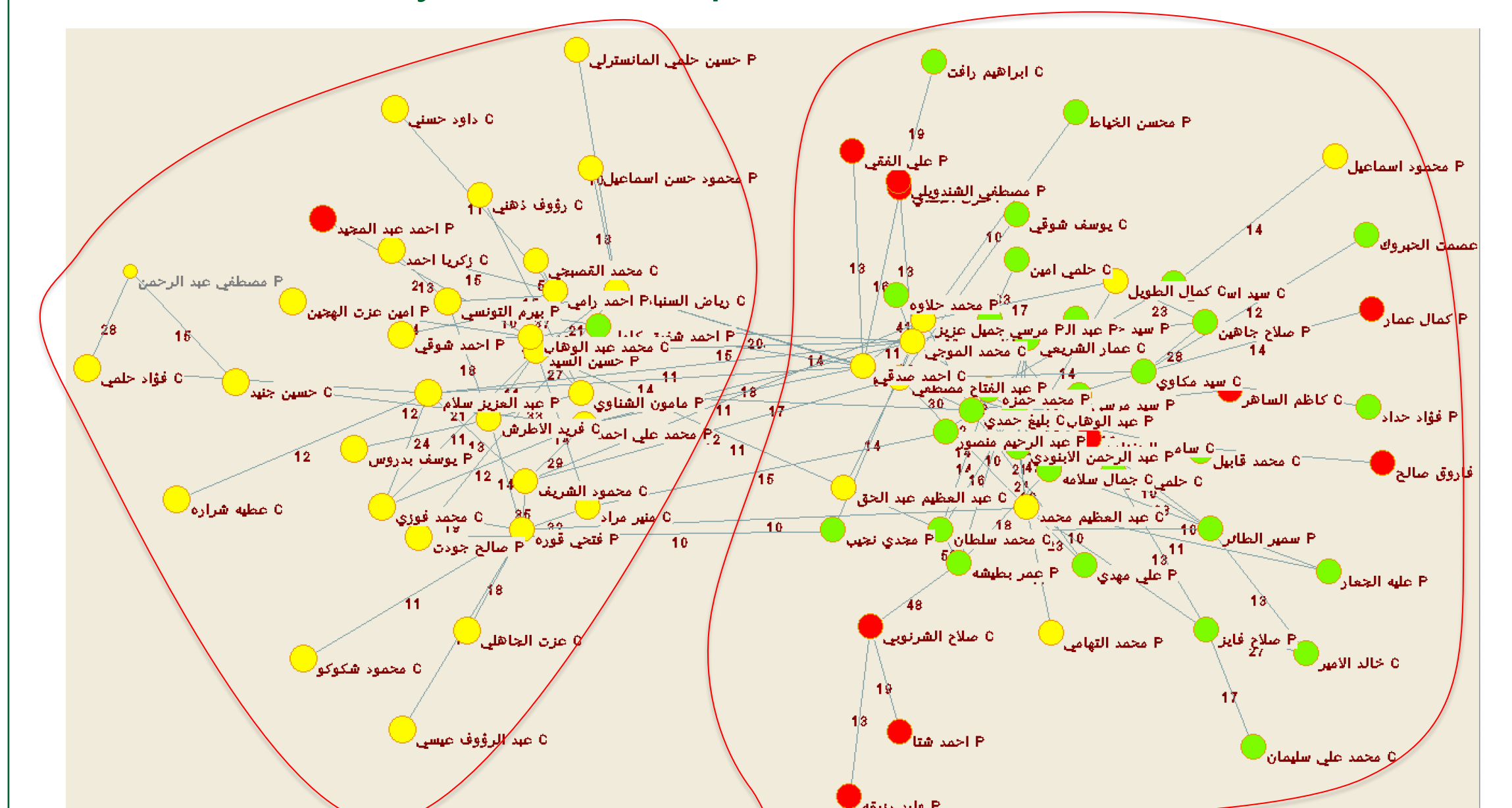
9. Conclusions and future work

Results: Network analysis confirms the central position of several well-known Egyptian composers and poets, and the greater connectivity of composers. Both egonet and full network analyses suggest that artists are most strongly connected in cohesive groups during the late Classic and Modern periods, precisely during Radio's peak. **Interpretations**: (a) Radio facilitated musical output and social connectivity during its heyday, while modern digital production reduced social interaction; (b) Radio actively censored post-70s content, which is also poorly documented in the database.
Future work: (a) Adding birth year, gender, and birthplace for all artists, and creator data for all songs. (b) Including singers in a more gender-balanced *three*-mode network. (c) Extending analysis to gender and birthplace, as well as age.