

THE SMALL WORLD OF AL CAPONE

The Embedded Nature of Criminal and Legitimate Social Networks.*

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Abstract

Everyone was guilty of a criminal offense during U.S. Prohibition, but even the imbibing Chicagoans were concerned by the cozy relationships between politicians, union leaders, businessmen, and mobsters that had made their city infamous. This overlap between the legitimate and criminal worlds poses several empirical questions: what did such network embeddedness look like, who were the men straddling both worlds, what was their relationship to Al Capone, and what were their structural signatures within the legitimate and criminal networks? Whereas most of our understanding of this embeddedness problem relies on historical analyses, this paper reexamines organized crime through a new analytical lens—social network analysis. Using a unique relational dataset created by coding more than 4,000 pages of documents, our analysis reveals the precise ways in which the criminal networks associated with Al Capone overlapped with political and other legitimate networks. These new data and the use of social network analysis mark this study as perhaps the first to (quite literally) map the world of organized crime in Prohibition Era Chicago. The findings reveal a series of overlapping social networks of more than 1,500 individuals with more than 6,000 ties among and between them. We compare the “structural signatures”—i.e., the various network characteristics—of organized crime figures who have been deemed “important” from more traditional historical analyses with those deemed important from structural analysis. In short, this paper examines how legitimate and criminal networks coalesce to form the small world of Al Capone.

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1 Introduction

Giacomo Colosimo was Chicago’s original gangster. An immigrant from Calabria, Italy, “Big Jim,” as he is more commonly referred to, started out at the bottom—quite literally, digging ditches and shoveling manure. But this full-time laborer and small time hood soon became involved in local union organizing and, in so doing, caught the attention of local politicians. Members of the First Ward Democratic Club and local aldermen “Bathhouse” John Coughlin and Michael “Hinky Dink” Kenna realized Big Jim’s potential for earning and his penchant for organizing. Coughlin and Kenna quickly incorporated Colosimo as a collector and middleman in their gambling and vice interests as well as a vote-getter in Italian neighborhoods. Over the span of approximately 15 years, Colosimo also owned two brothels with his first-wife Victoria, managed the protection and operations of hundreds of other brothels in the Red Light district, and was charged with crimes pertaining to human trafficking. Yet, while Colosimo undoubtedly had many of the “great man” qualities of other industrialists of his time, his success in Chicago’s underworld came in large part because of the interwoven sets of relationships between Big Jim, Coughlin, and Kenna. And, nowhere is this mixing of political and criminal worlds better illustrated than in Big Jim’s death, or, to be more precise, at his funeral.

The ceremony and opulence of Colosimo’s funeral is typically reserved for heads of state or royalty.¹ Newspapers reported more than 5,000 mourners at the funeral and extravagant floral arrangements lining all available areas of the gravesite, casket, and funeral vehicles. Funeral goers chanted prayers—lead by none other than Coughlin—and listened to hymns sung by members of the Chicago Opera Company. While the such lavishness and ceremony brazenly displays the power and wealth of mob bosses, the prominent list of funeral goers broadcasts the intimate relationship between politics and crime. For instance, newspaper accounts listed the names judges, aldermen, local politicians, a state representative, and a member of Congress right alongside gangsters, gamblers, and brothel owners as honorary and active pallbearers (Chicago Tribune 1920). As Landesco ([1929] 1968) aptly notes, “In the hour of death, personal ties are disclosed, which in life were concealed” (p. 205). Like a magician revealing a not-so-well-kept secret, the funeral of Colosimo exposed the blatant intermixing of Chicago’s legitimate and criminal worlds that made vice both possible and profitable for politicians and criminals alike.

This paper explores the extent and nature of this embeddedness of the criminal and legitimate worlds during the heyday of a gang boss even more opulent than Colosimo—Al Capone.

¹Here we are drawing heavily from observations made by Landesco ([1929] 1968) as well as newspaper accounts.

Capone, Colosimo’s former bodyguard and chauffeur, is often accredited with fine-tuning organized crime rackets and creating Chicago’s “Outfit” (Russo 2001). In fact, most historical accounts depict Capone as the organizational maestro of a massive criminal network that permeated virtually every corner of Chicago society. The main objective of this paper is to better understand how the power derived from the life of the underworld permeates legitimate social networks. Whereas most of our understanding of this embeddedness problem relies on historical analyses, this paper reexamines organized crime through a new analytical lens: *social network analysis*. Using a unique relational dataset created by coding more than 4,000 pages of documents, our analysis reveals the precise ways in which the criminal networks associated with Al Capone overlapped with political and other legitimate networks. These new data and the use of social network analysis mark this study as perhaps the first to (quite literally) map the small world of organized crime in Chicago. The findings reveal a series of overlapping social networks of more than 1,500 individuals with more than 6,000 ties among and between them. In short, this paper examines how legitimate and criminal networks coalesce to form the small world of Al Capone.

2 Re-Creating Capone: A Network Approach.

As the example of Colosimo’s funeral illustrates, prior research on organized crime in Chicago has long documented the intertwined and embedded nature the social and criminal worlds. In fact, some of the most riveting accounts of organized crime in Chicago chronicle such dealings from gambling dens and brothels to illustrious jazz clubs and presidential politics. Our research departs from this prior work not in ethos or narrative, but in empirics. Most prior research relies on historical accounts of specific events and specific individuals, drawing conclusions from nuanced readings of archival data to describe various historical arcs across time and space. Yet, purely historical accounts are limited in their expanse and focus—indeed, most historical research focuses on single actors or single events in the Mob’s history. While our approach rests firmly on the historical record, we seek to expand the understanding of organized crime by analyzing (as much as possible given data considerations) the entire range of social, political, and criminal behaviors of thousands of individuals over thousands of interactions and events. In this way, our analyses will reveal not simply the importance of unique actors, but also the significance of how this coming together binds the criminal and legitimate worlds.

Perhaps a relevant example of how social network analysis can be used to shed new light on historical archives is Padgett’s analysis of Cosimo de Medici (Padgett and Ansell 1993). Pad-

gett’s analysis of historical documents reveals that part of Medici’s rise to power was determined by the precise patterning of business, banking, and marriage relationships. While the historical record established the importance of the Medici long before Padgett, network analysis exposes a particular strategy of action that was unique to Medici. In much the same way, we turn to social network analysis in order to: (a) identify and expound on larger structural patterns that typically go unobserved in most historical accounts of organized crime, and (b) to determine where precisely the legitimate and criminal worlds blur together.

2.1 Social Network Analysis and Organized Crime

Social network analysis refers both a theoretical perspective and a set of methodological techniques that cross disciplinary boundaries, ranging from field-driven anthropology to theoretical physics. As a theoretical perspective, it stresses the interdependence among social actors, viewing the social world as patterns or regularities in relationships among interacting units (Wasserman and Faust 1994; Wellman 1983). As a methodological approach, social network analysis refers to a catalog of techniques steeped in mathematical graph theory that now extends to statistical, simulation, algebraic, and agent based models. The portability of network analysis across areas of scientific inquiry has explained phenomena such as: how people get jobs; the diffusion of technology, ideas, and disease; and even how political revolutions come to fruition.

Social networks are measured as a set of relationships on a bounded set of actors (Wasserman and Faust 1994). Actors can be individuals, organizations, websites, cities, neighborhoods, or any “unit” of interest with identifiable and definable relationships among them. A *relationship* refers to any type of tie or linkage between units—trading patterns, friendship, advice seeking, co-offending, sexual relationships, and so on. Formally, social networks are measured using graph theory, mathematical models that capture the pairwise relationships among specified units (Wasserman and Faust 1994). In graph theoretical terms, a network consists of a set of *vertices* or *nodes* that represent the bounded set of actors or units, and a set of lines or edges that define the relationships among them.

Researchers on organized crime spend considerable effort discussing different organizational forms, structures, and activities. It is of little surprise, then, that the most widely used application of social network analysis in criminology is the study of organized criminal groups. To date, criminologists have employed formal social network analysis to describe the structure

of street gangs (Fleisher 2006; McGloin 2005; Papachristos 2009; Tita, Makamura, and Krackhardt 2006), organized crime syndicates (Klerks 2001; McIllwain 2000; Morselli 2003), narcotics trafficking patterns (Natarajan 2006), terrorist organizations (Pedahzur and Perliger 2006; Xu and Chen 2003), and white-collar conspiracies (Baker and Faulkner 1993, 2003).

A network approach to organized crime assumes that social relationships and structures matter. The empirical goal is to measure as precisely as possible such patterning of social relationships in order to determine their structure and their influence on behavior. We argue that the structure of organized criminal networks is one of the main factors that demark these groups as a unique social form—something different from other types of organizations, groups, and structures. Network analysis can be used to uncover general properties of criminal groups that distinguish them from non-criminal networks and, in so doing, provide deeper insight into a range of social behavior.² In the present study, our objective is to uncover and analyze the criminal and legitimate networks that dominated Prohibition Era Chicago. In particular, network analysis detects patterns of relationships—and their relevance—that are not possible with other analytic techniques. In our case, the goal is not simply to say “networks matter,” but rather to pinpoint specific aspects of these social milieus—specific types of networks, positions, properties, and their overlap—that are more or less important in understanding organized crime.

2.2 The Capone Database

Empirically, a network approach to organized crime faces a unique problem: *how does one study groups that try to remain hidden?* By definition, organized crime groups typically work best when clandestine. From a research perspective, this hidden nature of criminal groups clouds boundary specification—i.e., the process of identifying who is in and who is out of a given network. While contemporary network studies often rely on police, open source, interview, and observational data, our study is circumscribed by archival materials on individuals long deceased. Our objective is to create a relational database that captures as broadly as possible individuals somehow connected to organized crime. We are not (necessarily) interested in finding some hidden Capone relic. Rather, we are interested in the database’s breadth. How many people are in this archive? Who were they? And, more importantly, how were they connected? In short, our goal is to recreate the connections among individuals in these various archives.

²For instance, Baker and Faulkner’s (1993) study of a price-fixing scheme in the heavy machining industry finds that whereas legitimate business networks organize in such a way to maximize efficiency, conspiratorial networks tend to develop a structure that maximizes concealment, even if this means sacrificing profits.

2.2.1 Data Sources

Since June 2008, we have collected, scanned, and coded documents from several archival sources, including: the Chicago Crime Commission, the Internal Revenue Service, the Federal Bureau of Investigation, the National Archives-Great Lakes Region, Northwestern’s History of Homicide in Chicago, 1870-1930 database, and Proquest Newspapers (see TABLE 1). We supplement these archival documents with secondary sources in order to triangulate historical records and contemporary accounts. The types of documents in these archives varied greatly ranging from ordinary newspaper clippings and obituaries to detailed police investigations, personal letters, bail-bond cards, tax documents, and court testimony. As seen in TABLE 1, to date 4,024 pages of primary and secondary sources have been coded. Each entry in the database links directly to a source, either primary or secondary, thus permitting cross-referencing and data filtering.

Table 1: Archival Sources for Capone Database

| Archival Sources | N of Pages Coded |
|--|------------------|
| Chicago Crime Commission | 1784 |
| Internal Revenue Service | 86 |
| Federal Bureau of Investigation FOIA Electronic Reading Room | in progress |
| National Archives-Great Lakes Region | 1072 |
| Northwestern’s History of Homicide in Chicago, 1870-1930 | 130 |
| Proquest Newspapers Historical Chicago Tribune | 345 |
| Secondary Sources | |
| Asbury, Herbert. 1940. <i>Gem of the Prairie</i> . | 172 |
| Eig, Jonathan. 2010. <i>Get Capone</i> . | 159 |
| Landesco, John. [1929] 1968. <i>Organized Crime in Chicago</i> . | 231 |
| Russo, Gus. 2001. <i>The Outfit</i> . | 45 |
| Total | 4,042 |

2.2.2 Sampling

Unlike some historical projects with a defined archive, ours is an attempt to compile a database of early 20th century organized crime in Chicago. This presents various challenges—the most problematic is boundary specification, namely who is “in” the data and who is “out.” Certain individuals (and events) are much more prominent in the historical record than others; and crime reporting often includes contradictions, typos, allegations, and bias. To address some these challenges, we took a two-fold sampling approach. First, we attempted a random seeding

method to identify as many individuals as possible in the archival materials by sampling specific documents and files. This entailed locating “consolidation” files of the Chicago Crime Commission (CCC) that summarized key figures and events during and before Prohibition.³ CCC members wrote these executive summaries contemporaneously and retrospectively on various corruption and criminal cases, relying heavily on their own primary investigations as well as legal documents and newspapers. Our main goal with this sampling step was to generate a list of individuals in all available sources who were somehow mentioned in connection with organized crime.⁴

Second, we adopted an informant-based sampling strategy familiar in qualitative research. Fortunately for our research purposes, the national and international public had a fascination with Al Capone and left behind a massive record. We collected and coded a population of archival documents generated from searching the informant, Al Capone. Additionally we have searched and coded for individuals connected to Capone, individuals listed as “public enemies” by the CCC, court indictments and documents, the Illinois Crime Survey of 1929 (Landesco [1929] 1968), and significant events and individuals referenced in secondary sources such as Asbury (1940). Documents associated with our informant include: IRS documents, court testimony and transcripts, police and arrest records, newspaper articles, and more.

The resulting database—which we call simply, “The Capone Data”—currently contains 2,892 unique individuals whose name appeared in records from years 1882 to 1949. We record when available: aliases, alternative spellings of names, birth year, place of birth, sex, race/ethnicity, possible ethnicity, marital status, number of children, primary city of residence, occupation, gang, position in gang, date of death, and cause of death. Although our sampling strategy is neither exhaustive nor completely random, we believe that it accurately captures a range of observable individuals and activities. Even the cleverest criminal mind would be hard-pressed to generate a list of 2,000 individuals with whom they associate.

³Chicago’s business elites began the Chicago Crime Commission in 1919. Its purpose was to do the work of Chicago’s failed police department by uncovering corruption and tracking notorious figures (Ruth 1996). The civilian based organization continues today.

⁴Unfortunately, we lost access to the archives in the middle of our data collection, ironically, for political reasons—a change of administrative policy towards outside researchers.

2.2.3 Relational Coding Strategy

We code all documents in such a way as to identify relationships. Relational coding includes events, allegations, descriptions and associations. Every time two or more names appear together in a record, we code a relational tie between unique individuals. Each tie begins by pulling names from the database, one individual as a sender and one individual as a receiver.⁵ Other information recorded for each tie (when available) includes: date or approximate year, type of tie, location, document source, and document source page number.

In the process of coding relationships, we have identified eleven types of hierarchical ties: family/personal, financial, funeral, legal, political, rival/informant, union, violence/murder/crime, and other. A second-level of coding includes 102 “tie descriptors” which contain more precise details of the specific relationship. For example, the *criminal* code is comprised of such smaller ties as arrests, corruption, racketeering, criminal associates, and illegitimate business ventures. Likewise, the *family/personal* code includes relationships such as family members, friends, mistresses, neighbors, acquaintances, etc. In total, we have identified, 13,934 ties.

3 The Networks

FIGURE 1 displays the social networks derived by linking unique individuals through their criminal and legitimate ties. Each of the nodes represents one of 1,567 individuals. Each of the lines represents a unique tie, of which 6,716 are displayed here. TABLE 2 contains basic information on the total network as well as its two sub-networks—criminal and legitimate.

This network is actually comprised of 121 smaller networks (components), but the vast majority of individuals (76 percent) exist in the single large component; in the remainder of this paper, we focus our analysis on this larger component. In short, these data demonstrate that it is actually *the configuration of criminal and legit ties that create the large and connected organized crime network*.

At the middle of this network is none other than the “Big Guy” himself, Al Capone. Given the sampling methods as well as the abundant historical records, this is of no surprise. In total, Capone has ties to more than 700 unique actors. Capone aside, individuals on average have approximately 8.6 ties, though the standard deviation is quite large (18.7 if Capone is not con-

⁵Though for most tie types the direction of the tie is irrelevant.

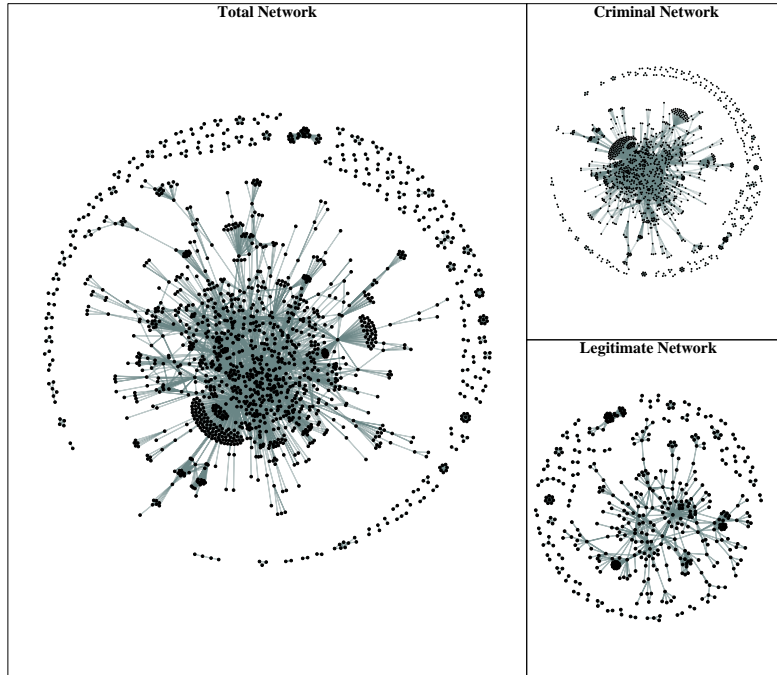


Figure 1: Criminal and Legitimate Network of Organized Crime in Chicago

sidered, 42.2 if he is considered). Regardless, with or without Capone, the distribution of ties in the network is highly skewed so that most people in the network have a small number of ties while a small number of individuals have a large number of ties (Appendix TABLE A1). This distribution of ties is consistent with prior research on non-criminal networks, thus providing some validity for our procedures of data collection.

Table 2: Summary Statistics of total, criminal, and legitimate networks.

| | Total Network | Criminal Network | Legitimate Network |
|---------------------------|---------------|------------------|--------------------|
| N of Individuals | 1,567 | 1,339 | 453 |
| N of Ties | 6,716 | 5,596 | 1,120 |
| N of Components | 121 | 104 | 285 |
| Size of Largest Component | 1,193 | 1,015 | 285 |
| Average Degree | 8.560 | 8.350 | 4.940 |
| Density | 0.005 | 0.006 | 0.011 |

The total network in FIGURE 1 is actually a composite of criminal ties and legitimate ties.

These separate networks are presented on the right-hand side of FIGURE 1. Given that the majority of ties in the database are criminal ties (82 percent), the criminal network is quite similar to the total network in size, number of ties, density, and average degree. In contrast, the legitimate network is considerably smaller ($N = 453$ individuals), has fewer ties ($N = 1,120$), a greater number of components ($N = 285$), and on average smaller degree centrality per individual (4.9). However, like the total and criminal networks, the legitimate network is also dominated by a single large component that is comprised of 62 percent of all actors.

Taken together, the networks in FIGURE 1 demonstrate that even though we often consider the legitimate world and the underworld to be somewhat *categorically* distinct, they are, in fact, intertwined. Indeed, although parsing out the separate ties demonstrates some differences between legit and criminal associations, these two social networks overlap in such a way as to create the larger *multiplex* network. This has two important consequences. First, considering both sets of ties generates a more expansive and complete network, and, second, some individuals become connected in multiple ways. In fact, those individuals with ties in both the legit network and the underworld are the glue that holds together the larger network structure.

To illustrate this point, FIGURE 2 presents a Venn diagram of the location of individuals within these networks. As seen in FIGURE 2, the majority of the individuals have ties in only the criminal world, and a considerably smaller number have ties only in the legitimate world. However, 225 individuals are straddling both worlds. These 225 individuals—whom we will simply call “Middle Men”⁶—are responsible for fusing the legitimate and criminal worlds.⁷

Occupying both the criminal and legitimate worlds, these Middle Men not only hold together organized crime, but also typify how overlapping social webs can generate conflict between an attribute-based view of the social world and a relational-based view of the world.⁸ In other words, people who exist in both worlds often have discrete categorical attributes (e.g., politician, gangster, businessman, etc.), but their patterns of relations may supersede or undermine their formal (read: public) attributes. For example, while a politician is clearly an elected or appointed position of public office, this position alone does not make him a legitimate character

⁶Though we use the gendered term “men,” at least one of these individuals is a woman: Mae Capone, Al’s wife, who was arrested with Al Capone (criminal tie) and was allegedly one of Al’s business associates (legitimate tie).

⁷We are currently exploring how these “Middle Men” relate to formal measures of brokerage and influence.

⁸See A. Abbott (1997) or Emirbayer (1997) for a discussion of how relational thinking differs from a variable-based way of viewing the social world.

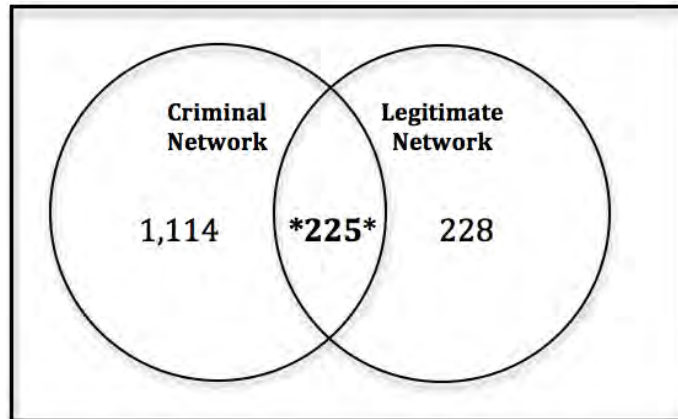


Figure 2: Overlap in Criminal and Legitimate Networks

especially if he has strong ties to the underworld—the lawmaker can also be the lawbreaker. In the case of these network data, we see that attributes alone are insufficient indicators between legitimate and illegitimate, legal and illegal, moral and immoral. In other words, social network analysis can help to identify those individuals, incidents, and events in which the boundaries between legal and illegal are blurred.

The Colosimo example we introduced at the beginning of this paper further illustrates this point. FIGURE 3 plots the ego-networks of Kenna and Coughlin, the two elected officials who recruited Colosimo to oversee their vice operations. This network contains 24 individuals including: 4 politicians, 1 police officer, 3 gangsters, 3 operators of gambling establishments, and 14 pimps and brothel owners. Kenna and Coughlin are at the center of this network. Although they were democratically elected Aldermen of Chicago’s first ward, they were colloquially known as the “Lords of the Levee” because of their political and financial control of Chicago’s red light district (Abbott, K. 2007). This network diagram covers over 30 years of political corruption and extortion on the part of Kenna and Coughlin. Some of the ties linking individuals together run the gamut of illegal bribes, gambling payments, and political payoffs as well as legitimate political support and appointments.

FIGURE 3 makes immediately apparent the dense intermixing of the politician and the criminal—and, more importantly, how such categorical distinctions as “legitimate” and “illegitimate” are skewed. Roughly 20 percent of the actors in this network can be categorized as “legitimate” in that they were elected or appointed. However, their proximity and dispropor-

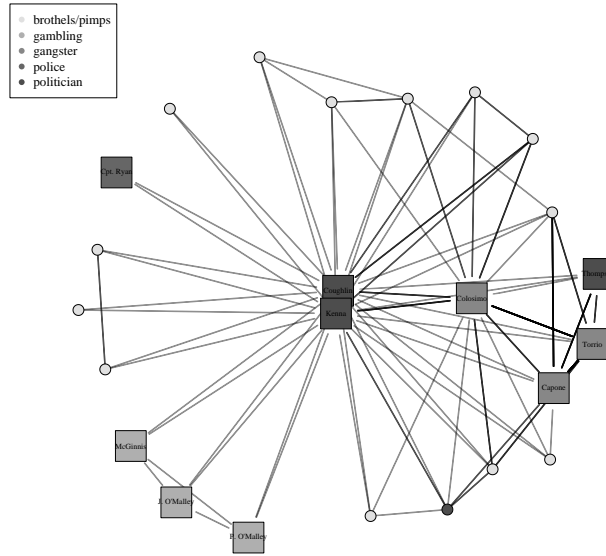


Figure 3: Kenna and Coughlin Ego-Networks

tionate connections to high-profile gangsters and madams subvert the dichotomy of legitimate vs. illegitimate. For example, 56 percent of Kenna’s and 67 percent of Coughlin’s ties occur in the criminal world. Likewise, Colosimo, Capone, and other gangsters have strong ties and close ties to elected officials. Thirty-one percent of Colosimo’s ties are in the legitimate world. Thus, this figure reveals the extent to which the legitimate and criminal mingle.

The overlap observed in the Kenna-Coughlin network binds together individuals from seemingly disparate social realms. In fact, it is smaller networks such as these that meld together to create the larger networks in FIGURE 1. Dozens of other relationships like the Kenna-Coughlin network are scattered throughout the larger network, essentially holding it together. It is the coming together of such local networks that are the foundation for the larger interactional patterns. And, at the center of it all are the individuals we call “Middle Men.”

4 Middle-Men and the Problem of Embeddedness

As described above, we identify 225 individuals who have ties in both the legitimate and illegitimate worlds. Again, categorically, 13 percent of these Middle Men are politicians, 44 percent are union, and 47 percent are gangsters. As expected, considerable overlap in such

distinctions exists. For example, 35 percent of the Middle Men can be categorized as both gangsters and union associates. Similarly, 58 percent of politicians could also be categorized as criminals or gangsters. It is precisely these hazy distinctions that make organized crime possible and fuse the networks together.

One of the most prominent Middle Men is, not surprisingly, Al Capone. This reflects not merely our sampling procedures, but also Capone’s role as maestro of organized crime in Chicago. His structural position in the network, then, should reveal his thumbprint on the political and legitimate networks we observe. Alongside Capone, approximately half of his “Top Guys” pervade political, union, and business networks.⁹ Even though Capone is given supreme causal power in the historical record, he and his Top Guys constitute less than 7 percent of all Middle Men. Put another way, although historically the Capone Syndicate are often accredited as being the main players in the legitimate and criminal circles, our data find a greater number of non-Capone Middle Men.

We now turn to examine the local network structures of these Middle Men to identify how (if at all) their networks differ from other individuals in the data. To this end, FIGURE 4 summarizes the “structural signature” of individuals’ ego networks. We examine five different network properties: (1) *legit degree*, the number of legitimate ties one has, (2) CRIMINAL DEGREE, the number of criminal ties one has, (3) LEGITIMATE K-CORE, how embedded one is in the legitimate network, (4) CRIMINAL K-CORE, how embedded one is in the criminal network, and (5) DISTANCE TO CAPONE, on average how many steps removed any individual is from Al Capone.¹⁰ The y-axis displays the standardized z-scores for all measures, while the x-axis displays the five different network statistics. Each boxplot contains the mean (solid line), a one standard deviation distribution (shaded grey), and the 95% confidence intervals (the whiskers). Panels A through D are described below.

As a point of comparison Panel A in FIGURE 4 shows the structural signatures for everyone in the largest component that is neither a Middle Man nor one of Capone’s Top Guys. Therefore, their network patterns center on the mean of zero and provide a baseline comparison. Panel B summarizes the statistics for the 210 individuals identified as Middle Men who are not

⁹“Top Guys” refers to the 25 individuals in our data who were identified as having a position of authority in the Capone Syndicate or were alleged to be in Capone’s inner circle.

¹⁰Degree is measured here as simply as the total number of ties in each of these networks. A k-core is a maximal group of actors, all of whom are connected to some number (k) of other members of the group. The Distance to Capone is measured as the shortest path between each individual to Capone.

Capone or his Top Guys. This panel shows that, on average, Middle Men have a slightly higher number of legitimate ties and are more embedded in both legitimate and criminal networks. It is important to note, that these individuals have both a greater number of ties and are also more deeply woven into densely connected criminal and legitimate networks. The Middle Men in Panel B are also, on average, slightly closer to Capone than non-Middle Men.

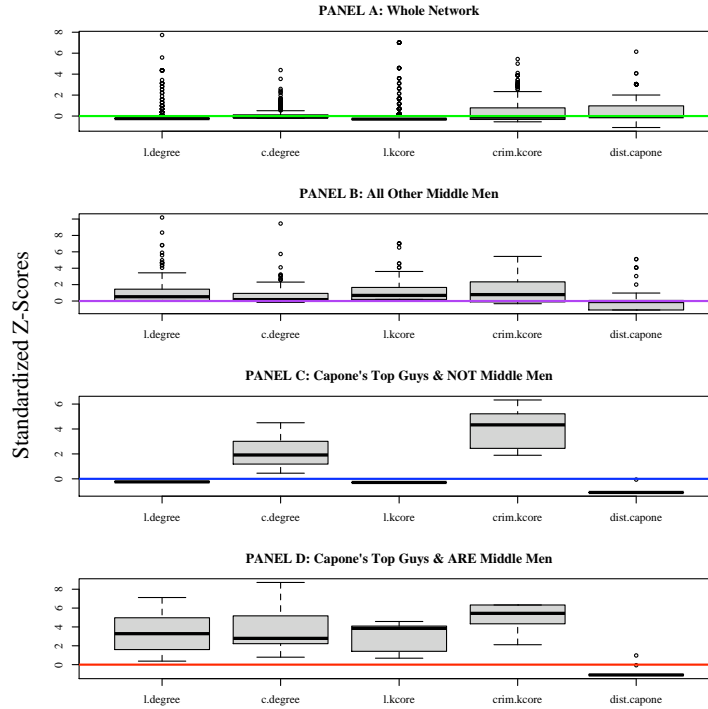


Figure 4: Select Network Properties of Different Types of Network Actors

Panels C and D contrast Capone’s Top Guys who are not Middle Men to the Top Guys who are Middle Men. The participation in the legitimate world in terms of degree of legitimate ties and embeddedness are substantially different between these two panels. Obviously Capone’s Top Guys, Middle Men or not, have high criminal degree and are highly embedded in dense criminal networks. They are also as close as one can get to Capone in distance. Perhaps the most interesting distinction FIGURE 4 is comparing Capone Middle Men (Panel D) vs. the other Middle Men (Panel B). Whereas Capone’s Middle Men are significant in both criminal and legitimate networks, non-Capone Middle Men displays high criminality and high legitimacy,

whereas the other Middle Men display low criminality (relatively speaking) and high legitimacy. Whereas Capone and his Top Guys are clearly operating in the criminal networks and into the legitimate networks, the other Middle Men's structural signatures suggests a more peripheral position in the criminal networks. In other words, the gluing of the criminal and legitimate worlds extended well beyond Capone and his Top Guys.

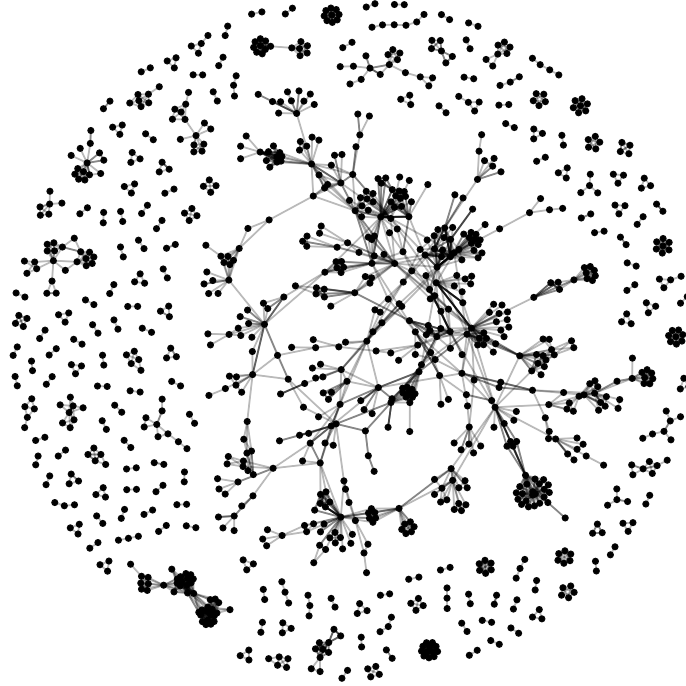


Figure 5: Largest Component of the Total Network with Middle Men Removed

5 Removing the Middle Men

If Middle Men are the ones responsible for holding together the legitimate and criminal networks, then their removal should (by definition) dramatically alter the observed networks. TABLE 3 lists selected network properties for the total network with various actors removed and FIGURE 5 shows what happens to the largest component from FIGURE 1 if the Middle Men are removed. As clearly seen in the FIGURE 5, the elimination of Middle Men decimates the large component breaking it into 180 smaller networks. The remaining large component is entirely comprised of criminal ties, while various legitimate networks and criminal networks orbit this

Table 3: Summary Statistics of networks With Certain Actors Removed.

| | Total Network | Without Mid. Men | Without Top Guys Who Are Mid.Men | Without Capone | Without TG Mid.Men And Capone |
|---------------------------|------------------|---------------------|-------------------------------------|-------------------|----------------------------------|
| Average Degree | 8.56 | 4.86 | 7.63 | 7.45 | 6.67 |
| Average Path Length | 3.88 | 5.66 | 3.91 | 4.46 | 4.67 |
| N of Components | 121 | 180 | 123 | 133 | 140 |
| Size of Largest Component | 1,193 | 493 | 1151 | 1046 | 978 |

large component. As seen in TABLE 3, the removal of the Middle Men also increases average path length (the distance between any two nodes) and decreases average degree centrality. In other words, it takes longer to get to people and, on average, people are less connected. The other columns in TABLE 3 show similar, but somewhat smaller, effects on the network when removing Capone, his Top Guys, and the Middle Men from the network.

6 Forthcoming Analysis

The remainder of this paper will (soon) use a series of Exponential Random Graph Models and Rare Event Logistic Regression Models to analyze: (a) what network and individual properties are responsible for the observed network patterns, (b) the affect of underworld ties on the formation of legitimate ties, and (c) the influence of individual and network properties on the embeddedness in legitimate and criminal networks.

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Appendix

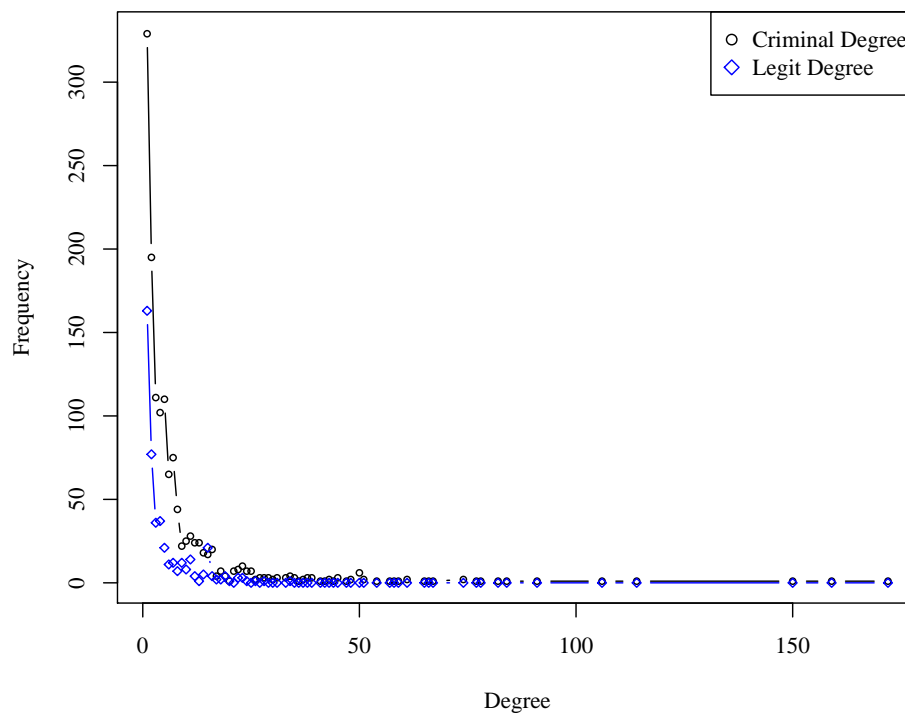


Figure 6: Largest Component of the Total Network with Middle Men Removed