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TRUST AND INFLUENCE: A CASE STUDY IN KENYA

by

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TRUST AND INFLUENCE: A CASE STUDY IN KENYA

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Submitted in partial fulfillment of the
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ABSTRACT

The significance of military partnerships and diplomatic relationships between the United States and its allies remains paramount as our focus shifts from counter-terrorism to competition among great powers. The trust between the U.S. and its partners, as well as its own trustworthiness and influence, remains critical to military engagements, operations, and exercises. The understanding of trust, trustworthiness, and their influence can be better determined and focused through the application of social network analysis (SNA). This thesis explores those concepts and then applies SNA to a case study of the U.S. and Chinese relationships with Kenya in an effort to illustrate how SNA can be applied to visualize and analyze networks for information-operations planning and policy implementation.

This thesis employs SNA to analyze the case study of Kenya and propose how this can then be used to focus efforts to grow trust in certain relationships, or enhance the U.S.'s trustworthiness, to maximize influence or mitigate China's influence.

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LIST OF ACRONYMS AND ABBREVIATIONS

ARD	Average Reciprocal Distance
CCTV	China Central Television
CRS	Congressional Research Service
CUG	Combined Uniform Graph
FOCAC	Forum of China-Africa Cooperation
GWOT	Global War on Terror
HOA	Horn of Africa
ICS	Integrated Country Strategy
IMC	International Medical Corps
KEG	Kenya's Editors Guild
MCC	Millennium Challenge Corporation
NDS	National Defense Strategy
NSS	National Security Strategy
PAO	Public Affairs Office
PLA	People's Liberation Army
SNA	Social Network Analysis
UN	United Nations
UNSC	United Nations Security Council
USAFRICOM	United States Africa Command

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I. INTRODUCTION

The 2017 United States National Security Strategy initiated significant changes in the manner in which the U.S. military and Department of State frame and view conflict by identifying a growing concern over near-peer adversaries, China and Russia, while simultaneously removing emphasis on non-state actors. As the United States government transitions its efforts from counter-terrorism operations towards acknowledgement of an international environment defined by great power competition, it becomes necessary to reacquaint itself with methods designed to identify where U.S. influence dominates and where it is being challenged.¹ These changes in focus, however, do not necessarily reset all U.S. military and diplomatic efforts in counter-terrorism; rather, they highlight the importance of maintaining longstanding relationships with partner nations. In Africa, for instance, Kenya remains one of the top partner states and number one force provider in combatting terrorism on the continent. Kenya's importance will not diminish in light of great power competition, but China's growing economic and military presence in surrounding countries raises questions of continued U.S. influence and trusted partnership.

Within the African continent there exists myriad players, both regional and international, seeking to wield influence for many reasons. Due to its strategic importance along the coastline and shared borders with some of the more volatile countries in eastern Africa, Kenya stands to benefit greatly from outside interests. Kenya's own dynamics, however, continue to cause outside speculation² of the administration's capacity to overcome its own struggles and become the prominent and independent regional partner that Africa, and the rest of the world, needs Kenya to be. Africa's projected population growth³ and the significant proportion of United Nations (UN) votes the continent

¹ "National Security Strategy of the United States of America" (United States, The White House, December 2017), 27, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905-2.pdf>.

² "Kenya," Millennium Challenge Corporation, accessed November 15, 2019, <https://www.mcc.gov/where-we-work/country/kenya>.

³ "Population," December 14, 2015, <https://www.un.org/en/sections/issues-depth/population/index.html>.

represents makes Africa of particular interest for both economic growth and diplomatic relations. Kenya's position as the leading economy in the eastern region as well as its role as the largest force provider in counter-terrorism measures in Somalia prove maintaining this relationship should remain of the utmost importance for the United States. Kenya's port at Mombasa has, historically, been a critical gateway for trade for all of its landlocked neighbors, allowing for goods to come in and out of the continent.⁴

In 1995, Martin Libicki argued that "information and information technologies are increasingly important to national security in general and to warfare specifically," and "advanced conflict will increasingly be characterized by the struggle over information systems."⁵ In the last twenty years of warfare, the phrase "winning the hearts and minds" has become a mantra used first in the military and then in U.S. popular culture. While warfare is far more nuanced than this now cliché phrase suggests, it has helped focus our attention on military interactions. Relationships at every echelon of the military structure with partner forces, like those with Kenya, as well as local populations during any operation or exercise, are paramount for success. It follows, then, that in order to compete in great power competition, the United States' information operations should continue to expand its capabilities as well as better hone current skills. One such capability, social network analysis (SNA), could assist information operations professionals in cultivating effective and long-lasting influence. SNA provides, as Cunningham et al. note, "a collection of useful, powerful, and specialized tools," which, "when used in conjunction with reliable data collection... can provide a perspective that is otherwise unavailable with traditional methods."⁶ It can also assist in understanding where there may be a breakdown in relationships, where trust is faltering, and where the U.S. may want to highlight its own trustworthiness. It also offers information operations practitioners tools to collect relational data about the individuals or organizations they wish to target and then visualize those

⁴ Daniel Branch, *Kenya: Between Hope and Despair, 1963–2011* (London, England: Yale University Press, 2011), 1–299.

⁵ Martin C. Libicki, *What Is Information Warfare?* (Washington, DC: National Defense University, 1995), ix.

⁶ Daniel Cunningham, Sean Everton, and Philip Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis* (New York: Rowman and Littlefield, 2016), 3.

networks in order to best formulate plans for engagement and influence. SNA, by itself, cannot provide an answer in terms of knowing who and how to influence; however, it can assist those in planning operations better understand the implications of the activities they plan as well as how to best focus efforts.

The next chapter looks at the concepts of trust, trustworthiness, and influence as discussed in prominent scholarship on each of the topics. The third chapter then walks through the terms and basic concepts of SNA and how they will be applied in the fourth chapter. An analysis of the military and diplomatic relationships over a ten-year span between the U.S. and Kenya, as well as China and Kenya, comprise the fourth chapter. As relationships bear great impact on behavior and decision-making, this thesis proposes that the application of SNA can provide another tool to assist in planning and implementing information operations and can potentially offer a method in tracking the impacts on those existing relationships as time passes.

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II. TRUST, TRUSTWORTHINESS, AND INFLUENCE

The long-standing relationship between the United States and Kenya remains critical to engagements on the continent while other international actors' burgeoning influences may appear to challenge these ties. The U.S. and Kenya regularly interact in both military and diplomatic realms, partnering together for decades to mitigate the threat of terrorist groups in the region. This partnership in "counterterrorism has become an economic instrument for Kenya's security forces and a tool that the Kenyan government uses to leverage diplomatic its diplomatic relationship with the United States."⁷ Throughout this enduring partnership and economic dependence, the U.S.'s and Kenya's interests have overlapped; the U.S. has maintained forces in the Horn of Africa (HOA) for decades, and Kenya has become one of the largest beneficiaries of a variety of programs from the U.S. China's growing presence in and around Kenya, however, continues to raise question marks as the People's Liberation Army (PLA) increases its military footprint. As a result, the requisite trust to partner with military forces, as well as the influence both the U.S. and Kenya exercise on one another, should be part of the calculus for future engagements. Here I will discuss trust, trustworthiness, and the influence that each wields in interactions between the U.S. and Kenya as well as China and Kenya. Understanding from where trust is derived, how trustworthiness impacts trust, and what those two concepts do for the capacity to influence can better affect the implementation of SNA into information operations planning and policy.

A. TRUST

Trust is given from one party to another, afforded to an entity based on relational factors that each entity may or may not have expressly agreed to prior to the interaction.⁸ In international relationships between states that, presumably, act solely in their own self-interest, how is trust cultivated? According to Cook, Hardin, and Levi, "trust exists when

⁷ Jeremy Prestholdt, "Kenya, The United States, and Counterterrorism," *Africa Today* 57, no. 4 (Summer 2011): 5.

⁸ George A. Akerloff, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *The Quarterly Journal of Economics* 84, no. 3 (August 1970): 488–500.

one party... believes the other party has less incentive to act in his or her own interest or to take his or her interests to heart.”⁹ This applies in state-to-state interactions when at least one of the states believes their interests overlap or one state’s interest is encapsulated in the others.¹⁰ Cook et al. also emphasize the need for distrust in certain situations as it helps to “limit exploitation and protect those who cannot protect themselves.”¹¹ Perhaps the most defining element of Cook et al.’s argument lies in their belief that trust cannot be endowed to strangers or large groups and that trustworthiness is generated through repeated interactions over time and that “many interactions in which there is successful coordination or cooperation do not actually involve trust.”¹² In short, they argue that encapsulating interests can create cooperation without engendering trust between the parties involved. Mark Granovetter, while agreeing that encapsulated interests can be a source of trust, trust can, in fact, be endowed to parties unknown to the trustor. It can be afforded through relational ties where there is a “capacity to predict and affect their behavior.”¹³ He relates this to how trust in a leader can result from a string of relationships that assure interested parties in a leader’s qualities.¹⁴ Moreover, he argues that network structure can affect the presence of trust. Dense and cohesive networks, for example, help establish and enforce social norms (including trust), and the “small worldness” of most networks can facilitate the diffusion of trust through a network.¹⁵ “The critical point... is that a *little trust goes a long way*: if people can trust those who are vouchsafed for *indirectly*, then the size of structures in which trust matter expands far beyond what would be possible if only *direct*

⁹ Karen S. Cook, Russell Hardin, and Margaret Levi, *Cooperation Without Trust?*, Russell Sage Series on Trust 9 (New York: Russell Sage Foundation, 2005), 2.

¹⁰ Cook, Hardin, and Levi, 2.

¹¹ Cook, Hardin, and Levi, 2.

¹² Cook, Hardin, and Levi, 8.

¹³ Mark S. Granovetter, “The Strength of Weak Ties,” *The American Journal of Sociology* 78, no. 6 (May 1973): 1374.

¹⁴ Granovetter, 1374.

¹⁵ Duncan J. Watts, *Small Worlds: The Dynamics of Networks Between Order and Randomness* (Princeton, NJ: Princeton University Press, 1999), 1–20.

ties could be effective.”¹⁶ In international relations, building a network of military and diplomatic ties can play a significant part in trust and imbues the U.S.’s trustworthiness to those who may otherwise be less-likely to engage or where U.S. influence is limited. Therefore, the trust between the U.S. and Kenya (or Kenya and China, for that matter), can develop through ties with third parties where the direct ties lack strength or do not exist. Understanding the structure of a network may then illuminate ties which could assist in building that trust between actors that may not otherwise tie directly.

B. TRUSTWORTHINESS

Trust and trustworthiness, at first glance, may seem to be the same, but the difference is key to understanding how entities engage in cooperative relationships in an otherwise anarchical state. Trustworthiness is a slightly different concept in that it is a quality of an entity that must be cultivated by that entity through signaling or behavior which indicates they can be trusted.¹⁷ As Onora O’Neill asserts, trustworthiness encompasses the belief that a person or entity is “competent, honest, and reliable,” and while all three of those qualities may not be represented in all scenarios when trust is given, it is likely to be a combination of at least two.¹⁸ As George Akerloff famously wrote about in his work on “The Market for ‘Lemons,’” the existence of asymmetric information often hinders trust between actors, but that it may still occur with efforts of some actors to signal their trustworthiness. Similar to Cook et al.’s position that trust cannot exist between strangers, Akerloff asserts that trust can be generated through signaling.¹⁹ Trustworthiness can also be transmitted through regular cooperation, showing competence, honesty, and reliability, ensuring that the actors involved in any given interaction may not be disappointed or in any other way cheated. In their work on managing “the commons” (aka, common pool resources—CPRs) Dietz, Ostrom, and Stern ask whether or not people

¹⁶ Mark S. Granovetter, *Society and Economy: Framework and Principles* (Cambridge, MA: Harvard University Press, 2017), 87.

¹⁷ Onora O’Neill, *What We Don’t Understand about Trust*, TED, 2015, https://www.youtube.com/watch?v=1PNX6M_dVsk.

¹⁸ O’Neill.

¹⁹ Akerloff, “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism,” 488–500.

always act in their own self-interest;²⁰ in that same context, do states only act in their own self-interest or are there relationships or decisions made for the good of others over themselves? In fact, Dietz et al. show how communication can assist in building trust in contentious or rivalrous contexts like CPRs.²¹ And Robert Axelrod has claimed that “mutually rewarding relations become so commonplace that the separate identities of the participants can become blurred,” which may even change the way the individuals see themselves.²² In making his case for trustworthiness, Axelrod highlights the importance of the “durability of the relationship” and those involved should look towards the future with consideration for the past.²³

The significance of trustworthiness rests in its implications on the behaviors of the actors themselves in how they communicate and interact with the other actors in their network. In SNA, an actor’s behavior reflects the impact and influence of the structure of the network and their position within that network; if the actor’s position sits at the periphery of a network, but that actor would like to become more central to the structure, their efforts to enhance their trustworthiness may signal that desire. The behavior of signaling trustworthiness may also be indicators to an observer or an analyst to what the social norms that develop an actor’s trustworthiness may be.

C. INFLUENCE

Much of trust and trustworthiness relies on the reciprocity between parties in a relationship, drawing on the expectation of cooperation and coordination in most interactions. In his seminal work on influence, Robert Cialdini outlined the six “weapons of influence,” as he terms them, which enhance the likelihood that an individual will “comply with a request”: reciprocation, commitment and consistency, social proof, liking,

²⁰ Thomas Dietz, Elinor Ostrom, and Paul C. Stern, “The Struggle to Govern the Commons,” *Science* 302 (December 12, 2003), www.sciencemag.org, 1907–1912.

²¹ Dietz, Ostrom, and Stern, 1907–1912.

²² Robert Axelrod, *The Evolution of Cooperation*, Revised (New York: Basic Books, 2006), 179.

²³ Axelrod, 182.

authority, and scarcity.²⁴ Each of these principles involve trust and trustworthiness to some degree. Reciprocity simply means that people are likely to repay an action; this theory found support through Axelrod's examination of cooperation as well, noting that both positive and negative reciprocity exists.²⁵ Actors are inclined to repay an action with the same action (tit-for-tat) whether it is one of aggression or one of kindness. Cialdini's second principle, commitment and consistency, emphasizes the need for actors to appear consistent in repeated interactions. This lends itself well to the previously discussed necessity in trustworthiness of looking towards the future while relying on past experiences.²⁶ The third principle of influence, social proof, relates to Granovetter's own discussion of how trust can be transmitted through our social networks;²⁷ it refers to how actors often seek the opinions of those around them.²⁸ This weapon of influence tethers trust and influence together well as an individual is more likely to trust those closest to them in their social network and therefore more likely to be influenced by their opinions. Closely related to social proof, the fourth principle—liking²⁹—illustrates just how much of an impact the social network can have on an actor's decisions and behaviors. As Cialdini clarifies in liking, familiarity through the regular interactions becomes the anchor to influencing an actor's behaviors and preferences.³⁰ Authority, the fifth principle, cites one of the most famous experiments in response to authority figures ever: Stanley Milgram's "Obedience to Authority" experiments.³¹ Cialdini argues that individuals are conditioned from birth to obey rules and authority; hence it remains an weapon of influence throughout

²⁴ Robert B. Cialdini, *Influence: The Psychology of Persuasion*, Revised (New York: Harper Collins Publishers, 2007), xii.

²⁵ Cialdini, *Influence: The Psychology of Persuasion*; Axelrod, *The Evolution of Cooperation*, 15–56.

²⁶ Axelrod, *The Evolution of Cooperation*, 146–158.

²⁷ Granovetter, "The Strength of Weak Ties," 1374.

²⁸ Cialdini, *Influence: The Psychology of Persuasion*, 114–166.

²⁹ Cialdini, 167.

³⁰ Cialdini, 176.

³¹ Cialdini, 208.

life. The final weapon of influence, according to Cialdini, is scarcity; this comes from the claim that there are limited quantities or availability of a commodity.³²

While Cialdini's work remains the anchor in understanding influence for the U.S. Army—it continues to be the primary textbook for the Information Operations Qualification Course—there are other works on propaganda, information warfare, media, and even simple human agency that ought to be discussed here as well. Jacques Ellul's work on propaganda, paired with his perspectives on technology, reached far into the future from the 1950s and 1960s, when he authored his works. Ellul argued that the prevalence of technology means that propaganda is irreversibly incorporated into our daily lives, regardless of deliberate intentions.³³ He disagrees with those who contend that propaganda is “active power vs. passive masses” and instead contends that it only succeeds when it “corresponds to a need for propaganda on the individual's part.”³⁴ Furthermore, he argues that “the propagandee is by no means an innocent victim” in that “he provokes the psychological action of propaganda, and not merely lends himself to it, but even derives satisfaction from it.”³⁵ Although Ellul spent his life railing against technology's pervasiveness, his perspective acknowledges the role of human agency in the choices we make. His thoughts on propaganda serve to remind us that an individual's own decision-making often serves their own interests.

In their book, *The Age of Propaganda*, Anthony Pratkanis and Elliot Aronson define propaganda as “the techniques of mass persuasion that have come to characterize our postindustrial society.”³⁶ Their work, like that of Ellul's, argues that propaganda is not simply the tool of evil, but rather something that has come to be included in mass communication and operates as a lever for influence. Similar to Cialdini's weapons of

³² Cialdini, 239.

³³ Jacques Ellul, *Propaganda: The Formations of Men's Attitudes* (New York: Vintage Books, 1973), 1–257.

³⁴ Ellul, 121.

³⁵ Ellul, 121.

³⁶ Anthony Pratkanis and Elliot Aronson, *Age of Propaganda: The Everyday Use and Abuse of Persuasion*, Revised (New York: Henry Holt and Company, 2002), 11.

influence, they outline four means in which propaganda persuades: pre-persuasion, communicator credibility, the message and how it is delivered, and emotional appeals.³⁷ The subcategories offered in pre-persuasion include words of influence, or renaming something to lead an actor to believe it is something it is not and pictures in our heads, paired with the words of influence, allow mass media to create fictions people begin to believe as truths. Pratkanis and Aronson argue that the mass media cultivate stories which persist in the storytelling and our understanding of the world around us.³⁸ The subcategories continue in each principle, but the primary argument circles around the same that Ellul made decades before: propaganda meets the needs of the actors it is designed to persuade, meaning that the actors themselves have agency in both the creation of propaganda and their acceptance of its messages. In the same vain, the U.S. military activities, or even those of China, explored later in this thesis, meet Kenya's needs as well as their own.

D. SUMMARY

As this thesis explores, the social networks created through military and diplomatic engagements may be exploited to better influence partner nations; however, mapping the network and determining which of the tools of influence can be applied to which actors and ties should be implemented at the policy level. The relationships that both the U.S. and China have with Kenya illustrate the potential brokers and bridges, as well as other critical actors in the networks, to which these influence principles may be best applied.

³⁷ Pratkanis and Aronson, 71.

³⁸ Pratkanis and Aronson, 71.

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III. SOCIAL NETWORK ANALYSIS: A BRIEF OVERVIEW

This thesis focuses on the influence and power gained in establishing trust through relationships between military and diplomatic entities from the United States and Kenya, and China and Kenya. It seeks to use social network analysis (SNA) to better understand Kenya's military and diplomatic social networks in order to better affect information operations implementation and planning. SNA envelops qualitative assessments of networks as well as quantitative metrics in order to provide a holistic approach to evaluating social networks. It draws on a wide range of theories from various social sciences, such as sociology, psychology, and political science, and then incorporates mathematical practices to measure the impacts of the network as a whole, the actors within the network, and the ties that bind them together. As Cunningham et al. write, SNA "is frequently confused with social networking and social media analysis" in that people often "hold the vague expectation that it has something to do with analyzing social media outlets."³⁹ However, while social media can provide data which can then be analyzed using SNA, the use of social media is only a recent development while SNA has existed for much longer, dating back to the early twentieth century.⁴⁰ Literature explaining and exploring SNA ranges from mainstream and accessible works like *Connected* by Nicholas Christakis and James Fowler⁴¹ to the mathematical and academically focused works like *Analyzing Social Networks* by Borgatti, Everett, and Johnson.⁴² Here, I will draw on some of the more prominent and relevant works on SNA as they apply to this thesis while explaining both what SNA is and also how this thesis applies its methods to a network to demonstrate its validity in the practice of information operations.

³⁹ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 6.

⁴⁰ Cunningham, Everton, and Murphy, 6.

⁴¹ Nicholas A. Christakis and James H. Fowler, *Connected: How Your Friends' Friends' Friends Affect Everything You Feel, Think, and Do* (New York: Little, Brown Spark, 2009) 1–305.

⁴² Stephen P. Borgatti, Martin G. Everett, and Jeffrey C. Johnson, *Analyzing Social Networks*, 2nd ed. (Los Angeles, CA: Sage Publications Ltd., 2018), 1–347.

A. BASIC CONCEPTS AND DEFINITIONS OF SNA

a. *Social Network Analysis*

In the clearest and simplest terms, SNA is best defined as the theory and methodology applied to understanding the impacts of social networks on behavior.⁴³ While it cannot predict human behaviors, it can assist in understanding how networks indicate why or how certain behaviors occur.

b. *Actor*

In SNA, an actor—also known as a node or a vertex—can be “individual people...groups, organizations, businesses, or even nonhuman entities such as websites, publications.”⁴⁴ In this thesis, actors include organizations (large and small) classified by their attributes of civilian groups, civilian organizations, government organizations, and military organizations.

c. *Tie*

Ties or relations (sometimes referred to as edges or arcs) tether the actors together. They can “vary in terms of type, direction, and strength”⁴⁵ and have characteristics of their own, like co-workers, married, friends, and a “multitude of other relational” possibilities.⁴⁶

d. *Social Network*

Formally, a social network is a pattern of ties linking together a “finite set or sets of actors.”⁴⁷ Informally, it is “a way of thinking about social systems that focus our attention on the relationships among entities that make up the system.”⁴⁸ Christakis and

⁴³ Sean Everton, *Disrupting Dark Networks*, Structural Analysis in the Social Sciences 34 (New York: Cambridge University Press, 2012), 4.

⁴⁴ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 10.

⁴⁵ Cunningham, Everton, and Murphy, 10.

⁴⁶ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 2.

⁴⁷ Stanley Wasserman and Katherine Faust, *Social Network Analysis: Methods and Applications* 8 (New York: Cambridge University Press, 1994), 20.

⁴⁸ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 2.

Fowler argue that social networks are “human superorganisms” that “grow and evolve” with their “own structure and a function.”⁴⁹ Considering the dynamics of human interactions in this manner becomes necessary when, like in information operations and influence activities, we seek to affect a decision maker’s choices or influence the outcome of a communication. The networks in this thesis consider the diplomatic and military ties between the United States and Kenya, and Kenya and China. The data was collected through public websites and news articles and, therefore, certain information on the data was unknown. As such, the ties between actors are all assumed to be undirected or reciprocal.

e. Attributes

Borgatti et al. note that like ties, actors also “have characteristics—typically called ‘attributes’—that distinguish among them, and these can be categorical traits... or continuous traits.”⁵⁰ Attributes encompass any non-relational information about the actors; in the case of this thesis, they capture what kind of group each node is.

f. Sociograms, Paths, and Walks

Sociograms, or graphs, are the visual representations of social networks showing the locations of all the actors and the ties between them. As Prell explains, we can take a “walk” through the network and understand the “sequence of nodes, and where nodes and lines can occur more than once.”⁵¹ The “path” this walk follows exists where “no node and no line occurs more than once.”⁵² In understanding the basic graph or sociogram generated with the nodes and edges, the network can be visually represented to better realize the relationships it represents. The compiled network data, sociogram, and resulting metrics calculated encapsulate the basic functions of social network analysis.

⁴⁹ Christakis and Fowler, *Connected: How Your Friends’ Friends’ Friends Affect Everything You Feel, Think, and Do*, XVI.

⁵⁰ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 2.

⁵¹ Christina Prell, *Social Network Analysis: History, Theory, & Methodology* (Los Angeles, CA: Sage Publications Ltd., 2011), 12.

⁵² Prell, 12.

g. Boundary

One first needs to determine a network's boundary—defining “what sorts of actors can be considered to be inside the network and which ones are outside my realm of interest.”⁵³ One also needs to define which ties are relevant for a particular analysis. In terms of the latter, “an actor's position in a network determines in part the constraints and opportunities that he or she will encounter, and therefore identifying that position is important for predicting actor outcomes such as performance, behavior or beliefs.”⁵⁴

B. BASIC ASSUMPTIONS

The basic assumptions listed encompass the general expectations or beliefs that those applying SNA hold; because SNA is an amalgamation of several fields of study and methods, these assumptions act as the elementary basis for SNA. The first assumption implies that an actor's decisions are dependent on their network or the behavior of those around them.⁵⁵ Christakis and Fowler highlight this assumption in their assertion that influence only reaches through three degrees of separation.⁵⁶ Similar to the first assumption, the second asserts that the ties between the actors provide the conduits or line of communication which non-material goods, like information (or even misinformation) can be transmitted.⁵⁷ The difference between the first two assumptions is that the first concerns actors while the second concerns ties; however, the basis for both remains that the network bears great impact on an individual actor's decision-making.

⁵³ Prell, 10.

⁵⁴ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 1.

⁵⁵ Everton, *Disrupting Dark Networks*, 15.

⁵⁶ Christakis and Fowler, *Connected: How Your Friends' Friends' Friends Affect Everything You Feel, Think, and Do*, 172–209.

⁵⁷ Everton, *Disrupting Dark Networks*, 18.

Table 1. SNA's basic assumptions⁵⁸

#	Assumption
1.	Actors, along with their actions and motivations, are interdependent, rather than independent, with other actors.
2.	Ties between actors function as conduits for the transfer or flow of information, sentiment, material and/or nonmaterial goods, or other resources (e.g., funds, supplies, information, trust, enmity)
3.	A network's social structure reflects enduring patterns of interaction between actors.
4.	Repeated social interactions between actors give rise to social configurations that take on a life of their own and cannot be reduced to constituent components even though actors remain dependent upon those components.
5.	An Actor's position in the social structure impacts his or her beliefs, norms, and behavior.
6.	Social networks are dynamic and responsive to changes in the actors, subgroups, and ties between actors.

The third assumption listed asserts that the network is a structure, though not in a tangible sense, this structure or “enduring pattern of behavior and relationships” and the “social institutions and norms that have become embedded in social systems... can shape behavior.”⁵⁹ The fourth holds that social networks can begin to act like a “living organism,” and the behaviors of the individual actors no longer entirely explain the

⁵⁸ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 13.

⁵⁹ Everton, *Disrupting Dark Networks*, 21.

behavior of the overall network. Sean Everton best explained this phenomenon by likening this to water; “water cannot be reduced or explained entirely by its underlying atoms but is still dependent on them.”⁶⁰ This suggests that each level of a network should be taken into consideration when crafting intervention strategies to either build up or disrupt a particular network.⁶¹ The next assumption logically follows that an actor’s decisions and beliefs are a function of their location in the social structure.⁶² For instance, “[i]ndividuals who are located socially proximate to a group are far more likely to join that group than are those who are socially distant.”⁶³ The sixth and final assumption addresses the life of a social network: it is always evolving as actors join and leave and ties between form and dissolve.⁶⁴

C. TOPOGRAPHICAL TERMS AND MEASURES

a. *Topography*

The topography of the network refers to its overall structure.⁶⁵ As discussed earlier, the position of the actors within the network and the ties all have impacts on the behaviors. There are numerous topographical measures which can assist in understanding a network’s structure and interpreting the observed behaviors of actors.

(1) Density

Density measures the interconnectedness of the actors in the network and can indicate whether it is tightly knit or sparse. This measure calculates the “ratio of actual ties to possible ties.”⁶⁶

⁶⁰ Everton, 23.

⁶¹ Everton, 23.

⁶² Everton, 24.

⁶³ Everton, 26.

⁶⁴ Everton, 27.

⁶⁵ Everton, 10.

⁶⁶ Everton, 11.

(2) Centralization

Centralization “measures the extent to which a network is centralized around a few actors.”⁶⁷ The U.S.-Kenya-China networks examined in this thesis highlight the centralization of a very few actors.

(3) Network size

Network size is a straight-forward metric, it is simply the number of actors within the network.⁶⁸

(4) Average distance

Average distance measures “the average length of all the shortest paths between all actors in a network.”⁶⁹ Understanding a network’s average distance may help gauge the speed by which information or messages disseminate through a network.⁷⁰

(5) Broker

A broker is an actor that ties two or more groups together.

(6) Bridges

A bridge is the relational tie that tethers two groups together.

Perhaps one of the most influential works in the field of SNA is Mark Granovetter’s 1973 article, “The Strength of Weak Ties,”⁷¹ in which he explores the impact and influence of ties between pairs of actors who seldom or rarely interact, which he calls weak ties.⁷² He argues that weak ties are more likely to function as bridges that provide a singular link between two groups that would otherwise have no connections. In fact, he argues that while

⁶⁷ Everton, 11.

⁶⁸ Everton, 12.

⁶⁹ Everton, 137.

⁷⁰ Everton, 137.

⁷¹ Granovetter, “The Strength of Weak Ties,” 1365.

⁷² He argues that “the strength of a tie is a combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie.” See Granovetter, 1361.

not all weak ties are bridges, “all bridges are weak ties.”⁷³ His work is particularly important to considering the United States’ relationships to Kenya by the nature of military and diplomatic interactions; the personnel within military units or diplomatic offices interacting with one another regularly change and, therefore, the weak ties (or bridges) help in disseminating sentiment and perceived trust over longer periods of time. Within these units and offices, it may be likely that only a few personnel engage with one another repeatedly and so, clearly, time, emotional intensity, and intimacy may all have varying degrees of success and importance to individuals within the organizations. As this thesis examines nodes only at the organizational level, the inference of weak ties among the few individuals that have repeated and long-term interactions shows, “in some detail, how the use of network analysis can relate this aspect to such varied macro phenomena as diffusion, social mobility, political organization, and social cohesion.”⁷⁴ While SNA cannot supplant human agency in understanding the ultimate success in influence or entirely predict a person’s behavior, it can assist in understanding patterns and help planning engagements and interactions to be more impactful.

(7) Subgroups

Within an overall network, subgroups or subnetworks often emerge. These subgroups are, as the name suggests, smaller cohesive groups within the overall network. In this thesis, the overall network established two distinct subgroups over the span of ten years, which are titled Military-to-Military (or Mil-Mil) and Diplomatic; within each of these subgroups there exist ties between U.S. and Kenya, and China and Kenya.

(8) Community Detection and Modularity

Community detection algorithms are useful for detecting subgroups within the overall network. The degree to which it “succeeds” is captured by modularity, which is a metric that “compares the number of internal links in the groups to how many you would

⁷³ Granovetter, “The Strength of Weak Ties,” 1364.

⁷⁴ Granovetter, 1361.

expect to see if they were distributed at random.”⁷⁵ A higher number indicates “more significant groupings.”⁷⁶ In this thesis, community detection algorithms and modularity helps identifying subgroups that exist within the networks that are examined, which may indicate where influence will travel through the network, the potential expectation for the spread of information, and how many touchpoints a message may need to have before reaching full dissemination.

D. CENTRALITY MEASURES

Centrality measures may be the most applied SNA metrics, reflecting the assumption that some actors have more central positions in a network and, therefore, exert more influence.⁷⁷ The centrality measures used in this thesis include degree, closeness betweenness and eigenvector (Table 2). Multiple centrality measures exist because there are different assumptions of what it means for an actor to be central.⁷⁸ As Cunningham et al. explain, “This... makes it possible for analysts to select the version of centrality that best corresponds with what they are seeking to discover in a particular network.”⁷⁹ This thesis uses two frequency-based measures that account for the number of each actor’s direct ties (degree centrality) and whether an actor’s ties are to other well-connected actors (eigenvector centrality).⁸⁰

The closeness centrality measure used in this thesis, average reciprocal distance (ARD), is appropriate for disconnected networks like those examined in Chapter IV because it treats the reciprocal of infinite distances as zero.⁸¹ Closeness centrality is

⁷⁵ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 222.

⁷⁶ Borgatti, Everett, and Johnson, 222. Normalized modularity, which takes into account the number of subgroups identified, “reduces bias and increases comparability,” 341.

⁷⁷ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 141.

⁷⁸ Cunningham, Everton, and Murphy, 141.

⁷⁹ Cunningham, Everton, and Murphy, 142.

⁸⁰ Everton, *Disrupting Dark Networks*, 12–13.

⁸¹ Stephen P. Borgatti. 2006. “Identifying Sets of Key Players in a Social Network.” *Computational, Mathematical and Organizational Theory* 12:21-34.

insightful because it helps determine which actors are in a position to exert influence in a network.⁸² Finally, betweenness centrality, the path-based measure applied in this thesis, considers “how often an actor lies on the shortest path between all pairs of other actors.”⁸³ Similar to closeness centrality, it can potentially identify who in a network has the ability to exert substantial influence. It can also assist in detecting potential brokers that may be either be critical in maintaining relationships the U.S. values or those whose influence the U.S. would like to disrupt.

Table 2. Centrality measures⁸⁴

Measure	Definition
Degree Centrality	The count of an actor’s ties
Closeness Centrality	Measures how close, on average, each actor is to all other actors in a network
Betweenness Centrality	Measure the extent to which each actor lies on the shortest path between all other actors in a network
Eigenvector Centrality	Assumes ties to highly central actors are more important than ties to peripheral actors, so it weighs an actor’s total ties to other actors by their total ties

⁸² Christakis and Fowler, *Connected: How Your Friends’ Friends’ Friends Affect Everything You Feel, Think, and Do*, 33–60.

⁸³ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 145.

⁸⁴ Everton, Sean, *Disrupting Dark Networks*. Structural Analysis in the Social Sciences, vol. 34. New York: Cambridge University Press, 2012.

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E. CONDITIONAL UNIFORM GRAPHS

Finally, this thesis applies Conditional Uniform Graphs (CUGs) at the culmination of the fourth chapter. While the previous SNA metrics and algorithms used in this analysis offer discovery and description of the network and its subgroups, CUGs can lend additional insight into the analysis by offering statistical tests of the network structure.⁸⁸ It can assist in determining whether or not there may have been biases in the data collection or process or whether an observed metric (e.g., centralization of the network) is greater or smaller than one would expect in a random graph of the same size and/or density.⁸⁹ In terms of the former, since the data was sourced from a limited number of sources, the networks analyzed here may not be wholly representative of Kenya’s actual military and diplomatic networks. In terms of the latter, CUGs can determine whether the centralization of Kenya’s military and diplomatic networks exhibit are substantially greater than one would normally

⁸⁵ Stephen P. Borgatti. 2006. “Identifying Sets of Key Players in a Social Network.” *Computational, Mathematical and Organizational Theory* 12:21-34.

⁸⁶ Christakis and Fowler, *Connected: How Your Friends’ Friends’ Friends Affect Everything You Feel, Think, and Do*, 33–60.

⁸⁷ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 145.

⁸⁸ Cunningham, Everton, and Murphy, 226.

⁸⁹ Cunningham, Everton, and Murphy, 235.

expect. Put differently, they can help ascertain whether the degree of centralization of the networks are statistically significant.

F. SUMMARY AND CONCLUSION

The basic concepts and assumptions in this chapter offer an elementary understanding of SNA as well as how they will each be applied in the following chapter. This chapter does not consider all possible SNA metrics and algorithms, but those discussed here will be used in the case study of Kenya's military and diplomatic relationships with both the U.S. and China. The intent within this chapter, as well as the next, is to first explain the terms and assumptions of SNA and then illustrate how they can be applied by compiling real world data available through open-source information. The following analysis offers limited real-world data and assessments and potential applications to operations planning and implementation.

IV. MILITARY AND DIPLOMATIC RELATIONS IN KENYA: INFLUENCES FROM THE UNITED STATES AND CHINA

The ties between the United States and Kenya began in the 1960s during Kenya's transition to an independent state; however, the importance of this relationship reached critical mass in 1998 after the bombing of the U.S. Embassy in Nairobi.⁹⁰ The growing concerns that the Horn of Africa (HOA) provided an easily accessible route in and out of the Middle East for al-Qaeda operatives focused U.S. military efforts in Africa to its eastern region and Kenya became the "lynchpin" to combating terrorism in HOA.⁹¹ According to Prestholdt, "it has been the focus of security funding, targeted aid to Muslim communities, and direct military engagement, particularly in the field of military-provided development assistance."⁹² In the wake of the U.S. response to 9/11, this support grew again in 2002 after a series of attacks in Kenya and "American security aid and corresponding pressure to arrest terrorists" increased.⁹³ Throughout the 2000s, "the U.S. approach to countering terrorism in Africa has been to forge counter-terrorism partnerships...with the aim of equipping them with the necessary tools to enhance their capacity to effectively combat terrorism."⁹⁴ The U.S. has worked with Kenya in "bolstering the capacity" of its "military and law enforcement agencies to conduct counter-terrorism operations."⁹⁵

As the 2017 National Security Strategy has realigned the U.S. focus to consider China and Russia as greater threats, Kenya's importance has not decreased; in fact, its position as a strategic focus may continue to grow as China's involvement and influence in Africa increases. As Hunt Friend and Fanger highlight, "Africa is, once again, becoming

⁹⁰ Jeremy Prestholdt, "Kenya, The United States, and Counterterrorism," *Africa Today* 57, no. 4 (Summer 2011): 3–27.

⁹¹ Prestholdt.

⁹² Prestholdt, 5.

⁹³ Prestholdt, 9.

⁹⁴ Adebayo Oyeade, "The USA and Africa," in *The Palgrave Handbook of Africa Colonial and Postcolonial History*, ed. Martin S. Shanguhya and Toyin Falola, vol. II (New York: Palgrave Macmillan, 2018), 796.

⁹⁵ Oyeade, 796.

an arena for international competition.”⁹⁶ While China has not partnered with Kenya through military means, like the U.S. continues to do, Chinese investments in Kenya, as well as its diplomatic ties, have grown considerably in the last decade. China’s foreign policy towards Africa focuses heavily on diplomatic engagements as “China has relied on their support at the United Nations for its political agenda” and the “African countries account for more than one-quarter of U.N. member states.”⁹⁷ In 2019, Kenya received the majority of the African Union’s votes, 37–13, over Djibouti for the upcoming non-permanent member seat to the U.N. Security Council (UNSC) which will be available in 2021.⁹⁸ As both China and the United States represent two of the five permanent members of the UNSC, strong diplomatic ties with all non-permanent members remains crucial. China prioritizes diplomatic ties with African nations through the Forum of China-Africa Cooperation (FOCAC), with fifty-two of the fifty-four countries participating and while Kenya does not currently partner with China through military exercises, many surrounding regional partners, like Tanzania and Sudan, do.⁹⁹ China’s interactions within Kenya remain consistent through a China Central Television (CCTV) headquarters in Nairobi and loans to both the government and state-owned businesses for infrastructure projects.¹⁰⁰

A. THE U.S. IN KENYA

In the current political landscape, both domestically and internationally, the United States’ concern over a revitalization of “great power competition” or a new Cold War era, seems to dominate day-to-day discourse. September 11, 2001, and the subsequent Global War on Terror (GWOT) shocked the United States from the “fog of materialism and

⁹⁶ Alice Hunt Friend and Ariel Fanger, “U.S. National Security and Defense Goals in Africa: A Curious Disconnect,” *Center for Strategic and International Studies* Defense Outlook 2018 (February 2018), 1–4.

⁹⁷ Yun Sun, “Africa in China’s Foreign Policy” (John L. Thornton China Center and the Africa Growth Initiative at Brookings, April 2014), 5.

⁹⁸ “What Kenya Has Going for It in Bid for Security Council Seat,” accessed December 14, 2019, <http://theconversation.com/what-kenya-has-going-for-it-in-bid-for-security-council-seat-124785>.

⁹⁹ Joshua Eisenman and David H. Shinn, “China and Africa,” in *The Palgrave Handbook of African Colonial and Post Colonial History*, ed. Martin S. Shanguhya and Toyin Falola, vol. 2 (New York: Palgrave Macmillan, 2018), 839–854.

¹⁰⁰ Eisenman and Shinn, 844.

disinterest and avoidance”¹⁰¹ of the 1990s and helped refocus American attention for the following twenty years. The GWOT developed deeper security partnerships with countries in Africa, like Kenya, that provided specific strategic advantages. Schraeder argues that “the triggering mechanism for sustained presidential attention to African issues is usually the occurrence of some type of intense politico-military conflict”¹⁰² or a crisis response. In the case of Kenya, the crisis response to the bombings of U.S. Embassies in 1998 appears to have created a path dependence on countering terrorism. That focused attention on GWOT, however, is again changing and, as Nye predicted in 2005, “the search for new state challengers is well under way.”¹⁰³

In 2012, the first U.S. Strategy Towards Sub-Saharan Africa laid out the strategic priorities for the United States, listing four pillars: (1) Strengthen Democratic institutions, (2) spur economic growth, trade, and investment, (3) advance peace and security, and (4) promote opportunity and investment.¹⁰⁴ These pillars, however, did not seem to mirror the actions on the ground in Kenya, where more than two decades of counter-terrorism trainings and exercises have been the prominent practice in military exchanges. In 2015, a Congressional Research Service report noted that Kenya was the number one recipient of “train-and-equip” monies for counter-terrorism assistance, which the report states equaled \$188 million in a ten-year span.¹⁰⁵ Assistance from the U.S. also includes monies from “Global Health Initiative, Feed the Future, Power Africa, and the Security Governance Initiative.”¹⁰⁶ However, the democratic standing of Kenya has been called in to question many times since the 2010 elections and the aid has continued. The Millennium Challenge Corporation’s (MCC) scorecard for Kenya reflects positive results for human development

¹⁰¹ Joseph S. Nye Jr., “The Limits of American Post-Cold War Power,” in *Major Problems in American Foreign Relations Volume II: Since 1914*, ed. Dennis Merrill and Thomas G. Paterson, 6th ed. (New York: Houghton Mifflin Company, 2005), 528.

¹⁰² Peter Schraeder, *United States Foreign Policy Toward Africa: Incrementalism, Crisis, and Change* (Cambridge, UK: Cambridge University Press, 1994), 26.

¹⁰³ Nye Jr., “The Limits of American Post-Cold War Power,” 530.

¹⁰⁴ The White House, *U.S. Strategy Towards Africa*, 2012.

¹⁰⁵ Name Redacted, “U.S.-Kenya Relations: Current Political and Security Issues,” 15.

¹⁰⁶ Name Redacted, 14.

in the country, as well as political rights and government effectiveness.¹⁰⁷ In fact, the area in which Kenya ranks lowest, government corruption, Kenya's scores have degraded each year for the last five years. By MCC's standards, Kenya's health and education standards have improved, but those measures which signify economic improvement and development remain low. The U.S. pillars supporting democracy and economic growth have not been as fruitful in Kenya as military interaction and placement.

In 2018, the Department of State published the most recent Integrated Country Strategy (ICS) for Kenya, which prioritizes advancing security and regional engagement as the first issue.¹⁰⁸ According to the ICS, Kenya continues to be the largest U.S. mission in Africa and its emphasis on "Kenya's ability to prevent and respond to crime and terrorism threats and mitigate threats to stability," while specifying the role of defeating "al-Shabaab, ISIS, and other terrorist organizations" demonstrates little change from the previous U.S. foreign policy.¹⁰⁹ The troubling lack of change in Kenya can be summed up through Allen's criticism that quantitative analysis "found no relationship between security assistance and improvements in state fragility in Africa."¹¹⁰

B. CHINA IN KENYA

Much of the concern over success of U.S. influence in Kenya focuses on the ever-growing relationships between China and many African nations. As China's influence on the continent grows, and its investments eclipse those of what the U.S. can offer in many sectors, proponents of the United States seek to understand what the U.S. can change to improve influence and foreign policy success. As Friend Hunt and Fanger noted, "although the NSS is right to note the frequent imbalance in benefits between African and Chinese interests, on average, 63 percent of Africans view Chinese economic and political influence

¹⁰⁷ "Kenya," Millennium Challenge Corporation, accessed November 15, 2019, <https://www.mcc.gov/where-we-work/country/kenya>.

¹⁰⁸ Department of State, "Integrated Country Strategy: Kenya," August 18, 2018.

¹⁰⁹ Department of State, 2.

¹¹⁰ Nathaniel D.F. Allen, "Assessing a Decade of U.S. Military Strategy in Africa," *Foreign Policy Research Institute* ORBIS 989 (August 2018): 11.

positively.”¹¹¹ In fact, “straining to compete with China economically, while limiting security-related engagements to terrorist groups, is likely to cede the strategically important elements of Africa’s future to the very state adversaries both the NSS and the NDS seek to dominate.”¹¹²

The Brookings Institute’s evaluation of China’s foreign policy towards Africa offers insights and projections for the future of China in Africa. Most poignantly, Sun notes the future potential issues that may arise for China as its interests and investments in Africa continue to grow, which they certainly will.¹¹³ China created the Forum of China-Africa Cooperation (FOCAC) to “coordinate its interaction with individual African countries”¹¹⁴ and this will continue to guide China’s interactions for the future, providing insight and collaboration where needed. Additionally, China has been one of the largest suppliers of military equipment to many other African nations, and while that interaction has not necessarily been in Kenya, there exist a multitude of interactions between China and other regional partners in Sub-Saharan Africa.¹¹⁵

C. DATA AND METHODS

In developing the military network, I built a dataset using open-source publications describing a variety of security cooperation and partnership building interactions from the United States Africa Command (AFRICOM) Public Affairs Office (PAO) and from the Embassy of China in Kenya.¹¹⁶ I then constructed a similar dataset for the diplomatic relational ties using open-source publications of the AFRICOM PAO, the Embassy of

¹¹¹ Hunt Friend and Fanger, “U.S. National Security and Defense Goals in Africa: A Curious Disconnect,” 3.

¹¹² Hunt Friend and Fanger, 3.

¹¹³ Sun, “Africa in China’s Foreign Policy,” 30.

¹¹⁴ Eisenman and Shinn, “China and Africa,” 844.

¹¹⁵ Eisenman and Shinn, 845.

¹¹⁶ “United States Africa Command,” United States Africa Command, accessed October 16, 2019, <https://www.africom.mil/Search?query=Kenya>; “Embassy of the People’s Republic of China in the Republic of Kenya,” China-Kenya Relationship, accessed October 16, 2019, http://ke.china-embassy.org/eng/zkgx/default_2.htm.

China in Kenya, and the United States Embassy in Kenya.¹¹⁷ These sources were used because they are designed to promote the military and diplomatic initiatives and interactions the United States and China have with Kenya. As such, they provide an open-source perspective of how the United States and China view their own influence and what each state considers as important interactions that support their own strategic foreign policy with Kenya.

The resulting dataset includes reports between 2009 and 2019 that specify cooperative military engagement, military engagement with civilians, and diplomatic interactions—the relationships—between the United States and China with Kenya. The chosen ten-year timeframe consists of when the United States transitioned from a heightened military presence in Iraq in 2008 towards the “Pivot to the Pacific” in 2011, and currently, into an era of great power competition.¹¹⁸ Thus, the resulting social network is composed of three major periods which showcase changes in U.S. strategic policy and how that may affect the measure of influence in Kenya in relation with China through longitudinal analysis.

a. *Relational ties*

- (1) Military-to-Military Engagements: Interactions between two or more military units from two or more states. Combined with following network.
- (2) Military-to-Civilian Engagements: Interactions between a military unit from one state and a civilian group from another state. Combined with previous network.
- (3) Diplomatic Engagements: Interactions between a senior politician or diplomat from one state with a politician, diplomat, civilian group, or military unit from another state.

¹¹⁷ U.S. Embassy in Kenya, “United States Embassy in Kenya,” *News and Events* (blog), n.d., <https://ke.usembassy.gov/>.

¹¹⁸ Nicholas J. Schlosser, *The Surge 2007–2008*, The U.S. Army Campaigns in Iraq (Washington, D.C.: Center of Military History United States Army, 2017), 1–96, https://history.army.mil/html/books/078/78-1/cmhPub_078-1.pdf; Mark E. Manyin, “Pivot to the Pacific? The Obama Administration’s ‘Rebalancing’ Toward Asia,” *Congressional Research Service*, March 28, 2012, 1–29.

b. Attributes

- (1) Civilian Organization: Non-governmental organizations, either for profit or non-profit, organized at a local, national, or international level.
- (2) Civilian Group: Unofficial: A group of non-affiliated civilians. This attribute includes members of any population interacting with official government or military organizations.
- (3) Government Organization: An official organization created and run by a states' government for the purposes of enacting or instituting functions of that government. Members of these organizations are civilian government employees.
- (4) Military Organization: An official military or armed force. The members are officers or enlisted soldiers, sailors, airmen, or marines.

When possible, the actors of the network were specifically identified. However, in many instances, I could only address the overarching organization, particularly among military relationships. For example, some interactions simply state the Kenya Defense Forces (the overarching organization) and others that provide more specific information, e.g., the 18th Chinese Brigade. As such, some SNA measurements will likely reflect a bias towards the overarching organizations and will require careful interpretation. However, in evaluating strategic United States and Chinese influence in Kenya, such bias may be less consequential because an interaction with a particular command within the Kenyan Defense Force may be viewed as an extension of an interaction with the overarching Kenyan Defense Forces. In other words, “the creation of exchange relations could...be a function of other relations in the network” which suggests an interaction with one Kenyan Defense Force entity may be a result of an interaction with the overarching Kenyan Defense Force organization.¹¹⁹ Therefore, the interaction among two entities could be derived from the influence and interaction with other “third party” entities within the network. The following two figures (Figures 1 and 2) graphically depict these networks.

¹¹⁹ Peter R. Monge and Noshir S. Contractor, *Theories of Communication Networks* (New York: Oxford University Press, 2003), 211.

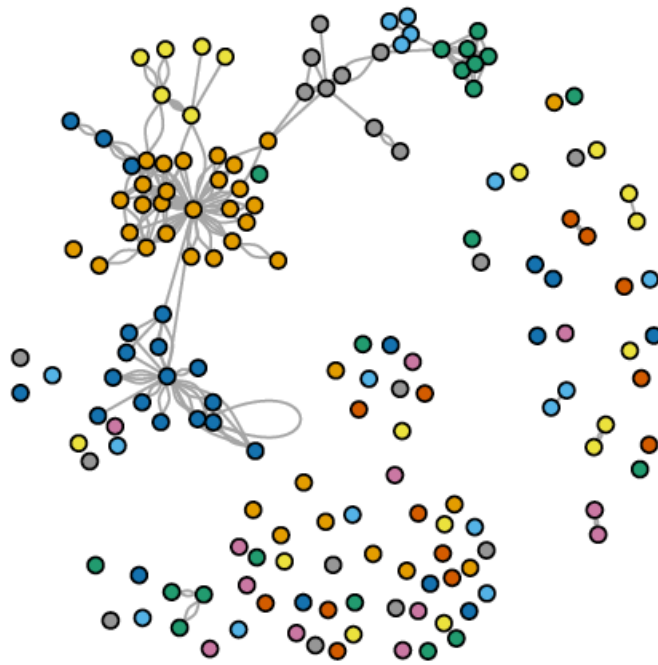


Figure 1. Military-to-Military and Civilian-to-Military engagements

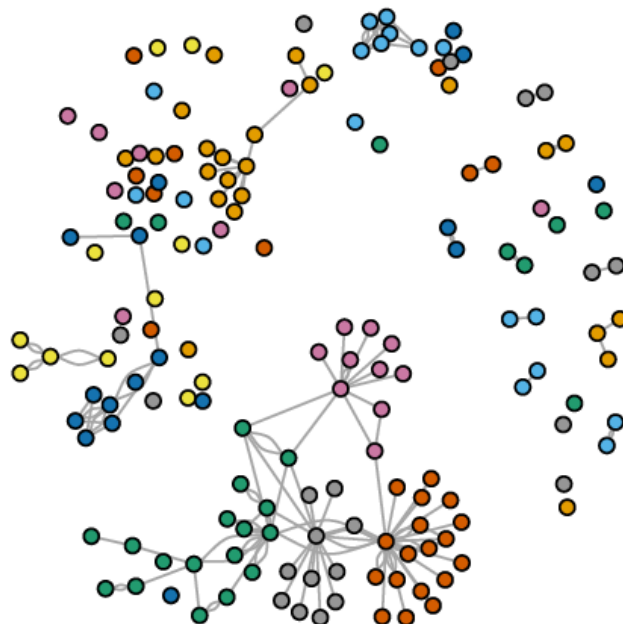


Figure 2. Diplomatic engagements.

D. METRICS AND ALGORITHMS

The metrics and algorithms chosen to analyze this data provide insight into the topography of the overall network as well as the two subgroups of military and diplomatic networks. Topographical metrics capture the overall structure of a network. Density can help in understanding the efficacy of focusing influence efforts on a particular subgroup within a network; a denser network spreads messages and influence faster, encouraging more homophily in decision-making, whereas a sparser network may be more difficult to transmit messages through. Average degree and centralization each also assist in understanding the dynamics of the network overall, potentially guiding decisions and focus on how to build trust or enhance our own trustworthiness image in a network.

Degree, betweenness, closeness, and eigenvector centrality comprise the node-level metrics that look at the impact individual actors may have within the overall network as well as the two smaller subgroups. Because this network is disconnected, the thesis uses harmonic centrality (also known as average reciprocal distance) for closeness centrality algorithm because it adequately accounts infinite distances.¹²⁰ Closeness centrality assists in understanding an actor's ties to other actors and how well they may or may not disseminate and receive information; the higher the score, the closer (more central) the actor is to all other actors.¹²¹ Betweenness centrality measures the "how often a given node falls along the shortest path between two other nodes."¹²² It can help illuminate who in a network has higher potential for brokerage. Eigenvector centrality considers the centrality of the of those actors it is directly tied to, or as Borgatti et al. define it: "each node's centrality is proportional to the sum of the centralities of the nodes it is adjacent to."¹²³ It indicates who in a network may have relationships with powerful actors. In effect,

¹²⁰ See Jorge Gil-Mendieta and Samuel Schmidt, *The Origin of the Mexican Network of Power*, Proceedings of the International Social Network Conference (Charleston, SC, 1996); Massimo Marchiori and Vito Latora, "Harmony in a Small-World," *Physica A: Statistical Mechanics and Its Applications* 285, no. 3 (2000): 539–46; Stephen P. Borgatti, "Identifying Sets of Key Players in a Social Network," *Computational, Mathematical and Organizational Theory* 12 (2006): 21–34.

¹²¹ Borgatti, Everett, and Johnson, *Analyzing Social Networks*, 199.

¹²² Borgatti, Everett, and Johnson, 201.

¹²³ Borgatti, Everett, and Johnson, 194.

it captures the extent of how much of an actor's impact on the network has to do with the relative impact of that actor's immediate ties. The simplest of all measures, degree, is simply the sum of an actor's ties.

The final algorithm applied to these networks, conditional uniform graphs (CUGs), can assist in determining (1) whether or not there may have been biases in the data collection or process, and (2) if the networks' observed level of centralization can be explained solely in terms of random processes.¹²⁴ As already noted, the data was sourced from a limited set of sources and may not be wholly representative of the true network. That said, it may also indicate if the centralization of Kenya's military and diplomatic networks is statistically significant.¹²⁵ If so, this could offer valuable insights into crafting strategies for how to engage these networks in the future.

E. RESULTS AND ANALYSIS

After compilation of available open-source information on the military and diplomatic engagements between both the United States and China with Kenya, I then conducted analysis of the topographical results of the network. Table 3 displays the results for each of the topographical and centralization measures. This smaller network, consisting of only 161 actors, scores low in terms of density indicating that it is a relatively sparse network. The centralization scores, and in particular eigenvector centralization, suggest that although this network may be sparse, one or a handful of actors may possess significant and potential indirect influence in Kenya.

To explore this apparent centralization further, I evaluated the centrality of the actors in the overall network. Figures 3–4 present the results for centrality measures. The results yield expected and unexpected results in both betweenness and eigenvector. The centrality of the Kenyan Defence Forces, USAFRICOM, and the Office of President Kenyatta represent is unexpected since all three are significant military or governmental actors. As discussed earlier, the overarching military organizations, USAFRICOM and

¹²⁴ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 235.

¹²⁵ Cunningham, Everton, and Murphy, 235.

Kenya Defence Forces, appear often in lieu of smaller, more specific unit identifications. I determined this inconsequential in understanding the patterns of the relationships between military units.

Table 3. Topographical and centralization measures for entire network.

Measure	Scores
Size	161
Diameter	11.000
Average Path Length	4.796
Density	0.027
Average Degree	4.422
Degree Centralization	0.294
Betweenness Centralization	0.388
Eigenvector Centralization	0.812
Closeness Centralization	0.366

The actors whose betweenness centrality measure do present potential brokerage opportunities prove to be interesting. For example, Kenyan Journalists appear to possess significant potential. Additionally, the higher eigenvector and betweenness centrality measures for Ambassador Wu Peng, the People’s Liberation Army, and the Uganda Military illuminate the substantial ties between Kenya and China, as well as Kenya and its regional partners. The closeness centrality measure provides exceptional insight into the overall network. While the top two scores belong to the expected actors, Kenya Defence Forces and USAFRICOM, the subsequent scores reveal that some unexpected actors could be pivotal in interactions and the flow of communications within this network. Again, Kenyan Journalists score high, and the Kenya Editor’s Guild (KEG) ranks in the top ten, suggesting that the influence the media wields, even within the military’s engagements, may have great impact (refer to Appendices A and B for further information in the KEG).

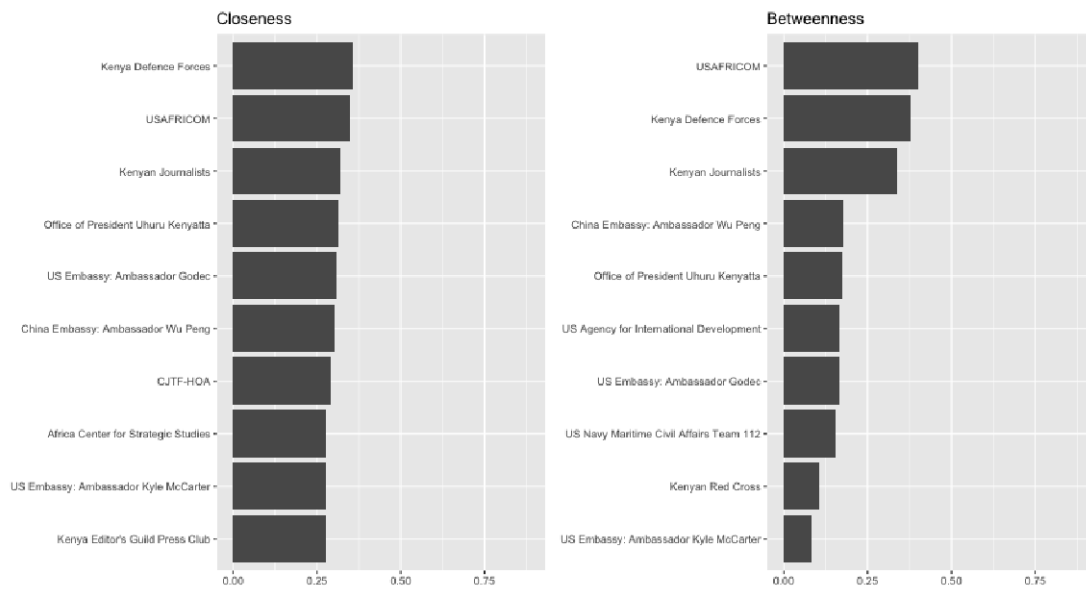


Figure 3. Closeness and betweenness centrality measures for the entire network.

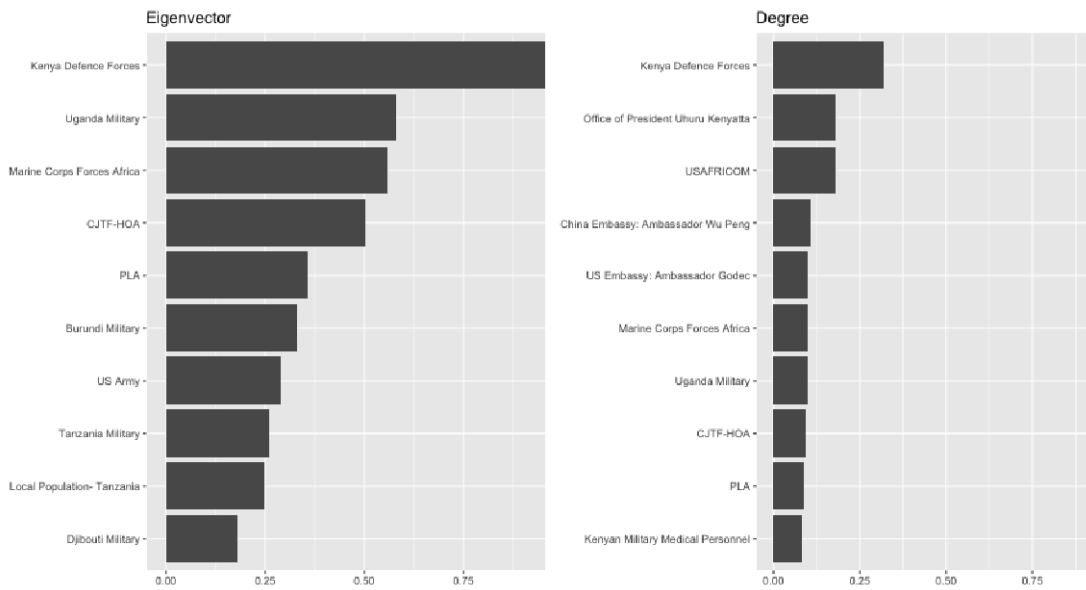


Figure 4. Eigenvector and degree centrality measures for entire network.

F. MILITARY NETWORK

Next, I examined the topographical and centrality metrics of the military relations, which includes both military to military ties, as well as military to civilian ties. The topography measures (Table 4) indicate a small (80 actors), sparse network. Most of the centrality measures suggest that implementation of an information operation or directed communication strategy within this network would likely require multiple touchpoints in order to reach all intended targets because “the information being transmitted must make lots of little hops through different clusters and so may take a long time to travel from one side of the network to the other.”¹²⁶ Eigenvector centralization, however, does suggest there may be a few brokers to focus upon.

Table 4. Topography measures of military subgroup.

Measure	Scores
Size	80
Diameter	8.000
Average Path Length	3.843
Density	0.016
Average Degree	2.534
Degree Centralization	0.307
Betweenness Centralization	0.135
Eigenvector Centralization	0.819
Closeness Centralization	0.398

Figures 5–6 provide the results of the centrality measures on the military relations. These reinforce the previous whole-network metrics of the ties between Kenya and the

¹²⁶ Anne Collar, “Re-Thinking Jewish Ethnicity through Social Network Analysis,” in *Network Analysis in Archeology: New Approaches to Regional Interaction*, ed. C. Knappett (Oxford: Oxford University Press, 2013), 225.

U.S. military, China, and regional partners. Once again, the eigenvector centrality scores indicate a few nodes may serve as power brokers for the rest of the network. Additionally, the sparseness (low density) and relatively low centralization scores suggests that information flow may be inefficient,¹²⁷ interactions irregular, and opportunities to disrupt or alter the relational ties exist. The presence of the regional partner militaries of Uganda, Burundi, Djibouti, and Tanzania in the top ten rankings in the centrality measures indicate the importance of neighboring countries. The PLA's placement within the top scores on the military networks may also indicate China's growing ability to influence through military engagements in the region.

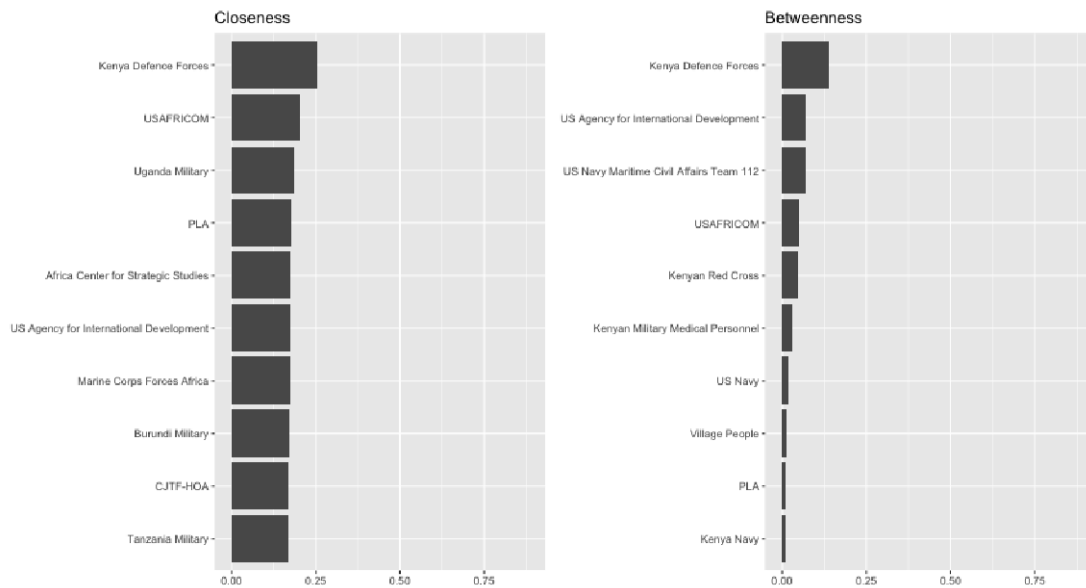


Figure 5. Closeness and betweenness centrality measures for Military subgroup.

¹²⁷ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 226.

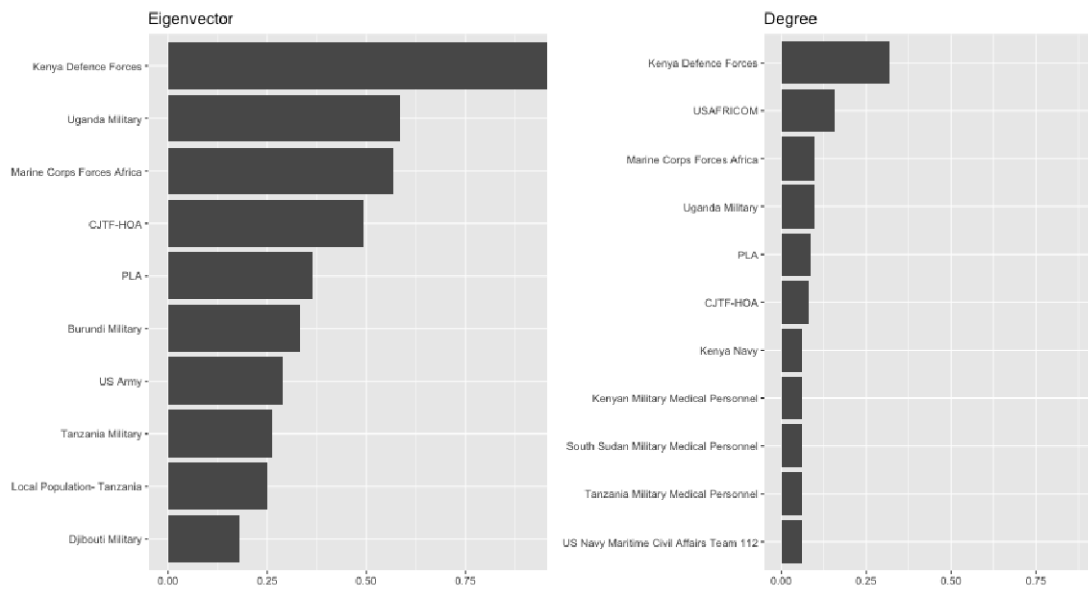


Figure 6. Eigenvector and degree centrality measures for the Military subgroup.

G. DIPLOMATIC NETWORK

The diplomatic network also provides insight into Kenya's relational ties between the U.S. and China. While the military ties prove to be closer to regional partners and the United States, the diplomatic interactions show very different results. As itemized in Table 5, the diplomatic network numbers only slightly larger than the military network, with 105 actors. It also proves to be sparse, small, and except for eigenvector centralization, low to moderately centralized. There is, however, a number of Chinese actors who rank high in terms of all four centrality measures. For example, Figure 8 indicates that the Chinese Ambassador to Kenya scores second highest in terms of eigenvector centrality. The Chinese Ambassador's degree centrality ranks second only to President Kenyatta himself.

Table 5. Topography and centralization metrics for diplomatic subgroup.

Measure	Scores
Size	105
Diameter	6.000
Average Path Length	3.030
Density	0.012
Average Degree	1.888
Degree Centralization	0.172
Betweenness Centralization	0.068
Eigenvector Centralization	0.809
Closeness Centralization	0.346

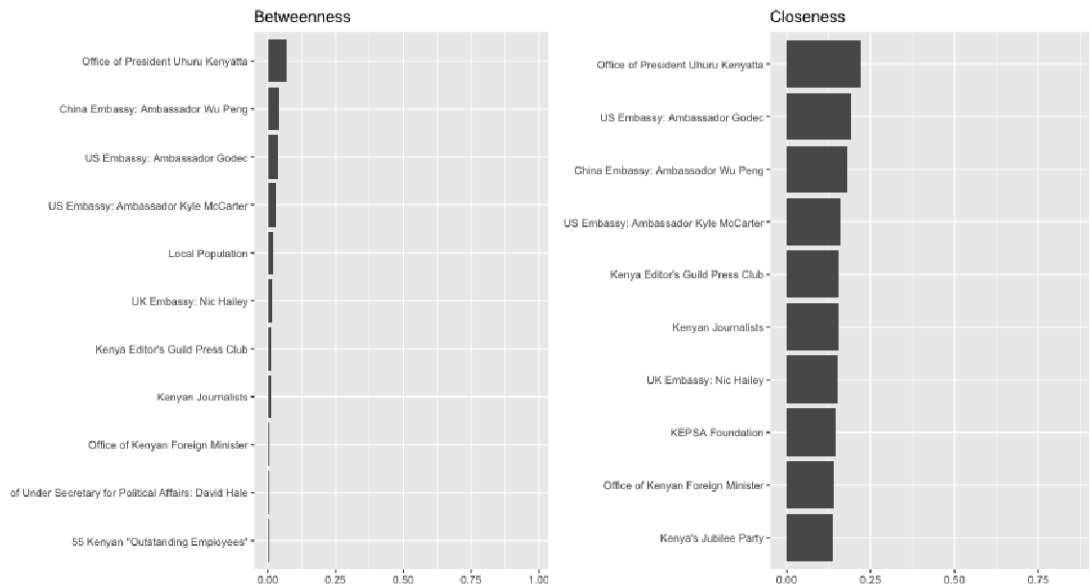


Figure 7. Betweenness and closeness centrality measures for Diplomatic subgroup.

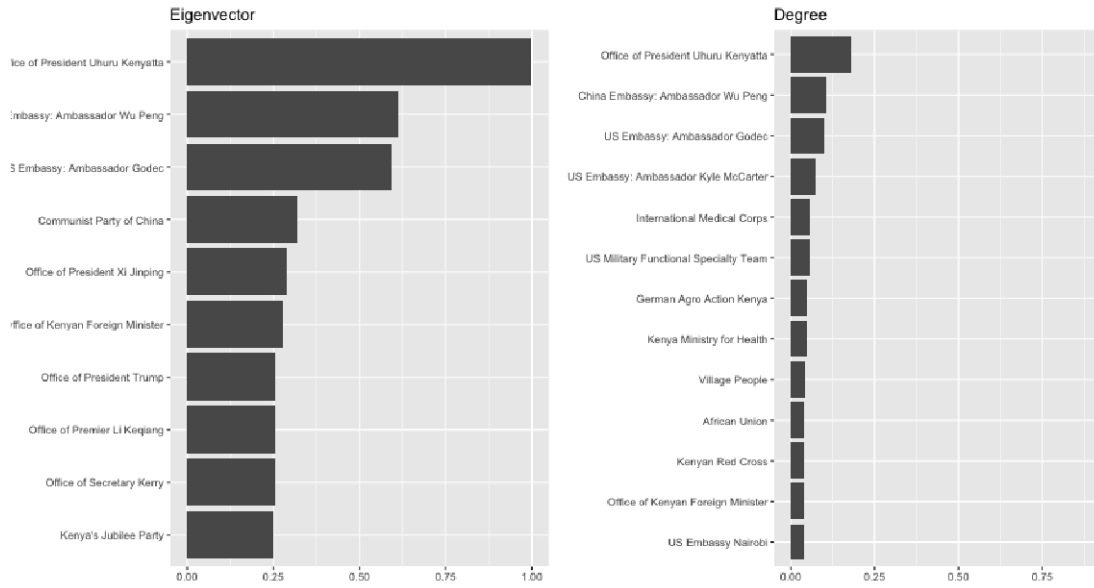


Figure 8. Eigenvector and degree centrality measures for Diplomatic subgroup.

H. SUBGROUP ANALYSIS

Within each of the two networks, military and diplomatic, exist a number of smaller groups which may provide further details to the brokers and bridges between these groups. Tables 6 through 8 and Figures 9 through 11 depict the subgroups using the Girvan-Newman community detection algorithm,¹²⁸ with convex hulls in Figures 9 through 11 to highlight the identities of each smaller group. This illustration explains the presence of a number of isolated dyadic relationships within the larger network. These also show the nine larger modular groups intermingled among and between the larger identified subgroups.

1. Overall Network

The metrics in Table 6 illustrate the sparseness of the overall network. Figure 9 highlights the number of disconnected dyads and triads on the periphery of the network.

¹²⁸ Michelle Girvan and Mark E. J. Newman. 2002. "Community Structure in Social and Biological Networks." *Proceedings of the National Academy of Sciences (PNAS) USA* 99(12):7821-26.

While there are scholars who argue that influence can occur from the periphery and work its way inwards,¹²⁹ the traditional expectation relies on the denser, smaller clusters in the center of the network for the diffusion of ideas.¹³⁰ The smaller dyads and triads on the periphery may still have a purpose for information operations planning, dependent upon the desired effect.

Table 6. Subgroups for entire network.

Measures	Scores
Number of Groups	23
Modularity	0.771
Normalized Modularity	0.806

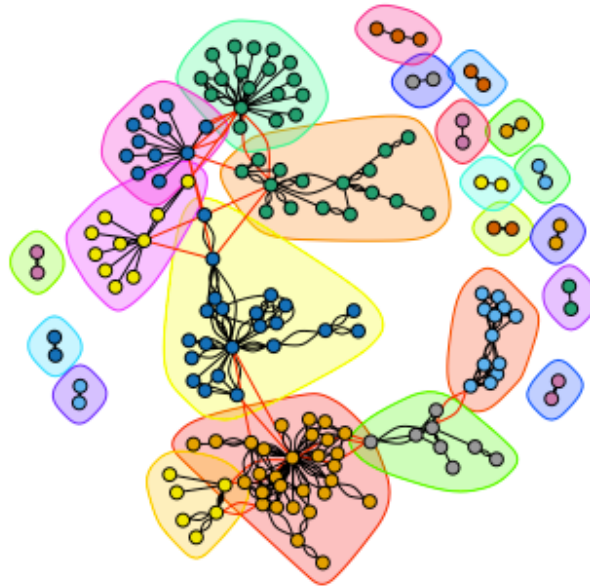


Figure 9. Diplomatic and military relations subgroups.

¹²⁹ Navid Hassanpour, *Leading from the Periphery and Network Collective Action* (Cambridge, UK: Cambridge University Press, 2017), 1–216, <https://doi.org/10.1017/9781316493403>.

¹³⁰ Everett M. Rogers, *The Diffusion of Innovations*, 5th ed. (New York: Free Press, 2003), 1–543.

2. Military Network

Table 7 and Figure 10 present the metrics and sociogram for the military network broken down by subgroups. Again, the military relational ties have among them dyads and triads, the preponderance of relational ties remain within the larger subgroup.

Table 7. Military relations subgroups.

Measures	Scores
Number of Groups	94
Modularity	0.669
Normalized Modularity	0.779

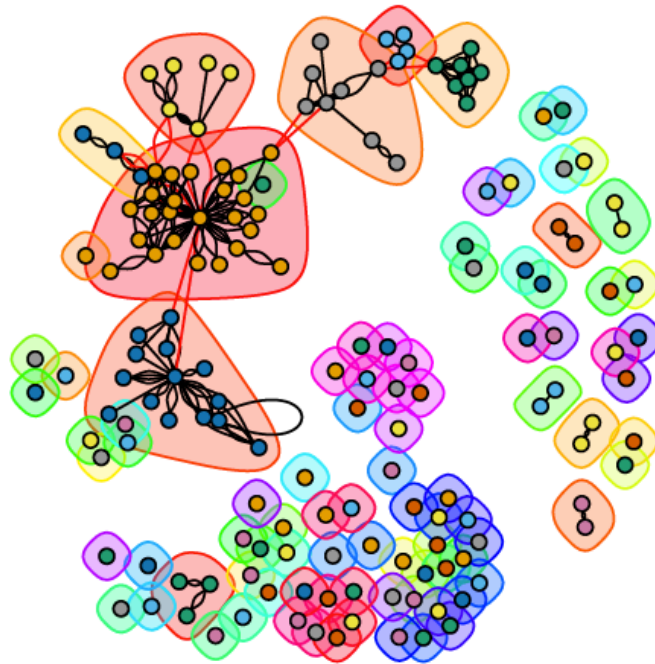


Figure 10. Military relations subgroups

3. Diplomatic Network

Table 8 and Figure 11, however, demonstrate that the diplomatic relational ties include smaller, more isolated subgroups with less interconnectedness. The diplomatic network includes fewer subgroups than the military network and scores higher in terms of modularity. The difference in modularity between the two networks suggests very different opportunities and availability for disruption and intervention within each. The transfer of information or communications through this network would likely take longer but could also be focused on the more isolated dyads and triads.

Table 8. Diplomatic subgroups.

Measure	Scores
Number of Groups	74
Modularity	0.794
Normalized Modularity	0.782

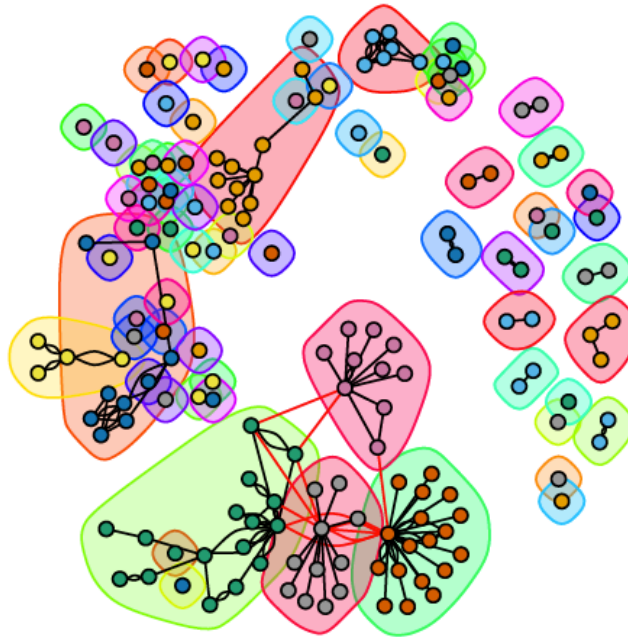


Figure 11. Diplomatic subgroups.

I. TEMPORAL ANALYSIS

As discussed earlier, the data spans a decade of interactions for both networks and envelops multiple administrations in all three countries covered in these topics. The analysis, therefore, necessarily needs to examine how changes occurred through time and what trends they could potentially highlight. I broke the analysis down into two five-year periods for each network as well as for the overall network, calculating topographical and centrality metrics for each time period and network.

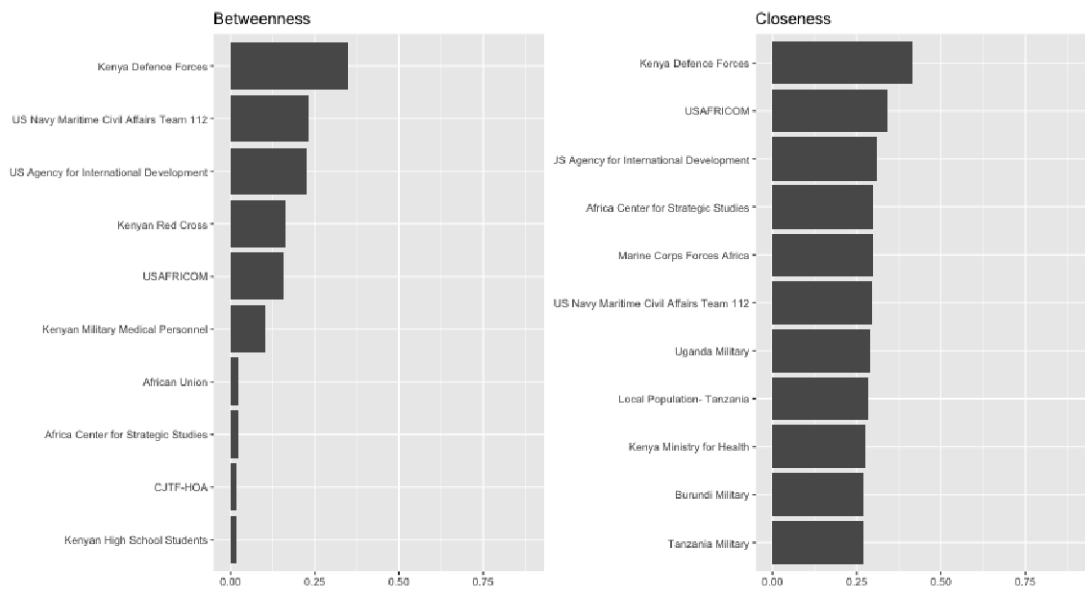


Figure 12. Betweenness and closeness centrality measures, overall network, 2009–2014.

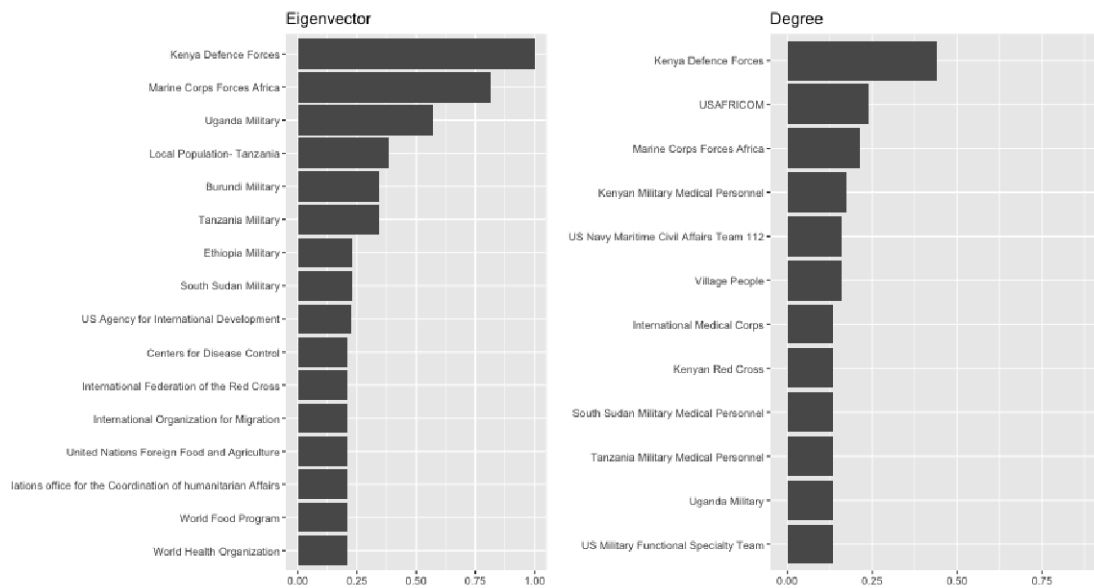


Figure 13. Eigenvector and degree centrality measures, overall network, 2009–2014.

1. Overall Network

The centrality scores for the first five years (2009–2014) for the overall network—as presented in Figures 14 and 15—illustrate the prominence of the U.S. military (e.g., USAFRICOM) in terms of its engagement with Kenya Defence Forces. Military actors consistently score higher in terms of centrality than the diplomatic actors. The scores from the second time period (2015 to present) however, suggest that diplomatic actors are becoming increasingly central: both the Chinese Ambassador and President Kenyatta became more prominent in the network, as a comparison of the degree centrality scores in Figures 13 and 15 illustrate. The most significant changes between the two time periods, however, become even more apparent when examining the two diplomatic and military networks separately. We turn to those next.

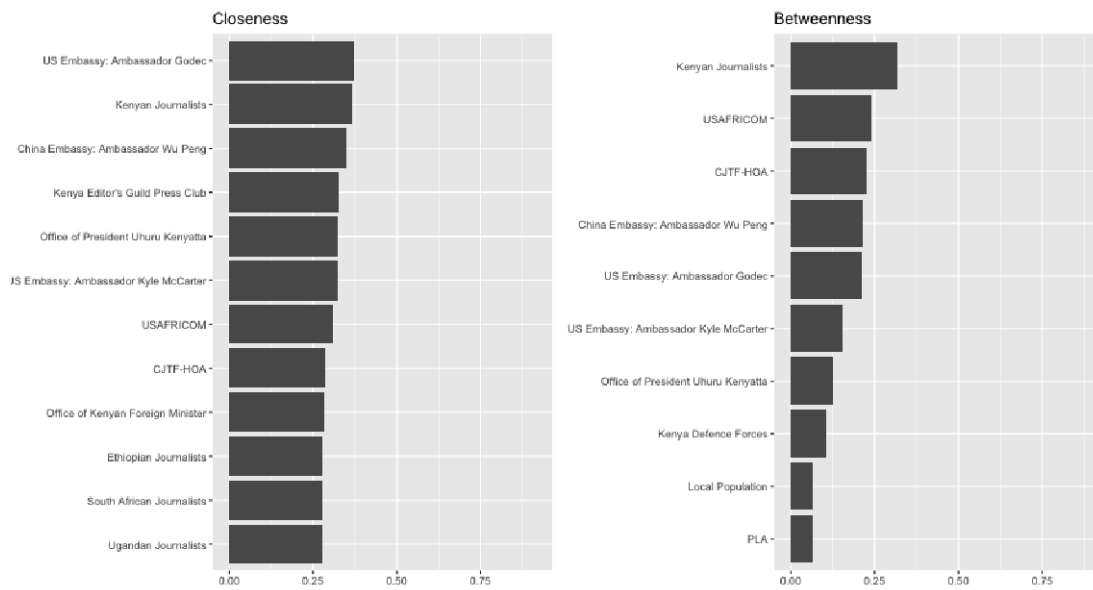


Figure 14. Closeness and betweenness centrality measures, 2015–2019, overall network.

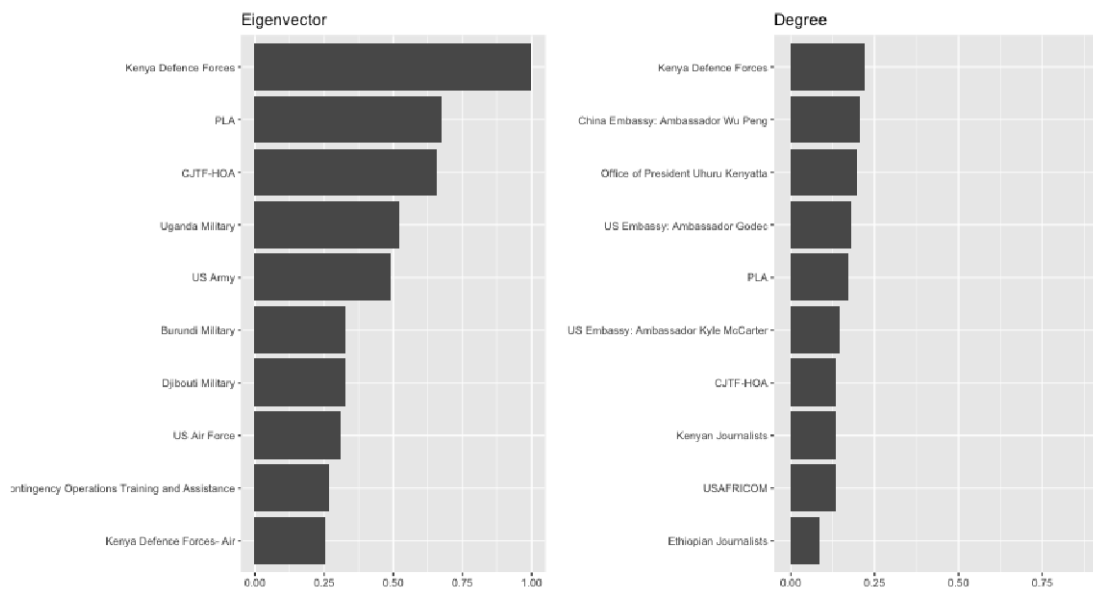


Figure 15. Eigenvector and degree centrality measures, 2015–2019, overall network.

2. Military Network

The military network through the first time period, as illustrated in Figure 16, again shows that the Kenya Defence Forces rank first in all four centrality measures. The time period from 2009–2014, captures the concentrated efforts to focus military interactions first with Kenya Defence Forces, with regional partner nations represented as well. The second time period reflects the changes which occurred from 2015–2019. Most significant, the Kenya Defence Forces betweenness score drops to an almost inscrutable number, nominally higher than USAFRICOM's. Additionally, the top ten scores for all four centrality measures illustrate the emphasis on relationships with military medical personnel. The Kenya Defence Forces eigenvector and degree centrality scores do not rank in the top ten in the second time period, suggesting there might have been a drop in strict military engagements and a corresponding increase in military engagements that focus more on medical training and local populations, as reflected by the fact that villages appear in the top-ten rankings for all four centrality measures.

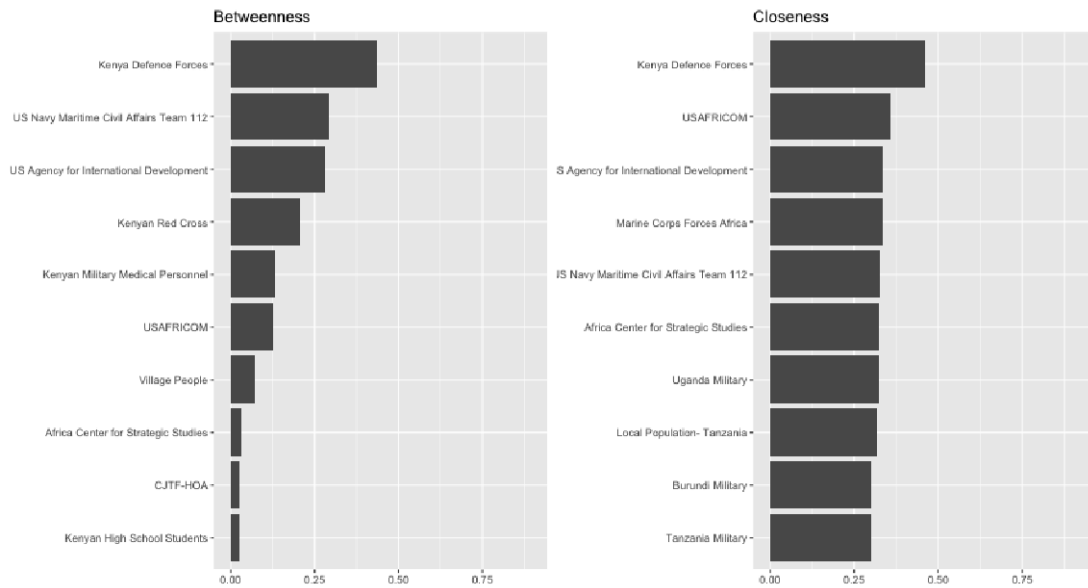


Figure 16. Betweenness and closeness centrality measures, military network, 2009–2014.

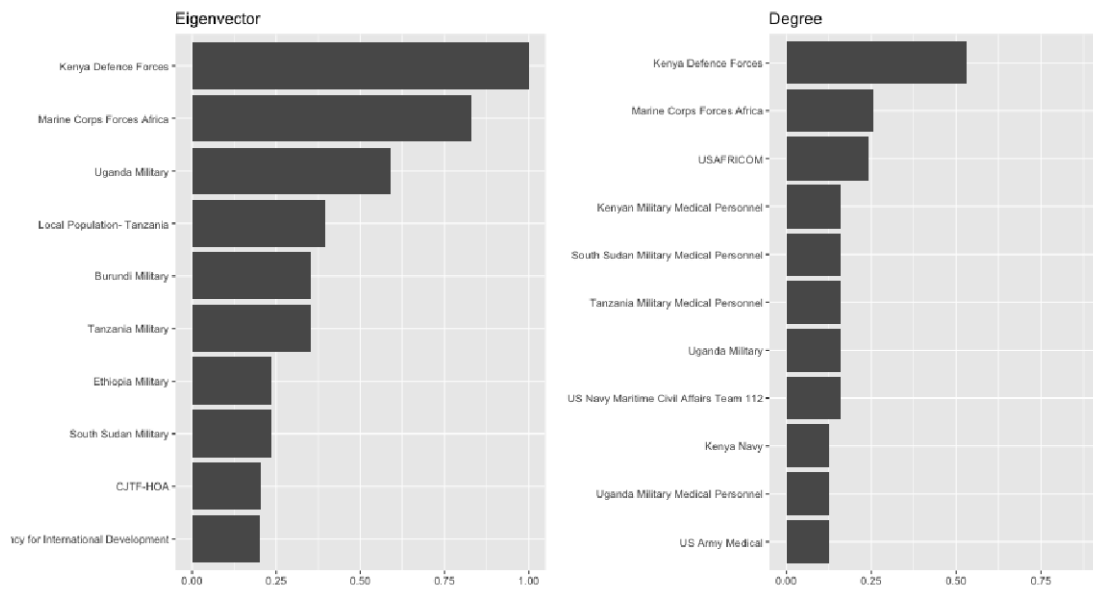


Figure 17. Eigenvector and degree centrality measures, military network, 2009–2014.

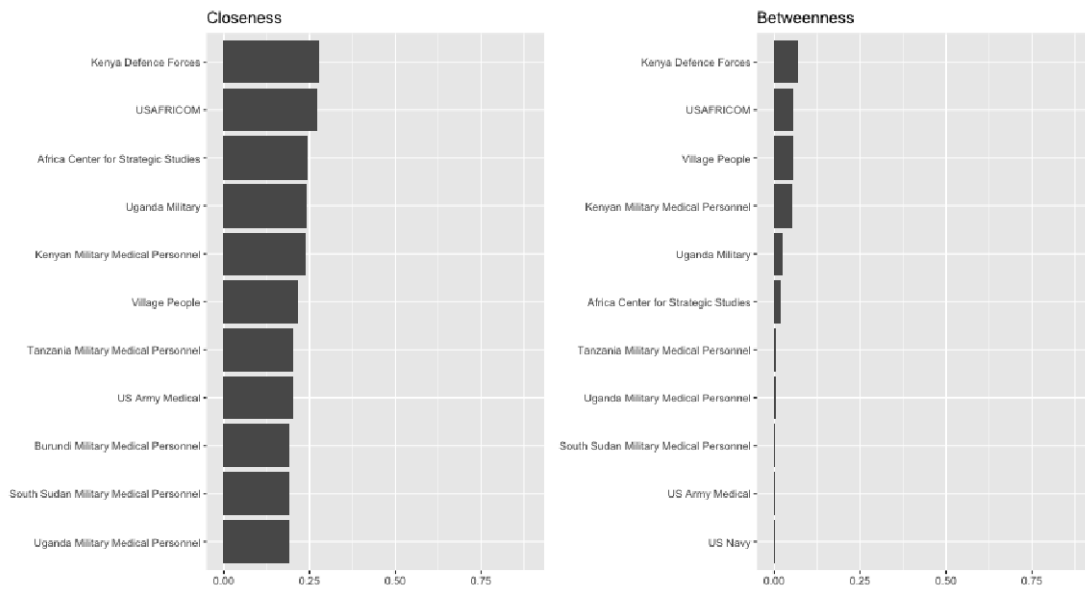


Figure 18. Closeness and betweenness centrality measures, military network, 2015–2019.

3. Diplomatic Network

The diplomatic network provides insight through the changes incurred during the ten-year period as well. Figures 19 and 20 present the centrality measures. For diplomatic ties, the prominent actors in the first time period represent a focus on medical training with Kenya Ministry of Health and International Medical Corps (IMC) topping both lists, the IMC ranking first in both eigenvector and degree. Because much of the focus of interactions in Africa by the United States over the last 30 years has been on medical responses,¹³¹ from a foreign policy perspective this analysis fits the narrative for U.S. concerns in Africa. USAFRICOM, U.S. Civil Affairs units, and U.S. military Functional Teams also rank on the top ten for betweenness and degree in the diplomatic ties. While this could appear to be an example of mission creep, U.S. military activities in Africa have consistently been an extension of diplomatic engagements.¹³²

¹³¹ Lauren Ploch Blanchard, “Kenya: Current Issues and U.S. Policy,” *Congressional Research Service*, February 26, 2013, www.crs.gov.

¹³² Andrea Kathryn Talentino, “The Military’s Role in Development,” in *The U.S. Military in Africa: Enhancing Security and Development?*, ed. Jessica Piombo (Boulder, CO: First Forum Press, 2015), 11–35.

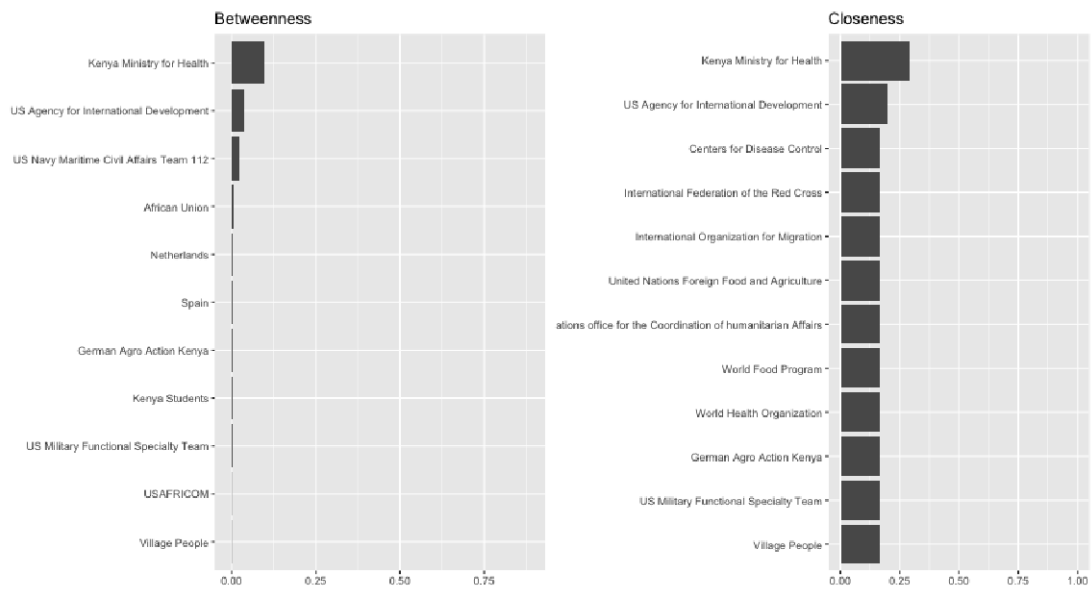


Figure 19. Betweenness and closeness centrality measures, diplomatic network, 2009–2014.

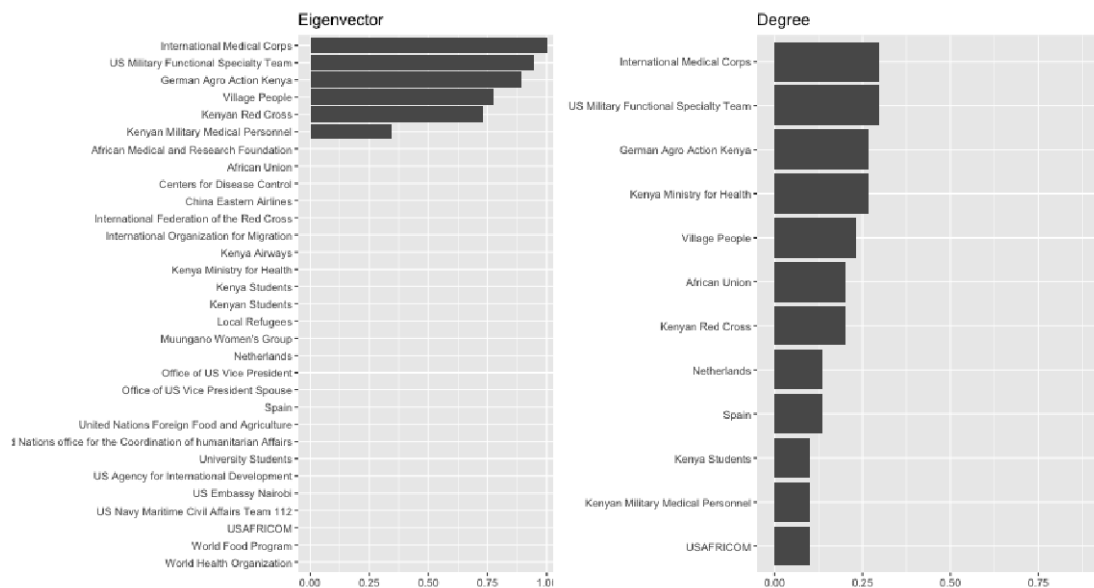


Figure 20. Eigenvector and degree centrality measures, diplomatic network, 2009–2014.

The diplomatic centrality metrics from the second time period (2015-2019) illustrate the most significant change in this series of analytics and validate the discussion of competition for influence in Kenya. As captured by Figure 21, the Chinese Ambassador ranks first in terms of betweenness and degree centrality and second in eigenvector, just below Kenya's President Kenyatta. The eigenvector scores of both the ambassador and president are nearly twice that of the U.S. Ambassador for the same metric. The U.S. Ambassadors do rank in the top five on all four metrics, and U.S. Ambassador Godec's (2015-2017) betweenness score equals that of the Chinese Ambassador. The rise in China's diplomatic efforts, however, could indicate a shift in focus for Chinese efforts in Kenya, from financial and economic efforts based on the Belt and Road Initiative, to ones more politically focused between diplomacy and personal relationships.

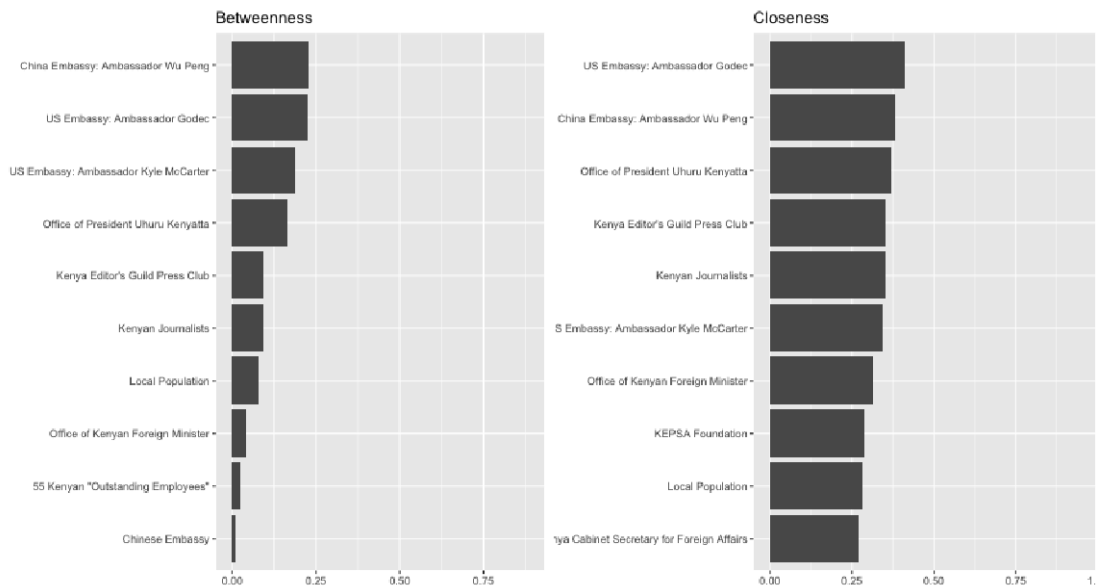


Figure 21. Betweenness and closeness centrality measures, diplomatic network, 2015–2019.

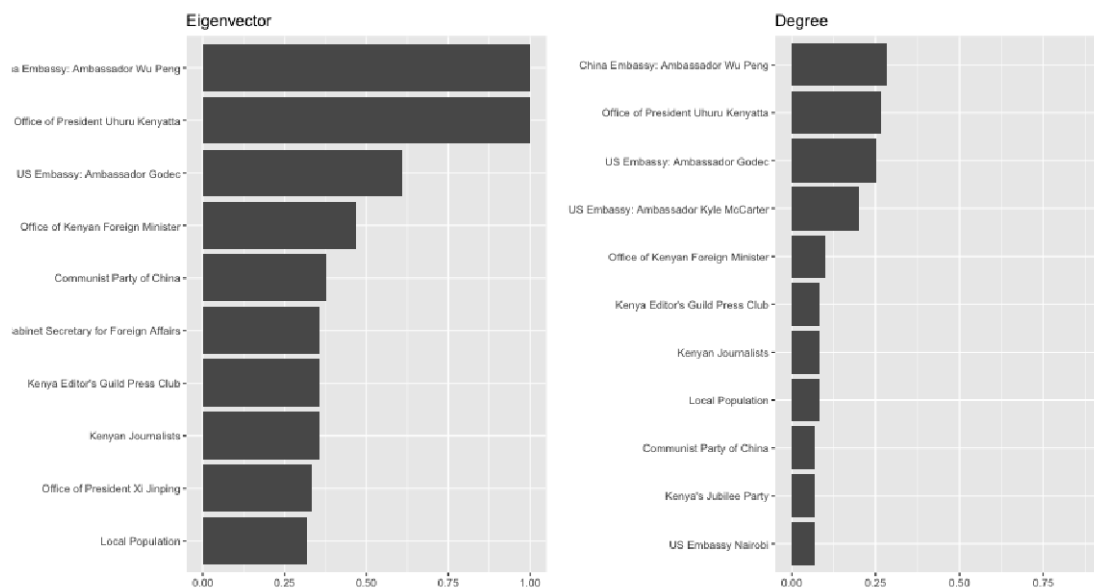


Figure 22. Eigenvector and degree centrality measures, diplomatic network, 2015–2019.

4. Conditional Uniform Graphs (CUGs)

Due to the nature of both the collection of the data through open-source public affairs and public relations webpages and the concentration on military and diplomatic ties, I sought to also explore whether any research biases could be present, as well as test if the observed centralization levels are strictly due to random processes. In particular, I used Conditional Uniform Graphs (CUGs) to test the “structural characteristics” of the network. CUGs test whether “some measure of a given network against that same measure in a series of randomly generated networks that share some substantive property in common with the original.”¹³³ If the observed centralization measures differ significantly from those found in randomly generated networks, then this could suggest a bias in data collection or that the observed centralization measures are telling us something significant about Kenya’s military and diplomatic networks.

¹³³ Cunningham, Everton, and Murphy, *Understanding Dark Networks: A Strategic Framework for the Use of Social Network Analysis*, 236.

Tables 9 and 10, along with Figures 23 and 24, present the results of the analysis. They suggest that if the collected network data reasonably capture Kenya's military and diplomatic networks, then the observed centralization levels are higher than one would normally expect. Put differently, although the networks do not appear overly centralized, they are more centralized than one might reasonably expect them to be. Of course, this is contingent on whether the analyzed networks do reasonably capture Kenya's military and diplomatic networks. If they do not, these results suggest that a bias was present in the data collection efforts, and so we should consider all results tentatively and regard any and all policy recommendations cautiously.

Table 9. Military relations CUG test results.

Centralization Measure	Edge	Percent Greater	Percent Less	Size	Percent Greater	Percent Greater
Degree	0.60	1	0	0.60	1	0
Betweenness	0.55	1	0	0.55	1	0
Closeness	.004	1	0	.004	1	0
Eigenvector	0.55	1	0	0.55	1	0

Table 10. Diplomatic relations CUG test results.

Centralization Measure	Edge	Percent Greater	Percent Less	Size	Percent Greater	Percent Greater
Degree	0.26	1	0	0.26	1	0
Betweenness	0.16	0.996	0	0.16	1	0
Closeness	.002	1	0	.002	1	0
Eigenvector	0.55	1	0	0.55	1	0

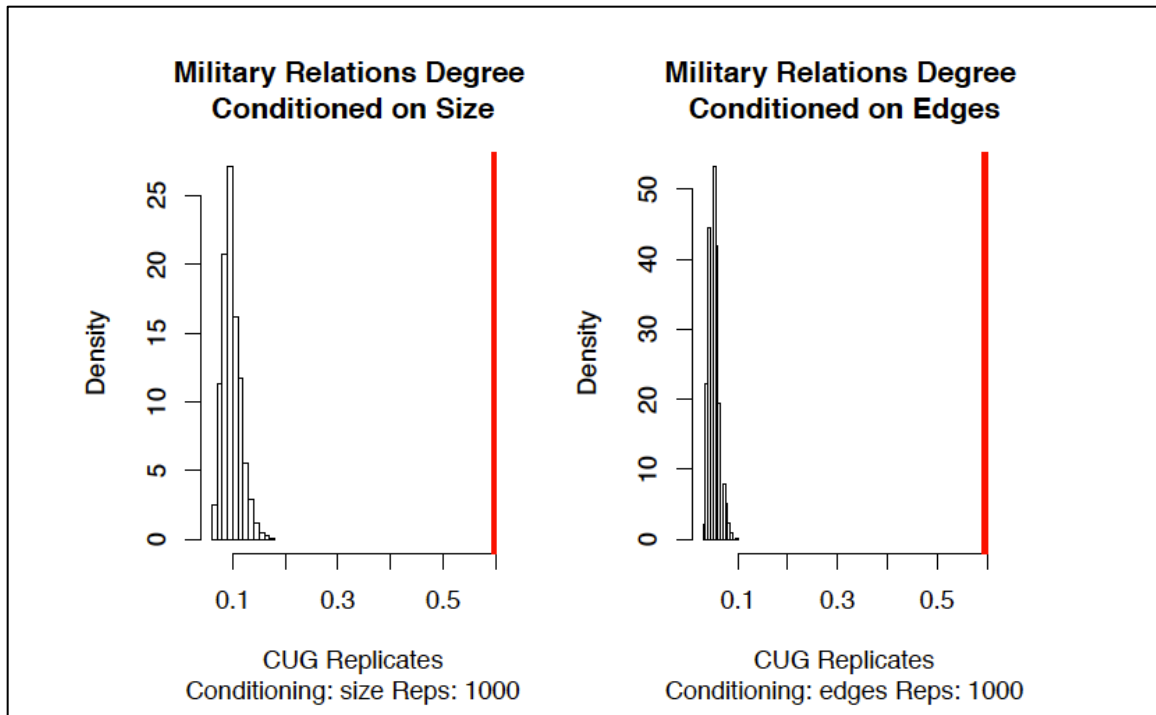


Figure 23. Military relations CUG test results.

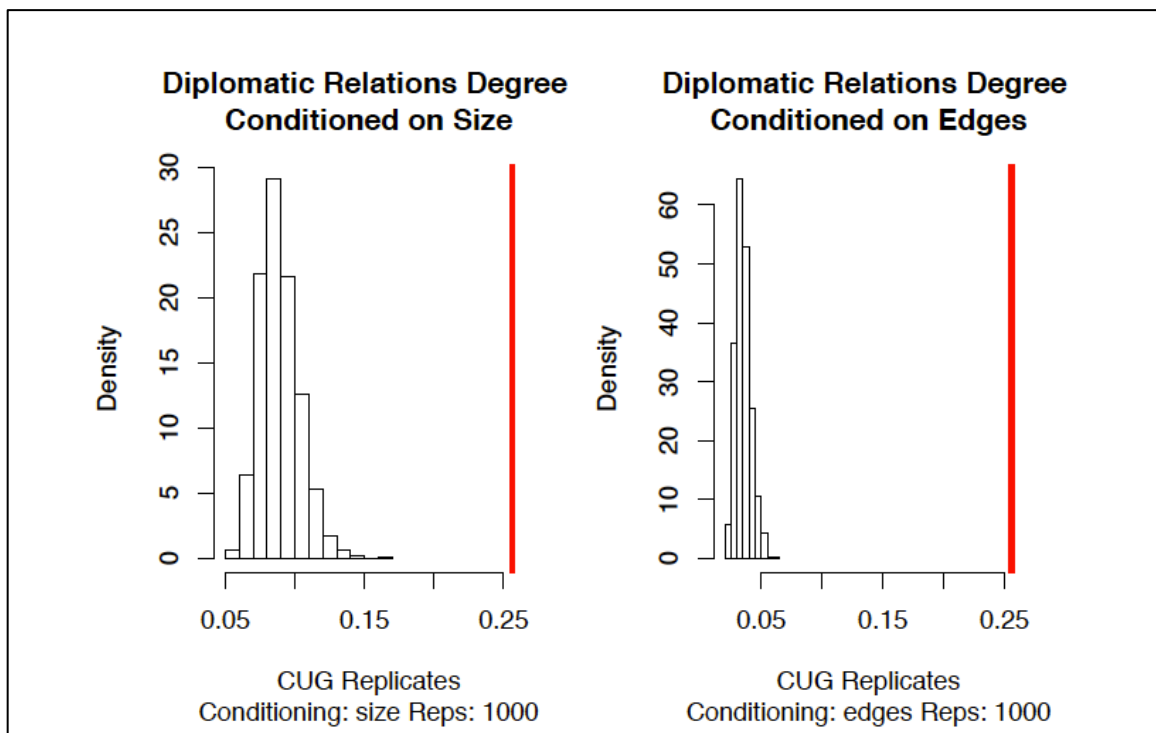


Figure 24. Diplomatic relations CUG test results.

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V. SUMMARY AND CONCLUSION

The United States and Kenya have enjoyed a long-standing relationship with strong ties developed through years of military interactions which have benefited both countries; although the benefits are not determined through distinct measures,¹³⁴ the persistent engagement patterns suggest future opportunities will continue. The U.S., however, should be mindful of the potential gap that could arise between the U.S.'s and Kenya's goals, as China's investments and military engagements in the region continue to grow. Change does not necessarily need to happen now, but the path dependence of military engagements in the country should not be taken for granted. China provides Kenya with opportunities for diversification and change, and the U.S. must be cognizant and ready to adjust as needed.

This thesis has sought to address trust, trustworthiness, and influence and how each can be impacted within a social network through the case study of Kenya's military and diplomatic ties with both the U.S. and China. Its social network analysis of these ties suggests that within the military network, the U.S. to Kenya ties and subgroups may provide more opportunities for continued engagement and trust-building. This does not, however, negate the growing Chinese interactions with Kenya and their growing diplomatic ties. The analysis did indicate China's engagements throughout the two five-year periods increased and although this thesis does not propose specific actions or effects for information operations, the purpose was to illuminate the tools SNA offers in understanding where ties exist and how those ties and actors may be affected by the surrounding network.

The analysis offered in this thesis does not offer a holistic view at the case study networks as there are limitations to the data considered. The limited discussion of Kenya's history and relationships to former colonial powers provides little development of the understanding in how the network has developed over the last fifty years and how that history may have created the networks in place currently. A longitudinal study including the progress of Kenya's ties to colonial powers and regional partners would provide a

¹³⁴ Allen, "Assessing a Decade of U.S. Military Strategy in Africa," 1–15.

deeper understanding and analysis. Because of the strict use of a limited list of open-source data, the networks analyzed here do not capture any ties to European countries and partners, which may skew the analysis such that some actors have less influence than they appear to have. The reverse could also be true. Some actors may have more influence than they appear to have in this analysis. Nevertheless, this case study does provide an example of how network data can be accumulated from open-source material and offers, at least a basic, understanding of the dynamic nature of networks and how they can assist in planning military operations.

The overall implications for operations appear to include two potential avenues for approach. First, the military subgroup analysis indicates that interaction with the Kenyan Defence Forces as well as incorporating the regional partners, or even isolated interactions with regional partners, may strengthen influence potential for the U.S. in Kenya. As the network's most central actor, the Kenyan Defence Forces' strong relational ties to the U.S. military, as well as to regional partners, indicate that protecting these relational ties remains key in protecting U.S. interests.

However, the analysis of the diplomatic network appears to have captured an increased influence of Chinese actors. While U.S. diplomats and politicians continue to engage and maintain interactions, the strength of ties and number of interactions and actors from China suggest that the diplomatic network may be where a disruption tactic should be applied. The continued overlap between the two networks indicates that addressing the activity of one while not addressing the other would not garner success in growing U.S. influence within relationships with Kenya and denying Chinese influence.

APPENDIX A. THE MEDIA IN KENYA

As research for this thesis was being conducted, it became clear that Kenya's media had become a focal point for attempts at Chinese influence. This appendix examines the ties between various media outlets, their owners and shareholders, and other key players. The data analyzed here are multi-modal (i.e., more than two types of actors) with ties within and between types of actors, so most standard social network metrics are not applicable. Nevertheless, the examination of key network diagrams can still highlight some interesting dynamics. The meta-network analysis tool, Organizational Risk Analysis (ORA),¹³⁵ is used here because it is designed to handle such data.

A. THE MEDIA IN KENYA

In the analysis of Kenya's military and diplomatic networks we saw that the media, and specifically the Kenyan Editor's Guild, appeared to lie in a position of brokerage. Here we take a closer look at Kenya's media network and what insights SNA can provide for understanding how to best move forward in building U.S. influence, or mitigating China's. Since its independence in the 1960s, Kenya's media has been entangled in the government structure, regularly criticized as biased and partisan, accused of being either too dependent on government support or controlled outright through government cooption.¹³⁶ As "control over the production and distribution of ideas ensures cultural and therefore ideological domination by those who own the means of production," government involvement and ownership of the media directly impact the information circulating throughout the country and among the population.¹³⁷ The concerns, therefore, arise of "increasing corporatization of the media sector, including media concentration and conglomeration," within Kenya.¹³⁸ In this section, we seek to discern the aggregation of

¹³⁵ Kathleen M. Carley, *ORA*, version 2.3.6 (Carnegie Mellon University: Center for Computational Analysis of Social and Organizational Systems (CASOS), 2001).

¹³⁶ George Ogola, "The Political Economy of the Media in Kenya: From Kenyatta's Nation-Building Press to Kibaki's Local-Language FM Radio," *Africa Today* 57, no. 3 (Spring 2011): 77–95.

¹³⁷ Ogola, 78.

¹³⁸ Ogola, 78.

national media outlets in Kenya and, through social network analysis identify possible indications of the concentration of media outlets and ties between the owners.

Kenya's media has been entangled with the government since before its independence in 1963, with two of its newspapers having survived: *The Daily Nation* and *The East African Standard* (now known as *The Standard*), which remain two of the most prominent media outlets in the country.¹³⁹ The stories of each newspaper differ greatly but not in the methods they employed to survive poor economic climates and tumultuous political environments.¹⁴⁰ While Kenya's media story is similar to most African countries throughout independence, "the Kenyan situation reflects a failure to involve the masses in decision-making processes, problems of legislative melee, problems of window dressing, and policy vacuum among others."¹⁴¹ The practice of "developmental journalism"¹⁴² fostered climates where the government administrations pressured the media to support and tell good news stories in order to facilitate and encourage growth and prosperity.

Kenya is largely "regarded as having a well-developed and fast-growing media industry" throughout Africa and has been "pluralist since the early 1990s" with a less oppressive government than many of its neighbors.¹⁴³ Kenyan journalists, however, still struggle with pressure to act as "instruments of partisan politics or inciting ethnic violence," and although a media law was passed in 2009, libel laws continue to frustrate true freedom of press.¹⁴⁴ Ultimately, Kenyan journalists remain conflicted, trying to survive in difficult economic times while not becoming an enemy of the state.¹⁴⁵ The

¹³⁹ Ogola, "The Political Economy of the Media in Kenya: From Kenyatta's Nation-Building Press to Kibaki's Local-Language FM Radio," 78.

¹⁴⁰ Ogola, 79.

¹⁴¹ Sharon Adetutu Omotoso, "Media, Society, and the Postcolonial State," in *The Palgrave Handbook of African Colonial and Postcolonial History*, ed. Martin S. Shanguhya and Toyin Falola, vol. 2 (New York: Palgrave Macmillan, 2018), 1294.

¹⁴² Ogola, "The Political Economy of the Media in Kenya: From Kenyatta's Nation-Building Press to Kibaki's Local-Language FM Radio," 78.

¹⁴³ Elisabet Helander, "A Critical View of the Kenyan Media System Through the Perspective of the Journalists," *African Communication Research* 3, no. 3 (2010): 522.

¹⁴⁴ Helander, 522.

¹⁴⁵ Helander, "A Critical View of the Kenyan Media System Through the Perspective of the Journalists," 521.

persistent presence of government oversight, contradictory or ambiguous legal guidelines, and lack of a robust economy make it difficult for honest reporting to exist.

While significant issues lie with governmental control and its long-term entanglement of media ownership, governmental oversight, and oppressive regime practices, external factors present a real concern for U.S. influence within the country. While the majority of owners the media outlets in Kenya originate from other countries, many are European allies of the U.S. or regional partners on the African continent. The outlier of these external influences is China. China does not own any Kenyan media outlets, but it did establish a CCTV Africa headquartered in Nairobi in 2012, which provides mobile TV service entitled “I Love Africa” and reaches seventeen million Kenyan cellphones.¹⁴⁶ This service does not transmit as Kenyan media outlets traditionally do but is instead designed to compete with other international outlets such as CNN and BBC.¹⁴⁷ Also, in 2012 China began a print magazine, *China Daily*, which is also headquartered and printed in Nairobi, and which Kenya Airways distributes on its flights.¹⁴⁸ None of these actions are surprising; China’s policy towards Africa is not a secret nor are the agreements during the Forum of China-Africa Cooperation (FOCAC) every three years.

During the 2006 FOCAC, China outlined a “intervention” plan to the African nations that included five points:¹⁴⁹ “increased contact between news media,” “multi-level exchanges and co-operation, with international visits and exchanges between media groups,” and “improvement of telecommunications infrastructure in African countries.”¹⁵⁰ These should concern Western agents for a multitude of reasons, not least of which that “media training is not value-neutral; it also carries with it the cultural and political values associated with the acquisition of those skills.”¹⁵¹ While the U.S. and its allies assert that

¹⁴⁶ Michael Leslie, “The Dragon Shapes Its Image: A Study of Chinese Media Influence Strategies in Africa,” *African Studies Quarterly* 16, no. 3–4 (December 2016), 161–174.

¹⁴⁷ Leslie, 165.

¹⁴⁸ Leslie, 165.

¹⁴⁹ Leslie, 163.

¹⁵⁰ Leslie, 163.

¹⁵¹ Leslie, 164.

freedom of the press encourages truth in democracy and transparency to a population, the state-run Chinese media do not practice the same style of journalism. The entrenchment of the already oppressed Kenyan media now being indoctrinated to believe journalists work for the state could only amplify an already corrupt system.

China is not the sole competitor for influence in Kenya; there are a variety of independent and state actors involved in the media industry. Lukoil, a large Russian oil company, owns SNG Holdings Limited, which owns *The Standard* although little insight or examination exists on Russian presence there. The United Kingdom's legacy remains as the former colonial ties still tether Kenyan practices; however, the deliberate efforts from the U.K. do not conflict with U.S. interests in the region. Kenya, in fact, garners support and interest from multiple countries as the prominent economy and force provider in Eastern Africa, but the steadfast and methodical Chinese practices raise the most concern for U.S. influence interests.

B. DATA AND METHODS

I examined media outlets within the geographic boundaries of the country. Some media outlets that originate from outside of Kenya (e.g., Google) still serve as top sources of information for the Kenyan population. The data were drawn from an open-source search using Google and Lexis Advance, focusing on outlets recognized as national-level entities. I then used the list of outlets to gather further information on ties between them, their owners, parent companies, and the primary shareholders of these parent companies. Additionally, given the link that the Kenyan Editor's Guild (KEG) provides between media outlets in the country, data on its members and their ties to the Kenyan Media network were also included and gathered directly from its website. Figure 25 presents the Kenya Media network. It includes 111 actors, but as the figure makes clear, it is largely disconnected. This could be due to missing data, but it may indicate that the network consists of clusters of outlets, owners, and others that operate largely independent of one another.

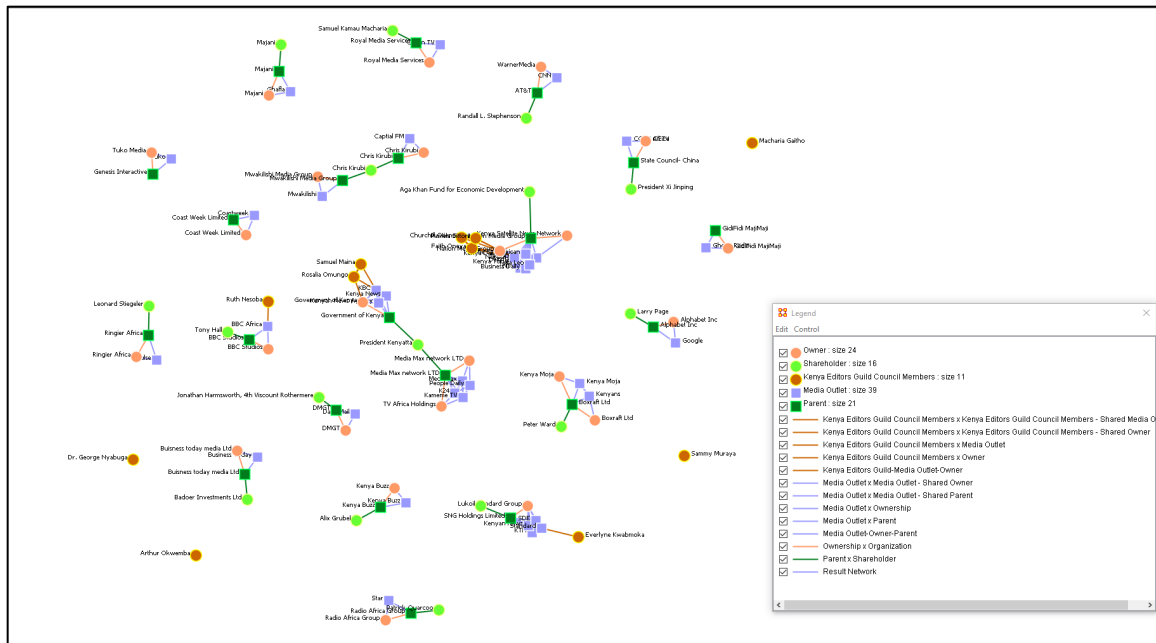


Figure 25. Kenya Media network.

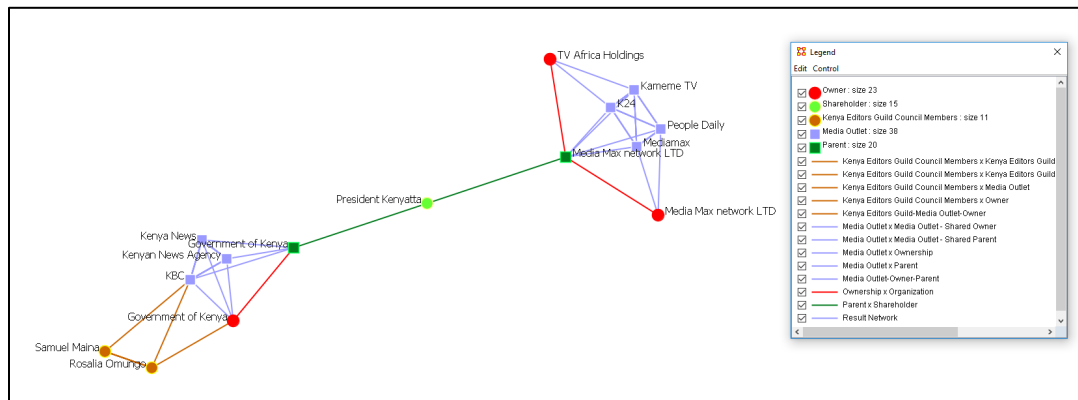


Figure 26. Small component illustrating President Kenyatta's brokerage position.

Figure 26 presents one of the larger components of the network,¹⁵² color coded by node type. It shows that President Kenyatta serves as a broker between the Kenyan government's various media holdings and his privately-owned media outlets. In particular, he functions as a broker between the Kenyan government and Media Max Limited, which

¹⁵² In a component all nodes (actors) can reach one another either directly or indirectly.

President Kenyatta owns. Comparing this component with Girvan-Newman clusters, which are summarized in Table 11, we can see that Girvan-Newman partitions the component into two smaller subnetworks (groups 2 and 4 in Table 11), placing President Kenyatta with the subnetwork in the lower left. Because most clustering algorithms partition actors into a single group, it had to place President Kenyatta into one or the other. Nevertheless, by splitting the component into two, it correctly detects that the component contains two distinct groups. And it is clear from Figure 26 that President Kenyatta is the broker between the two.

Table 11. Girvan Newman clusters.

Group	Size	Members
1	17	Churchill Otieno, Faith Oneya, Pamela Sittoni, KSN, NTV, Daily Post, Kenya Daily News, Kenya Today, Nairobi News, Nation, The East African, Business Daily, Taifa Leo, Kenya Satellite News Network, Nation Media Group, Nation Media Group, Aga Khan Fund for Economic Development
2	8	Samuel Maina, Rosalia Omungo, KBC, Kenya News, Kenyan News Agency, Government of Kenya, Government of Kenya, President Kenyatta
3	8	Everlyne Kwabmoka, KTN, Kenyan News, SDE, Standard, Standard Group, SNG Holdings Limited, Lukoil
4	7	K24, Kameme TV, Mediamax, People Daily, TV Africa Holdings, Media Max network LTD, Media Max network LTD
5	7	Mwakilishi, Captial FM, Mwakilishi Media Group, Chris Kirubi, Mwakilishi Media Group, Chris Kirubi, Chris Kirubi

Figure 27 presents the network's largest component. It includes three members of the Kenya Editor's Guild, with Nation Media Group as the owner and parent Company of the media outlets. Nation Media Group, and its leading shareholder, Aga Khan, have been involved in Kenyan media since Kenyan independence.

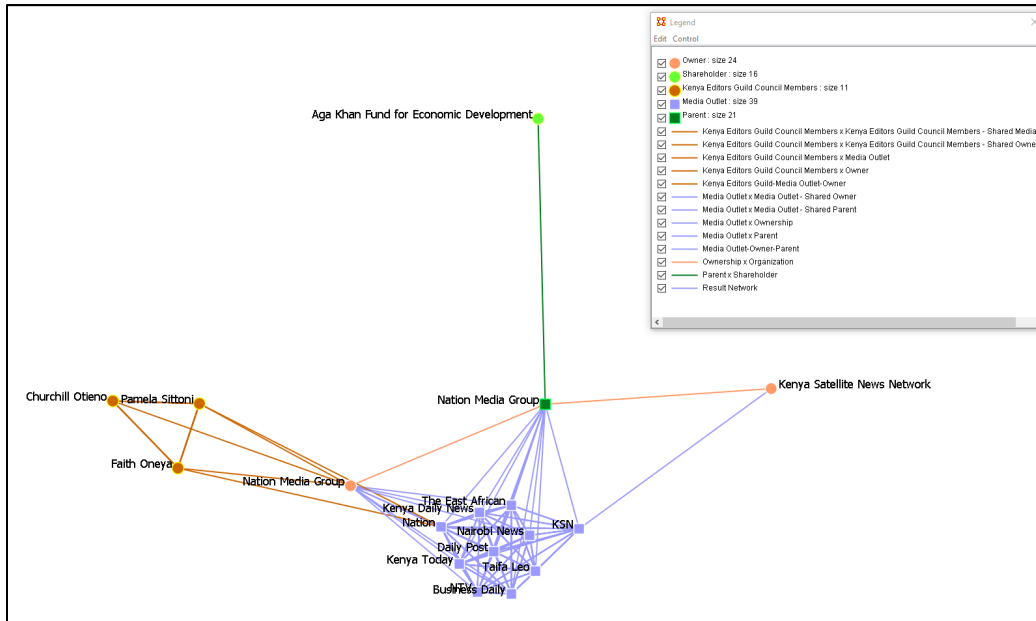


Figure 27. Media outlets, owners, and parent company.

Figure 28 captures how isolated the Chinese media outlets are in the Kenya media landscape, reflecting the network's overall disconnectedness, which leaves presents many opportunities to form ties. In short, the network allows for freedom of choice for the U.S. or a competitor to become involved in Kenyan media.

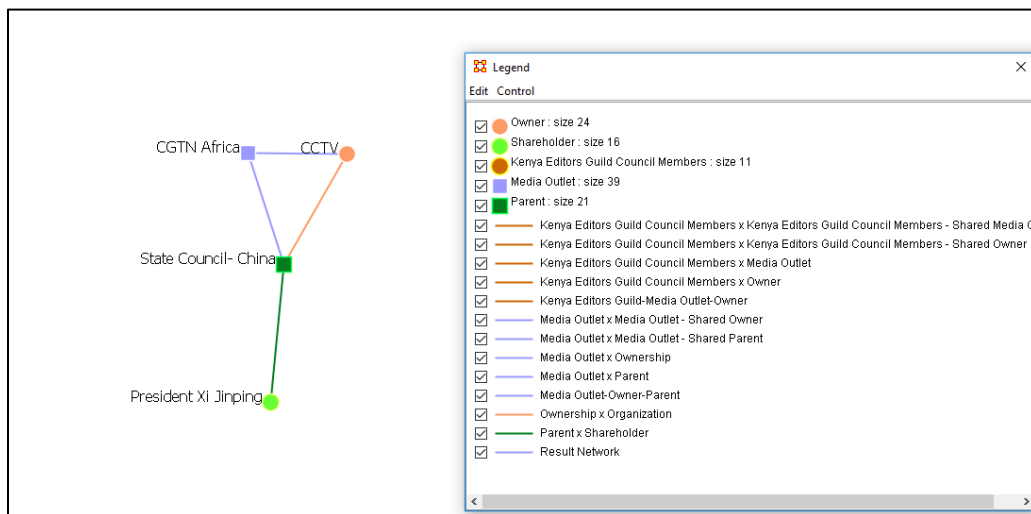


Figure 28. China's influence cluster.

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APPENDIX B. MEDIA IN KENYA CODEBOOK

A. MEDIA OUTLET

Definition of Media Outlet: Media outlets are defined as publications, radio station, television network, or internet sites that disseminate information to the public within the geographic boundaries of Kenya. The viewership may reach outside the specified geographic boundaries, however for the purposes of this research, the media outlet reaches a national-level audience within Kenya.

List of Media Outlets available within the geographic boundaries of Kenya:

1. Citizen TV
2. K24
3. Kameme TV
4. KBC
5. KSN
6. KTN
7. MediaMax
8. NTV
9. Business Today
10. Daily mail
11. Daily Post
12. Ghafla
13. Kenya Buzz
14. Kenya Daily News
15. Kenya Moja
16. Kenya News

17. Kenya Today
18. Kenyan News
19. Kenyans
20. Mwakilishi
21. Nairobi News
22. Pulse
23. SDE
24. Tuko
25. Nation
26. Standard
27. The East Africa
28. Kenyan News Agency
29. Coastweek
30. Business Daily
31. Capital FM
32. Ghetto Radio
33. People Daily
34. Star
35. Google
36. Taifa Leo
37. CGTN

B. OWNERSHIP AFFILIATION

Definition of Ownership Relations: Ownership relates to the person or company which owns and operates each media outlet.

List of Organizations which possess direct ownership of media outlets within Kenya:

1. Royal Media Services
2. TV Africa Holdings
3. Government of Kenya
4. Kenya Satellite News Network
5. Standard Group
6. MediaMax Network LTD
7. Nation Media Group
8. Business Today Media LTD
9. DMGT
10. Majani
11. Kenya Buzz
12. Kenya Moja
13. Boxraft LTD
14. Mwakilishi Media Group
15. Ringier Africa
16. Tuko Media
17. Coastweek Limited
18. Chris Kirubi
19. GidiFidi MajiMaji
20. Radio Africa Group

21. Alphabet Inc
22. BBC Studios
23. WarnerMedia
24. CCTV

C. PARENT COMPANY AFFILIATION

Definition of Parent Company relations: A Parent Company has a “controlling interest”¹⁵³ in the media outlet ownership companies. The Parent Companies may exercise active or passive roles of control over the subsidiary media outlet owners.

List of Parent Company Organizations to which the ownership companies belong:

1. Royal Media Services
2. MediaMax LTD
3. Government of Kenya
4. Nation Media Group
5. SNG Holdings Limited
6. Business Today LTD
7. DMGT
8. Majani
9. Kenya Buzz
10. Boxraft Ltd
11. Mwakilishi Media Group
12. Ringier
13. Genesis Interactive

¹⁵³ Adam Hayes, “What You Should Know About Parent Companies,” Investopedia, accessed November 5, 2019, <https://www.investopedia.com/terms/p/parentcompany.asp>.

14. Coastweek Limited
15. Centum Investment Company
16. Gidi Fidi Maji Maji
17. Radio Africa Group
18. Alphabet Inc
19. BBC Studios
20. AT&T
21. State Council- China (Government)

D. LEADING SHAREHOLDER AFFILIATION

Definition of the Leading Shareholder relations: The leading Shareholder may be an “individual, institution, or company that owns a share of a corporation’s stock.”¹⁵⁴ Due to the possible involvement and management that a leading shareholder may have within a parent company or its subsidiaries, the Leading Shareholder relations creates a two-mode network between both the Owners and the Parent Companies of the media outlets.

List of the Leading Shareholders within each Parent Company:

1. Samuel Kamau Macharia
2. President Kenyatta
3. Aga Khan
4. Lukoil
5. Badoer Investments Ltd
6. Jonathan Harmsworth
7. Majani

¹⁵⁴ “What Does A Shareholder Do,” UpCounsel, accessed November 5, 2019, <https://www.upcounsel.com/what-does-a-shareholder-do>.

8. Alix Grubel
9. Peter Ward
10. Chris Kirubi
11. Leonard Stiegler
12. Patrick Quarcoo
13. Larry Page
14. Tony Hall
15. Randall L. Stephenson
16. President Xi Jinping

E. KENYA EDITOR’S GUILD COUNCIL MEMBERS¹⁵⁵

Definition of Kenya Editor’s Guild relations: Council members of the Kenya Editor’s Guild are individuals who want to “advance media freedom and professionalism” on the continent of Africa.¹⁵⁶ The Council members are leading professionals in media or academia and associated with various institutions and organizations in Kenya.

1. Churchill Otieno- President (Nation)
2. Samuel Maina- Vice President (KBC)
3. Everlyne Kwamboka – Council Member- Print (Standard)
4. Sammy Muraya – Council Member – Television (Freelance)
5. Faith Oneya-Council Member-Online (Nation)
6. Dr. George Nyabuga – Council Member – Academia (University of Nairobi)

¹⁵⁵ “Council Members – Kenya Editors Guild,” accessed December 19, 2019, <https://www.kenyaeditorsguild.org/about-us/council-members/>.

¹⁵⁶ “Council Members – Kenya Editors Guild.”

7. Ruth Nesoba – Council Member- Radio (BBC)
8. Pamela Sittoni – Trustee (Nation)
9. Arthur Okwemba – Trustee (AWCFS)
10. Macharia Gaitho – Trustee (Independent)
11. Rosalia Omungo – Ag. Secretary/ CEO

F. ATTRIBUTES

1) Media Type: The Media Type classifies each of the outlets as either broadcast (television or radio), internet, newspaper or press agency. While most media outlets now have an online presence, these categories identify the medium each outlet employed at inception.

Coding Scheme:

1. Broadcast: Television or radio
2. Internet: Represented only through online presence
3. Newspaper: National newspaper circulation
4. Press Agency

2) Media Focus: The Media Focus classifies the primary purpose of the media outlet. These categories represent the primary purpose of the media outlet but may not include the full complement of programming or information made available through each outlet.

Coding Scheme:

1. Business
2. Entertainment
3. General Interest
4. Shopper

3) Parent Company Flag: The parent company flag attribute lists the country in which the parent company's headquarters is located according to information on Lexis Advance.

1. Kenya
2. United States
3. Switzerland
4. Russia
5. United Kingdom
6. China

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