

Man-hunting, Nexus Topography, Dark Networks and Small Worlds

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Editorial Abstract: “Rob” Dodson offers a methodology to identify and locate High Value Individuals (HVI) a difficult challenge for many intelligence analysts supporting information operations targeted against key individuals in terrorist and violent extremist organizations.

Since the terror attacks of 9/11, the main focus of the U.S. government has been on the capture of what is commonly known as High Value Individuals (HVIs). The granular nature of this threat has created an entire new set of problems and requirements for those engaged in tracking and apprehending these individuals. To be successful, a new methodology of analysis is required. This paper will outline a proposed process currently under review, integrate additional processes, and measure its ability against recommendations outlined in the 911 Commission Report and the Report of Intelligence Failures Relative to Weapons of Mass Destruction.

Man-Hunting¹

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individuals. As a result, the mission of U.S. National forces has changed from find, fix, and destroy, to identify, locate and capture. The resulting dilemma is that this function falls outside the normal scope of military intelligence collection and analysis. Therefore, most intelligence analysts are ill equipped to handle the paradigm shift of focus currently underway.

In the art of man-hunting, analysts face new challenges with the sub-state actor. The fluid, dynamic and surreptitious nature of the HVI differs significantly from the

monolithic nation state threat most analysts were trained for and previously experienced working. The HVI requires intelligence collection and analysis at the lowest level, the individual. This granularity is outside the norm for most current collection systems.

To understand the nature of the HVI’s operation, it is important to understand the nature of the HVI. The first step is to understand how such individuals avoid being captured. That is, a HVI must have some type of implicit or explicit strategy to avoid capture. There is evidence that, in general, HVI’s use three basic strategies to avoid capture. These are: (1) masking, (2) disengagement, and (3) mobility.

The first strategy, masking, is similar in nature to the military concept of cover and concealment. The HVI uses a strategy incorporating denial and deception in his operations by hiding or concealing his true identity, location, or support network.

The second, and most effective strategy is disengagement. This strategy is the safest as it allows the HVI to operate in an environment that is not accessible to a hunter force. Access to this operational area by the hunting force is prevented because of certain constraints and limitations that include political, economic, legal, military or geographic conditions.



Osama bin Laden and Ayman al-Zawahiri remain unlocated

Aljazeera

The third strategy, mobility, prevents fixing a HVI at a decisive place and time. By continually moving, the HVI attempts to optimize his ability to avoid capture. The HVI will move at a time, to a place, in a direction or by a manner that is not expected by the hunter force. This strategy increases the risk of the HVI by providing signatures to intelligence collection; however, it may be possible to offset these signatures by incorporating deception methodologies.

Understanding these strategies creates a foundation to understand a HVI's decision-making process. The HVI's decisions are based on four criteria – familiarity, survivability, safety, and vulnerability. These criteria are the result of a five-step process designed to aid the intelligence analyst in searching for the HVI.

Familiarity addresses the level of comfort or intimacy a HVI has for a specific geographical location. This familiarity can be based on criteria such as family ties, previous visits, close associates residing in the area, of a shared ethno-linguistic identity (known as nexus zones).

These criteria create a cognitive bias within the HVI toward “comfort zones”. Such bias will limit the potential hiding locations of the HVI as a person's mental map is constrained by the sum of their experiences. As a result, the vast majority of the HVI's hiding locations are limited because of an unwillingness to depart from his normative behavior.

Survivability also limits the HVI's decision-making process. Survivability is the HVI's ability to live and operate within a geographical region. As a result, a HVI will not normally choose an area in which he cannot live and operate. Survivability extends beyond the necessities of life, however. To remain operational, the HVI must be able to communicate, conduct business, coordinate activities, meet with associates, etc. In other words, some type of support network must exist to survive.

This support network (Dark Networks) not only provides physical sustenance, but also provides early

warning and physical security services. Within this support network lays an inner trust network. This trust network (nexus zone) consists of those individuals who know the exact location of the HVI and serve as an interface with the rest of the support network.

This concept also supports the safety criteria for the HVI. By limiting access to the HVI to a small group of trusted individuals, the HVI retains a significant degree of safety. This further impacts the decision-making process of the HVI by requiring him to identify those individuals in whom the HVI has explicit trust. A major criterion for this includes familiarity of the individuals who comprise the trust network (analysis must include previous connections – small world).

The final criterion is to understand where the HVI may be vulnerable to apprehension. Unique to this is the fact that this vulnerability is based on the operational area of the hunter force. Certain legal and political constraints limit the areas where the hunter force can operate. This further limits the time, location and manner of the search.

The process previously referenced is built on an approach known as Nexus Topography, which is further amplified by considering Dark Networks and Small Worlds.

Nexus Topography²

Nexus Topography is an extension of the common practice of Social Network Analysis (SNA) used to develop profiles of HVIs. Currently, SNA examines the links in a social group, whereas, Nexus Topography is a template that can be used to construct a map of relationships in different social environments. Nexus Topography maps social forums or environments, which bind individuals together (this can be extended to include Dark Networks and Small Worlds). Such mapping will assist in the identification of missing information on the HVI's network, allowing the system to redirect collection activities.

Detailed levels of information about HVIs are lacking. There are four basic reasons for this shortfall. First, current

intelligence collection systems are not flexible enough to deal with the dynamic nature of the asymmetric threat. These individuals operate in cells, which are most often connected in a flat horizontal versus a vertically organized hierarchy. This horizontal structure negates the value of looking for specific chains of command, which are either not present or ambiguous in nature. The horizontal nature of the network also allows the HVI a greater range of flexibility, allowing him to interact with individuals only when need to address a particular problem. Therefore, the HVI operates in a situational environment and is unlikely to follow traditional patterns of command and control.

Second, open source information is rarely factored into intelligence analysis. This bias is a holdover from the Cold War when information was scarce and was primarily collected through clandestine methods. The ability to have detailed situational information via the Internet must not be overlooked. Open source information will also provide a significant amount of information relating to prior contacts within the SNA construct as outlined in the third reason.

The current framework for analysis only concentrates on the immediate operational network and does not capture the entire social network of the HVI. These prior contacts (Small Worlds), as well as what is known as Dark Networks provide substantial and critical information about the HVI. Often these connections consist of wide-ranging differences resulting in the failure to capture the complex nature of these networks. Further, by concentrating on the operational ties between the HVIs, the current framework fails to provide a historical context for any relationship it does identify. In *Uncloaking Terrorist Networks*³ Valdis Krebs states: “Conspirators don't form many ties outside their immediate cluster and often minimize the activation of existing ties inside the network. Strong ties between prior contacts, which were frequently formed years ago in school and training camps, keep the cells linked. Yet, unlike normal social networks

these strong ties remain mostly dormant and therefore hidden to outsiders.” Consequently, the analyst has no way of knowing if the HVI has developed such prior contacts since they normally do not appear in current reporting channels. The horizontal aspect of the network also allows the HVI to activate latent relationships as necessary. This further confuses the normal collection process and often provides misleading direction to the analyst.

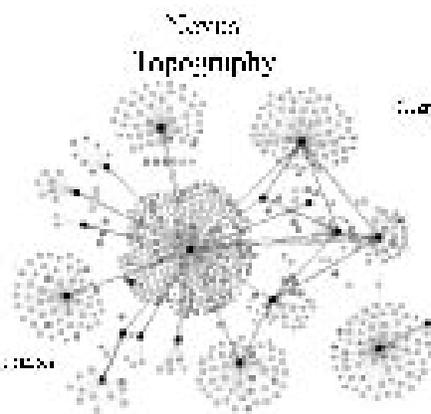
Fourth and finally, SNA suffers from an inherent flaw – it relies on complete information. Without complete information, SNA is limited in its effectiveness. Since most HVIs operate in an opaque environment, it suffices to say that the information used in SNA studies will be incomplete. Their clandestine network’s cell structure is developed to prevent information from being gathered about the organization.

The development of Nexus Topography allows the analyst to overcome these shortfalls. In developing an HVI’s SNA, one must move from the known to the unknown. In the development of a social network there are two constants: all social interaction occurs at a specific place and at a specific time. The likelihood of an interaction occurring increases if the two individuals do occupy the same time and space – a situation called spatial coincidence. The exception to spatial coincidence involves the ability to create virtual relationships over communications networks (i.e. the Internet). As a result, the primary focus of Nexus Topography is to show how, why, when, and where relationships are formed.

In understanding the entire SNA process, one must understand that social interactions occur within larger social structures called communities. There are two communities that are important to the development of relationships – the community of locality and the community of identity. By examining a HVI’s communities of locality and

identity, it may be possible to uncover the HVI’s Dark Network.

It is important to introduce the concepts of diversity, redundancy, and adaptability within a social network. Diversity refers to the multiple identities individuals may have. For instance, an individual may have a familial identity, an employment identity, a religious identity, and an academic identity. Each identity is different and helps define the individual’s social network. Redundancy occurs when individuals share multiple identities within a network. For instance, two individuals could attend the same church, graduate from the same university, and work in the same office building. In this case, these two individuals have a redundant relationship based upon multiple shared identities (religious,



Nexus Topography

social, and economic). The by-product of redundancy is that portion of each individual’s social network will have duplicate nodes. Finally, relationships have the characteristic of changing over time. That is, a HVI’s social network will shift as the HVI’s interest’s change, he moves to another community, or his position within that community evolves. These changes directly influence the nature of his relationships, which will further change his informal social network. Diversity, redundancy, and adaptability are what make social networks, and especially clandestine terrorist networks, so powerful, and why military commanders have a hard time disabling clandestine networks.

These specific sets of links – which come together in nexus zones can be categorized and used to map specific sets of bonds in the network, which in turn should help analysts investigate key areas of possible interaction. Affiliations may be religious, familial, political, educational, criminal, military, ethno-linguistic, cultural, and economic. It is important to note that many sub-networks overlap because ideological bonds manifest themselves simultaneously in different nexus zones

Dark Networks⁴

Dark Networks refers to those networks that exist within society but may have, in fact, the striving of an endstate that creates collective-action problems for governments all over the world. There may also be connections between these Dark Networks and the legal entities that are out to destroy them.

One school of thought indicates that all international relations exist on three different, although related levels – the world of power and might, economic power and influence, and the non-governmental activities shaping the world (currency flow, migrations, globalization, the Internet, etc). The third level is the area in which the Dark Networks operate.

For Dark Networks to function, it becomes apparent that they must either interact with the legitimate networks or establish their own clandestine networks that parallel the legitimate ones. If this is not possible, then other methods to circumvent the first and second level must be found. In doing so, the Dark Networks generally gravitate toward areas of the world that provide the ability to survive – the four criteria outlined previously. As a result, these networks base their operations in safe havens in remote, war-torn and chaotic areas; stay small and shifty; use specialized subcontractors or freelancers on a need-to-know basis; vary movement routes and routines whenever possible; and

are always insulated with expendable intermediaries in case someone is caught.

In addition, the networks function horizontally, similar in structure to a hollow organization where there are centralized functions of finance, planning, strategy, and marketing but where the operating units are relatively autonomous and operate under contractual relationship with the central authority. The ultimate goal would be the creation of an organization that is so scattered and self-sustaining that the elimination of the leadership might not impact the ongoing life of the organization.

The common feature of Dark Networks that survive is their ability to stay flexible and adapt quickly to changing pressures and circumstances. These networks must continually assess risk to ensure their protection. As a result, every Dark Network that requires continuing coordination must be based on ties of trust that were often formed long before the activity started (prior contacts). These trust relations are of vital importance not only to minimize the risk of treason and detection but also to minimize or resolve disputes.

Therefore, the central question for all networks is, "What holds a network made up of different, more or less autonomous, but interdependent actors together?"

Small Worlds⁵

The underlying theory of small worlds is more readily known in the "Six Degrees of Separation" genre. This theory postulates that it is possible (mathematically) to link any two individuals within the world together using a small, finite number of people (generally thought to be six). While the math has been shown to be flawed to a degree, if a few, randomly placed links are inserted into the SNA diagram, it has been found that the basic theory does remain intact. Using what is known as "weak links", i.e. the prior connections within the social environment, does this.

Research found that weak links are often of greater importance than strong links because they act as the crucial ties that sew the social network together. These are the "shortcuts" that if eliminated, would cause the network to fall to pieces. This bridging does not merely connect to one person, but to the entire network of that one person. They are bridges into distant and otherwise quite alien social worlds. Strong links do not have this "breaking out" effect; they connect to people within the current social network of the individual anyway.

These small world networks work magic. From a conceptual point of view, they reveal how it is possible to wire a social world so as to get only six degrees of separation, while still permitting the richly clustered and intertwined social structure of groups and communities that we see in the real world. Even a tiny fraction of weak links – long distance bridges within the social world – has an immense influence on the number of degrees of separation.

In the environment in which we are currently operating, these small world networks may in fact be the critical linkages to HVI's abilities to move throughout the world undetected.

Conclusion

Developing the landscape in which to hunt HVIs is a difficult one, requiring a process that is complex and outside the norm of daily intelligence activities. To be successful, a new and integrated approach must be developed. By melding the fundamentals of Man-hunting, Nexus Topography and Dark Networks, a process that could prove valuable can be developed.

Endnotes

¹ Derived from a paper, A Man-hunting Process, Major Matthew Nilson, USA, Naval Postgraduate School, Monterey, California 2004

² Derived from a paper, Nexus Topography: Mapping a Fugitive's Social Network, LTC Steve Marks, et al, USA, Naval Postgraduate School, Monterey, California 2004

³ Derived from, Uncloaking Terrorist Networks, Valdis Krebs, International Network for Social Network Analysis, 2003

⁴ Derived from "Dark Networks as Problems", Jorg Raab and H. Brinton Milward, Journal of Public Administration Research and Theory, Vol. 13, no. 4

⁵ Derived from Nexus: Small Networks and the Ground Breaking Theory of Networks; Mark Buchanan; W.W. Norton and Company, N.Y. 2002 