Network Theory and Drone Attacks

Chances are that you will find a news story about a drone attack on militants within a week of reading this blog post. They have become common in Pakistan, and are now used in other places such as Somalia and Yemen. Drone attacks are expensive, with the missile alone costing more than USD 50,000, plus the cost of operating the drone. The expected payoff of drone attacks is to weaken insurgencies such as the Taliban. But do they work?

David Siegel has an article on repression and social networks that provides some answers on when such tactics are effective. The reason social networks are relevant is that people decide to join insurgencies based in part on what their friends are doing, because the actions of friends are helpful for learning what actions are considered good, what causes to join, and what the risks and benefits are. As a result, insurgencies spread through social networks, and they will spread faster when these networks have many connections and few places that are isolated from each other.

Thinking about insurgencies as social networks helps us understand what drone attacks do: they remove individuals from the networks, and when one individual disappears the connections that individual has also disappear. A significant number of attacks can tear the network into small pieces and stop an insurgency completely, but that requires a scale of attack much greater than anything currently seen. Instead, what the current pace of (approximately) one attack a week does is to pick of some parts of the network, leaving much of it unchanged.

Based on network theory, will that work? If individuals are equally eager to join the insurgency, and equally well connected, such a strategy has only a remote chance of stopping an insurgency, because there are too many connections that need to be severed. If some individuals are (much) more influential and connected, and the attacks hit those individuals more than others, they can be effective, especially if these individuals occupy central positions in the network. Because drone attacks target leaders or assemblies of central persons, this is in fact the theory behind them. They remove those who are most central in the network, and through that seek to remove those who are the strongest drivers of the insurgency, and break the network apart.

But what if friends of the people who are removed (well, killed) by the attacks react by getting angry and joining the insurgency? In that case, the attacks not only lose their effectiveness, they can in fact become counter-productive and can fuel the insurgency. This backlash effect is true under one, ironic, circumstance, however. Attacks are counter-productive when they hit actual leaders with many ties to others who can become angry. If they instead hit innocent people, the backlash will be less because few people in a society of villages have enough network contacts to fuel much anger.

Siegel, David. 2011. "When Does Repression Work?: Collective Action and Social Networks." Journal of Politics 73 (4): 993-1010.

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