



WHITE PAPER

KINGFISHER COMPUTATIONAL ANALYSIS

China (and North Korea)

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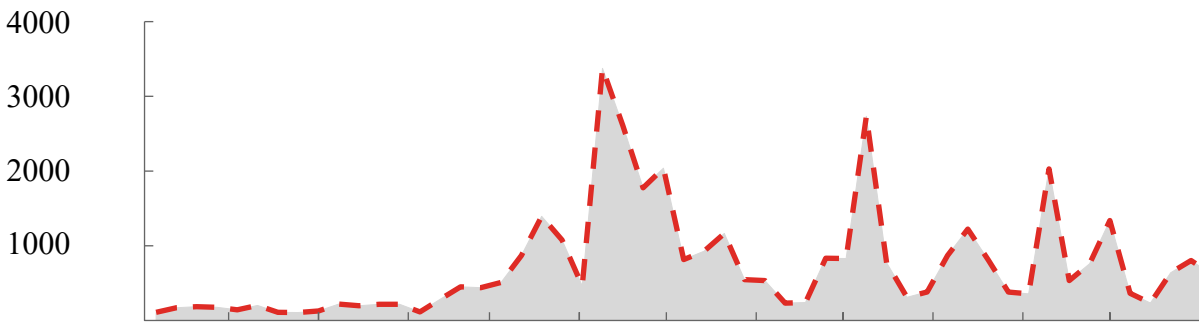
One of the topics of continuing interest in China is North Korea. Understanding how topics related to North Korea trend over time in China helps to understand Chinese and North Korean bilateral relations. If we compare the interaction between elites from the two countries with an expectation for that interaction, we can obtain a *bilateral measure*. By comparing the bilateral measure for several countries, we can see how those countries allocate their resources or react to specific topics within a country. In recent work done for the U.S. Government (USG), using computational analysis we observed:

- North Korea and China became estranged after the demise of Jang Song-thaek
- China has an interest in curtailing North Korea

A typical observation was that in Kim Jong-un's early tenure, economic reform and stronger trade relations were rising as North Korean priorities. China at the time started pressing Pyongyang to curb its ballistic missile program and return to six-party talks concerning its nuclear weapons program.

If we focus on China, we can see how topics trend among China's elites. How topics trend in China can be relevant when analyzing China and North Korea interactions. Quantitative models help identify new leverage points; they help confront the complexities of the vast China data available, and they help understand consequences of possible strategies. The quantitative data sources used here are largely newspaper stories from which we can infer information using machine learning tools. We can add "gray literature" and technical information to the news media data, providing technical layers useful when analyzing technology transfer, weapons research, etc.

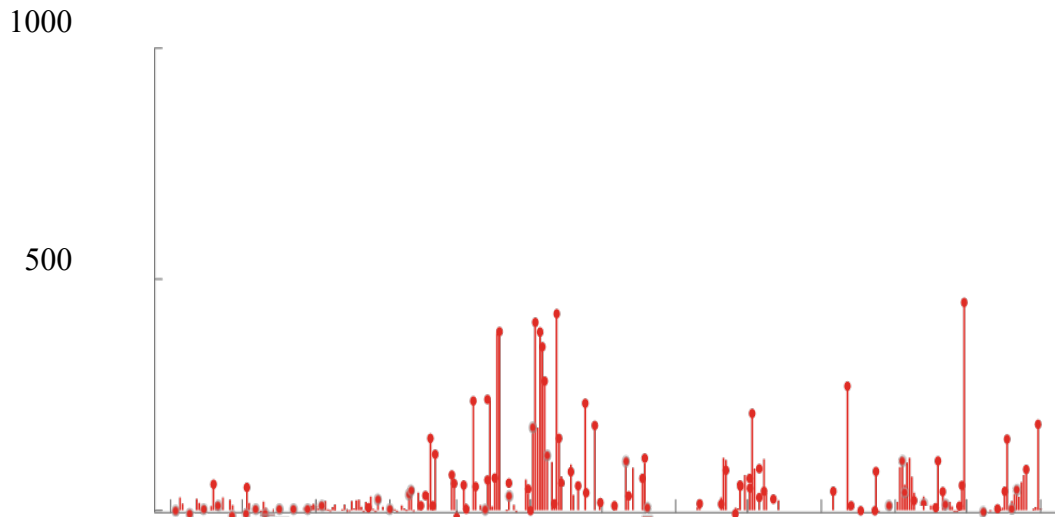
Graphical depiction of quantitative analysis can help visualize and understand the story it tells. The following graphs from 2017 show how a specific Chinese topic, the North Korean nuclear program, trended. Analysts and data scientists used global news media stories to generate the graphs automatically. Here a topic represents an area of continued interest from Chinese elites. These graphs are similar to, but generated differently from, Google Trends. The main difference is that the topics are limited to activity in a specific area of the world. For brevity we show one topic trending in China; however, we also used the same data to generate graphs on other topics including China's coastal islands, China's "One Belt – One Road" trading plans, China's ongoing governmental corruption issues, China's finding new energy sources, and China's infrastructure spending. The first graph below topically refers to ongoing nuclear testing, development, and negotiations surrounding North Korea's nuclear and ballistic missile program. Because it is an active topic, it has more spikes and variance than other topics.



The event timeline for this topic is as follows:

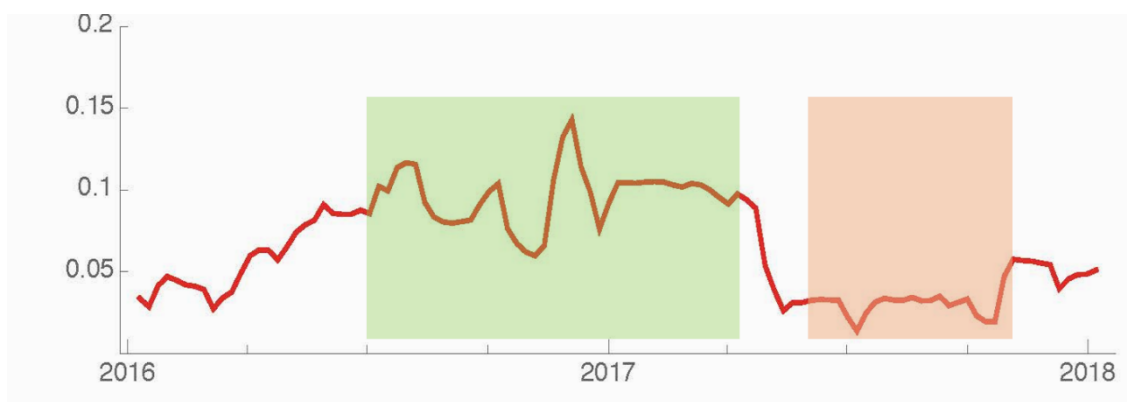
- November 29 - North Korea fires an intercontinental ballistic missile, the Hwasong-15, at 3 am, local time, 2017-11-28-1800 UTC. The missile flew 4400+ km high with a 53-minute flight time, landing west of Japan.
- September 15 - North Korea launches a medium-range ballistic missile. The missile flew over northern Japan before landing in the Pacific Ocean.
- September 3 - North Korea explodes what it claims is a thermonuclear or hydrogen bomb. The test was the country's sixth public nuclear test.
- August 29 - North Korea launches a medium-range ballistic missile over Japan and into the Pacific.
- August 26 - North Korea fires three short-range missiles.
- July 28 - North Korea fires a Hwasong-14 missile, which travels 620 miles.
- July 4 - North Korea fires its first intercontinental ballistic missile.
- June 23 - North Korea conducts a rocket engine test.
- June 8 - North Korea launches multiple rockets; they are likely anti-ship cruise missiles.
- May 29 - North Korea launches a short-range missile, maybe a Scud or similar type missile.
- May 21 - North Korea launches a medium-range ballistic missile, which flies for ~310 miles.
- May 13 - North Korea launches a medium-range ballistic missile, likely a KN-15.
- March 28 - North Korea tests a rocket engine.
- March 6 - North Korea launches four medium-range ballistic missiles. The missiles fly ~600 miles and land off North Korea's east coast.
- February 12 - North Korea launches a missile into its eastern sea.

The second graph shows Chinese elite interest regarding the North Korean nuclear topic represented in the graph above. It uses the same topic model as the first graph, but it filters the data by elite behavior. For a spike to occur here an elite or group of elites must push it beyond what is normal for that topic. Here the graph depicts elite interest in the North Korean nuclear topic, and how much elites want that story elevated. Any spikes in the second graph preceding spikes in the first graph indicate elites are pushing the story for their self-benefit. In China, this likely indicates the government is pushing the story. A variation of this technique can be used to signal topic-related events that may occur in the future.



It is possible to refine the graphs further by aggregating elites by category (e.g., politicians, military, intelligence, education, medical, etc.). This, in turn, leads to the ability to investigate elite networks and proximal networks within those networks.

Political systems composed of many elites are constantly in motion, changing shape and form as actors change positions responding to events and activities other elites generate. The elite structure contours at any point in time reflect the degree elites are segmented—meaning, how much or how little interaction exists across political factions or other social cleavages. Segmentation affects elite communications and whether or how they interact across partisan or functional divisions, including the ease with which information flows among elite groups and the extent to which information bottlenecks affect the flow.



Cohesion and significant events for China. The red trace is a measure of the elite cohesion over time. The green background highlights a region of high cohesion. The salmon-colored background highlights a region of low cohesion.

The graph above offers insight into the value of leveraging the extremely large amounts of open source information available in quantitative analysis. To interact successfully with its competitors and adversaries, a country needs the ability to understand the geopolitics of what DoD has termed Gray Zone conflicts and how to anticipate and develop response options to those types of conflicts. Quantitative analysis, particularly regarding elite interactions, enables that ability. When one sees cohesion among elites within an adversary or competitor country or other entity increasing or decreasing it offers an opportunity to plan how to leverage elite interests in that country to obtain specific USG goals or objectives.