

Testing the Importance of Information Control to Pyongyang: How North Korea Reacts to the Diplomatic, Information, Military and Economic Tools of Statecraft

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Applying big data and sentiment analysis to 15 years of North Korean state media reports, this paper tests the importance that Pyongyang places on information control. By comparing Pyongyang's responses to four categories of foreign policy tools: diplomatic, information, military, and economic (the DIME construct), this research found that North Korea reacts far more negatively to information and military tools than to diplomatic or economic tools. The broader findings demonstrate the efficacy of information as a tool for pressuring authoritarian states, and provide democratic states an option for responding to influence or cyber campaigns launched by authoritarian, state-level peers.

Keywords: North Korea, information control, sentiment analysis, big data, military exercises

In 2015, North Korean soldiers planted landmines on the Southern side of the North-South border in an area where South Korean soldiers were known to patrol, eventually maiming two South Korean soldiers. South Korea retaliated by turning on loudspeakers capable of reaching into North Korea, a move that may have initially seemed odd, or weak, to outsider observers unfamiliar with the North.

However, shortly after the loudspeakers were switched on, “North Korea’s top negotiator called South Korea’s [use of] loudspeakers a ‘declaration of war.’ His colleague, North Korea’s deputy permanent representative to the United Nations, called the broadcasts ‘psychological warfare.’”¹ A former North Korean propaganda official said the broadcasts were “akin to a peaceful version of the nuclear bomb.”²

In the end, it worked. Within two weeks, the South had received a rare ‘expression of regret’ over the incident from the North, in exchange for Seoul shutting off the speakers.

International press and human rights organizations commonly rank North Korea at or near the bottom of rankings measuring freedom of the press and freedom of information. In *the 2017 World Press Freedom Index* compiled by Reporters Without Borders, North Korea ranked last, 180 out of 180 countries surveyed.³ In Freedom House’s ranking of *Freedom in the World 2017*, North Korea received a 3 out of a possible score of 100 (with 100 as most free, 0 as least free), ranking ahead of Syria and Tibet while tying Eritrea and Turkmenistan.⁴ ⁵ North Korea’s rank was similar on Freedom House’s 2017 ranking of freedom of the press, scoring 98 out of a possible 100 (confusingly, in this report, 0 is most free and 100 is

1. Baek, Jieun, *North Korea’s Hidden Revolution: How the Information Underground Is Transforming a Closed Society* (New Haven Yale University Press, 2016), pp. 187-188.

2. *Ibid.*

3. Reporters Without Borders, “2017 World Press Freedom Index,” <<https://rsf.org/en/ranking>> (date accessed September 12, 2018).

4. Freedom House. “Freedom in the World 2017.” <<https://freedomhouse.org/report/freedom-world/freedom-world-2017#anchor-one>> (date accessed September 12, 2018).

5. Puddington and Roylance, “Freedom in the World 2017 - Populists and Autocrats: The Dual Threat to Global Democracy.”

least free), tying Turkmenistan for the lowest ranking in the survey.⁶

This lack of freedom to access information, outside that provided by the North Korean state, is commonly noted by regionally-focused scholars and practitioners. Several cite the regime's desire to control the country's information environment as a key factor in the North's governance.⁷ Perhaps the clearest, most concise description available on the North Korean domestic information environment arrives from a 2009 *Foreign Affairs* article:

*"North Korean leaders have taken information control to extremes unprecedented even among communist dictatorships. Since the late 1950s, it has been a crime for a North Korean to possess a tunable radio, and all radios sold legally are set only to official broadcasts. In libraries, all nontechnical foreign publications, such as novels and books on politics and history, are placed in special sections accessible only to users with proper security clearance. Private trips overseas are exceptional, even for government officials. North Korea is the world's only country without internet access for the general public (although there is a small, growing intranet system maintained by the government). These measures seek to ensure that the public believes the official portrayal of North Korea as an island of happiness and prosperity in an ocean of suffering (South Korea suffers "under the yoke of U.S. domination and subjugation, its sovereignty wantonly violated," reports the official North Korean news agency)."*⁸

In the same article, Lankov explicitly lays out the failures of

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6. Freedom House, "Freedom of the Press 2017: Press Freedom's Dark Horizon," <<https://freedomhouse.org/report/freedom-press/freedom-press-2017>> (date accessed September 12, 2018).
 7. See, for example, Georgetown scholar and former Director for Asian Affairs at the National Security Council during the George W. Bush administration (and briefly, President Trump's nominee for U.S. Ambassador to South Korea) Victor Cha, *The Impossible State*, (Harper Collins, 2012), p. 461, "The DPRK [North Korea] regime is only as strong as its ability to control knowledge. [...] Without control of information, there is no ideology. Without ideology, there is no North Korea as we know it."
 8. Andrei Lankov, "Changing North Korea: An Information Campaign Can Beat the Regime," *Foreign Affairs*, November/December 2009, <<https://www.foreignaffairs.com/articles/asia/2009-11-01/changing-north-korea>> (date accessed September 12, 2018).

previous methods to induce change in North Korea.⁹ Military coercion is unrealistic; financial sanctions ineffective; expectations that diplomacy, patience, and goodwill can induce reforms are a false hope—instead, the only way to advance the interests of the U.S., South Korea, and their allies is to bring about pressure for change from within North Korea, and the way to do this is through cracking Pyongyang’s control over information and introducing truth and information into the North.¹⁰

Others with experience in the North, including former British ambassador to North Korea John Everard¹¹ and Park Sokeel, director of research and strategy for Liberty in North Korea (LiNK), describe similar efforts at information control by Pyongyang.¹² Further afield, scholars and practitioners from a variety of backgrounds discuss the foundational importance of information control to North Korea’s rulers.¹³

Crucially, while many have stressed the importance of information control to Pyongyang, few have attempted to test the assertion. The relative consensus on the lack of media freedom and information access, coupled with the assessed importance of information control to the North Korean regime, provides a useful research opportunity.

This research tests how Pyongyang reacts to challenges to its information control, then compares that reaction to challenges posed by diplomatic, military, and economic tools. The goal is to determine whether the North reacts more negatively to information tools like

9. *Ibid.*

10. *Ibid.*

11. John Everard, *Only Beautiful, Please: A British Diplomat in North Korea* (Stanford University, The Walter H. Shorenstein Asia-Pacific Research Center, 2012), p. 53.

12. Andy Heintz, “In the Nuclear Standoff, Ordinary North Koreans Disappear,” Institute for Policy Studies, Washington, D.C., January 2018.

13. For example, see Victor Cha’s, *The Impossible State: North Korea, Past and Future* (New York, NY, Harper Collins, 2012); U.S. State Department North Korea specialist Patrick McEachern’s, *Inside the Red Box: North Korea’s Post-Totalitarian Politics* (New York, NY, Columbia Press, 2010); Andrei Lankov, *The Real North Korea: Life and Politics in the Failed Stalinist Utopia* (Oxford University Press, 2013), esp. p. 213-214; or B. R. Myers, *The Cleanest Race: How North Koreans See Themselves - And Why It Matters* (Brooklyn, NY, Melville House, 2010).

loudspeakers and leaflets than it does to UN resolutions, military exercises, or economic sanctions. The DIME (diplomacy, information, military, economic) framework used here is likely familiar to many readers and offers the benefit of a comparative approach.

The hypothesis is that North Korea, like other states interested in controlling their domestic information environment, will respond more negatively to the use of information tools than the other DIME tools. A finding here that North Korea reacts more negatively to information tools than sanctions, diplomacy, or military tools would have immediate policy relevance, by providing an additional response option for democratic states undergoing cyber or influence attacks from the North.

For the purposes of this research, we define *information tool* as any medium by which information can be shared, broadcast, or distributed. These tools can include radio and TV broadcasts, the internet and social media, word of mouth, film, and documents (e.g. magazines, books, and leaflets). As we saw above in the survey and descriptions of North Korea's information environment, Pyongyang bans, blocks, or attempts to disrupt many of these tools, limiting their applicability for the research included in this paper.¹⁴ As a result, the research focus, in terms of information, involves two tools somewhat outside of Pyongyang's control: loudspeaker broadcasts across the border from the South into the North and leaflets sent by balloons, again from the South into the North.

To measure the North's reaction to tools in all four of the DIME categories, this paper incorporates the tools of web scraping, big data, and sentiment analysis. Web scraping is an automated process that allows researchers to gather volumes of data from websites. This data is then compiled into a database for analysis; in this case, sentiment analysis. Sentiment analysis is a method for analyzing text to help determine the range of emotions (positive, negative, or neutral) and/or feelings (anger, happiness, or sadness) expressed by a select corpus. Automated sentiment analysis involves, "the computational treatment

14. Similar research by the author on Russian information control was able to include a wider range of tools. Research into China and Iran also shows promise for analyzing additional (e.g. cyber) tools.

of opinion, sentiment, and subjectivity in text.”¹⁵ In a sense, turning text, from whatever the source, into quantifiable data, or as others have described it, “sentiment analysis is opinion turned into code.”¹⁶

By analyzing the sentiment of a report, or better, tens of thousands of reports, researchers gain a quantifiable measurement for comparing events. Using North Korean state-controlled media as a proxy for North Korean reaction to outside events, researchers gain the ability to compare Pyongyang’s responses to various DIME category tools. This comparison then allows researchers to test the assertion that information control is of vital importance to the North’s rulers.

Sources

For the North, two types of sources were used: first was *The Korean Central News Agency* (KCNA – <<http://www.kcna.kp>> or <<http://www.kcna.co.jp>>), for decades, North Korea’s official government news organization. Second was a series of databases tracking North Korean actions (essentially, what the North did in addition to what the North *said*); these include databases of related UN resolutions (which include both diplomatic and economic tools/events);¹⁷ ¹⁸ databases of military

15. Bo Pang and Lillian Lee, “Opinion Mining and Sentiment Analysis,” *Foundations and Trends in Information Retrieval*, Vol. 2, No. 1-2 (2008), p. 6.

16. Mia, “Editor’s Choice: Sentiment Analysis Is Opinion Turned into Code,” *Digital Humanities Now*, 7 April 2015, <<http://digitalhumanitiesnow.org/2015/04/editors-choice-sentiment-analysis-is-opinion-turned-into-code/>> (date accessed September 12, 2018).

17. Kelsey Davenport, “UN Security Council Resolutions on North Korea,” Arms Control Association, Washington, D.C., October 2017.

18. Security Council Report, “UN Documents for DPRK (North Korea),” Security Council Report, New York, NY, September 2017, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed September 12, 2018).

exercises, missile launches, and related activities;¹⁹ ²⁰ and a database of select North Korean diplomatic activities and state-level negotiations.²¹ The analysis of North Korean actions, in addition to sentiment, is included as a way of addressing concerns over a research methodology focused solely on the relatively unproven tools of sentiment analysis.

Korean Central News Agency (KCNA) Findings

The Korean Central News Agency is North Korea's primary, authoritative media outlet. When the regime wishes to communicate a message to an external audience, this is often the chosen medium, whether in English, Korean, or other languages. The research here uses a dataset downloaded in late August 2017 of all KCNA reporting from January 2002 to August 2017, just over 100,000 entries/articles. This represents all data (i.e. reporting) available on the website at the time of the scrape (August 2017).

To determine the KCNA's baseline sentiment, the text of every report was analyzed for sentiment on a five-point scale (very positive, positive, neutral, negative, and very negative);²² text with no sentiment (primarily dates or place names) was excluded. Once the analysis was complete, the findings were output to data visualization software to

19. CSIS, "Beyond Parallel," Washington, D.C., Center for Strategic and International Studies, 2018, <<https://beyondparallel.csis.org/databases/>> (date accessed September 12, 2018).

20. Center for Nonproliferation Studies, "The CNS North Korea Missile Test Database," James Martin Center for Nonproliferation Studies at the Middlebury Institute of International Studies at Monterey, November 2017, <<http://www.nti.org/analysis/articles/cns-north-korea-missile-test-database/>> (date accessed September 12, 2018).

21. CSIS, "Beyond Parallel," Washington, D.C., Center for Strategic and International Studies, 2018, <<https://beyondparallel.csis.org/databases/>> (date accessed September 12, 2018).

22. This research used MeaningCloud service/software (<https://www.meaningcloud.com/>) to conduct the sentiment analysis. MeaningCloud was selected from the many similar services for its ease of use; its selection here is not intended as an endorsement and is noted only to provide disclosure and context.

create the illustrations shown below.²³ In the illustrations, very positive is P+, positive is P, neutral is NEU, negative is N, and very negative is N+. It is helpful to note that not all topics created very positive or very negative sentiment; some illustrations will therefore lack those elements of the scale (Colored-graph version is available on KINU English website—very positive: green, positive: blue-green, neutral: grey, negative: orange, very negative: red). To assist clarity, the illustrations list the scale level (P+, P, NEU, etc.), their respective percentages, and also use size to convey the relative differences between sentiment levels—the greater the size, the larger the percentage of reporting containing that sentiment. The analysis and associated illustrations are examined on a comparative basis using the four DIME tools.

Overall, baseline KCNA reporting is more positive, at 68% (the sum of the P and P+ reporting), than negative, at 22% (the sum of the N and N+ reporting; though not visible in the graph below, very negative, N+, sentiment was a relatively miniscule, 0.83%). This finding alone is interesting, because it contradicts the common narrative of the North as a cranky, belligerent state, publicly grating to friends, verbally hostile to foes.

The same data is shown below, broken down monthly by the polarity (positivity-negativity) and number of reports. Note positive reporting is always higher than negative reporting, and very positive reporting is always higher than very negative reporting. Also note the large spike in overall reporting starting in 2011 and lasting into 2012.

South Korea held National Assembly elections in April 2012 and a presidential election in December 2012; the South Korean naval vessel Cheonan was sunk in March 2010 (reportedly by a North Korean torpedo); the shelling of Yeonpyeong Island by the North (with return artillery fire by the South) occurred in November 2010; and Kim Jong-il, North Korea's leader at the time, died in December 2011. These are all important events that occurred on or around the peninsula during this

23. For data visualizations, this research used Tableau (<https://www.tableau.com/>). Tableau was selected for its ease of use and for offering free access to students and faculty. Inclusion here is not intended as an endorsement and is noted only to provide disclosure and context.

Figure 1: Sentiment of KCNA reporting, January 2002 to August 2017

All KCNA Reporting from Jan 2002 to Aug 2017

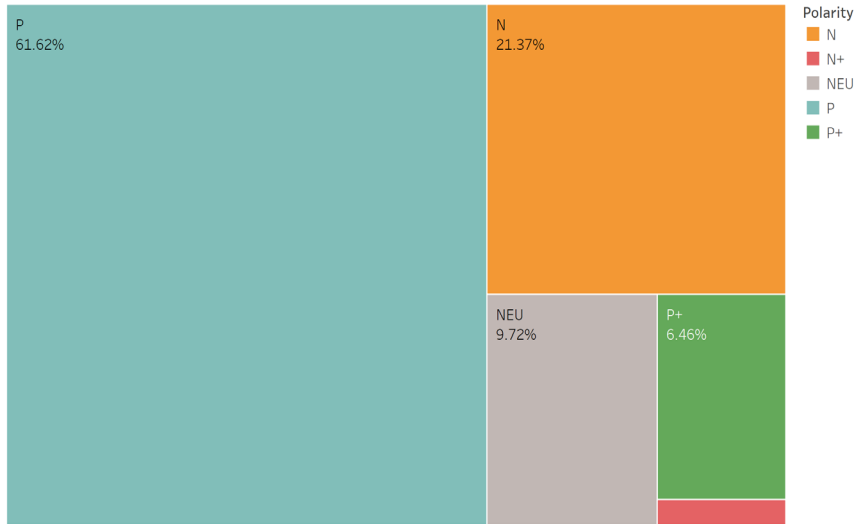
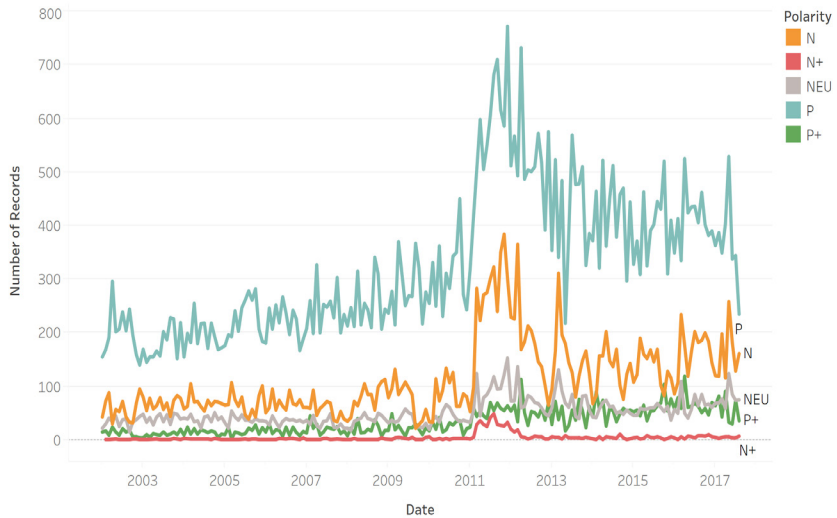


Figure 2: Polarity of KCNA reporting, January 2002 to August 2017

Polarity of KCNA Reporting by Month, Jan 2002 to Aug 2017



approximate time period; however, this research found neither correlation nor causation between these events, separately or in aggregate, and the spike in reporting noted above. This sudden increase in reporting remains an area for future research.

With baseline sentiment for KCNA reporting established, assessments of Pyongyang's reactions to the DIME category tools become possible. By comparing the 68% positive finding (positive and very positive combined) with the tools below, the research assesses the tools' effectiveness, beginning with U.S. and South Korean military exercises.

Military

For the military category, three terms were used to examine KCNA sentiment during the 2002-2017 time period surveyed: *military exercise*, *foal*, and *ulji* (the search returned both lower-case and capitalized spelling of the terms—for example, foal and Foal, ulji and Ulji).²⁴ This captured reporting and sentiment on military exercises in general, plus the specific (and separately held) joint South Korean and U.S. Foal Eagle and Ulji Freedom Guardian (also known as Ulji Focus Lens) military exercises. It is important to note that when transliterating from the Korean, Pyongyang uses a J, and gets Ulji, whereas in the South (including in U.S. references to the exercises) Seoul uses a CH and gets Ulchi. Therefore, a researcher looking at the exercises in English is more likely to get results from either the northern or southern side of the DMZ depending on the spelling of Ulji/Ulchi. This research uses the North's spelling, since the focus is on Pyongyang.

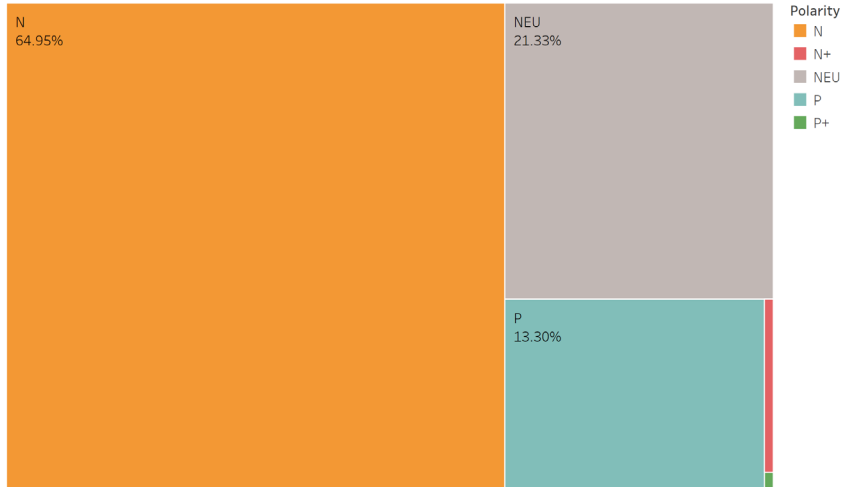
As shown below, military-related terms generated some of the most negative sentiment. First is the illustration of KCNA reporting on *military exercise*, followed by *Ulji* and *Foal*.

The amount of very negative (N+) and very positive (P+) reporting is barely visible in the lower-right of the image. At 0.39%, the very

24. The results curated to ensure terms (*e.g. foal*) were only used in reference to the research topic.

Figure 3: Sentiment of reporting on ‘military exercise’, January 2002 to August 2017

2002-2017 KCNA - ‘military exercise’



negative sentiment is negligible, but combines with negative (N) sentiment to provide an overall figure of slightly over 65% for the general term *military exercise*. For the two named exercises, the negative results are somewhat higher, per below.

The negative sentiment for Ulji Focus Lens (or Ulji Freedom Guardian) is just under 70%, while that for the Foal Eagle is 74%—both among the highest levels found in this research and similar research done on Russia. These initial findings align with expectations, that military activities by adversary states are viewed more negatively by the targeted state(s) than activities like diplomacy, economic sanctions, or information campaigns.

In an attempt to explore and confirm these findings, the next examination looks at sentiment by month, for the 15 years analyzed. If Pyongyang’s views on military exercises are indeed quite negative, then periods with military exercises should have elevated levels of negativity. Fortunately for the research here, joint U.S. – South Korean exercises are nearly always held in March and August, and only in those two

Figure 4: Sentiment of reporting on 'ulji', January 2002 to August 2017

2002-2017 KCNA - 'ulji'

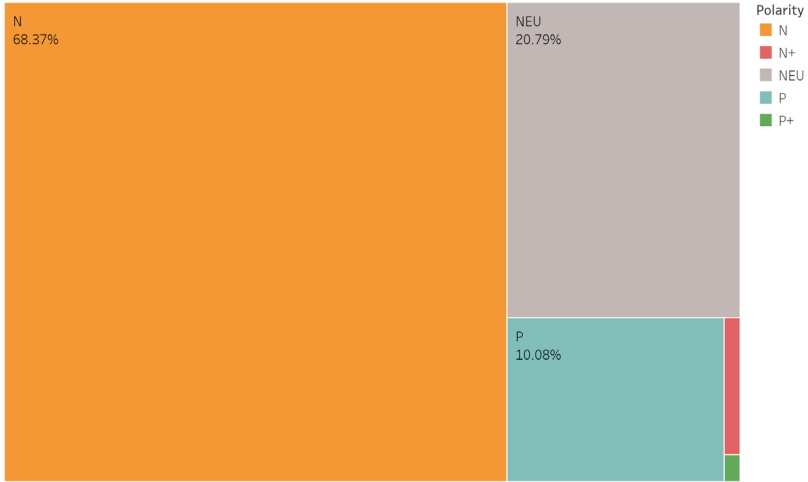
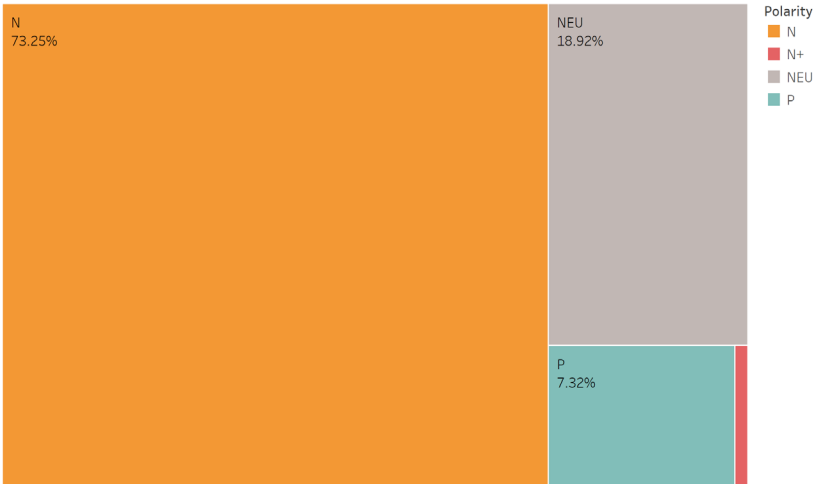


Figure 5: Sentiment of reporting on 'foal', January 2002 to August 2017

2002-2017 KCNA - 'foal'



months.²⁵ Some years may witness a start or end date that strays just outside these months; however, the majority of the annual exercises occur in March and August. Therefore, March and August should have elevated levels of negative reporting compared to other months.

In the image below, the KCNA data from 2002-2017 is aggregated and broken down by polarity and by month.²⁶ Though somewhat complex, the illustration shows March has the most negative sentiment (N) of any month; August has the third most negative. In terms of very negative (N+) sentiment, August is first and March is second. Both of these findings are in line with expectations that months with military exercises would be the most negative.

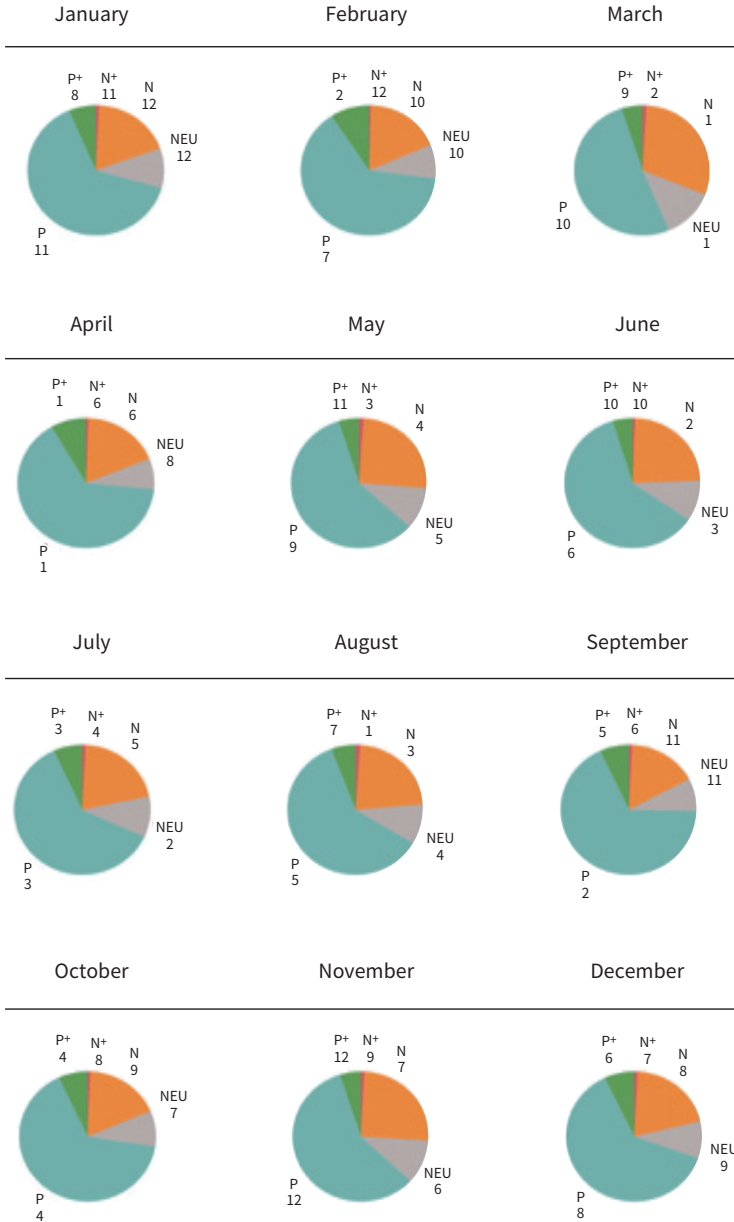
Interestingly, positive (P) sentiment is highest in April and September—the two months directly *after* the exercises complete. Both of these findings support the idea that Pyongyang responds very negatively to U.S.–South Korean military exercises. Second, it also appears to support claims by the North and others that the annual exercises are an important negative factor in relations between North and South Korea, and between the North and the United States.

It is important to note that other researchers have found this not to be the case, that instead, Pyongyang’s reactions to the annual exercises are based more on current relations with the U.S. than actual sentiment toward the specific exercises.

“A new study by *Beyond Parallel* shows that annual U.S.-ROK [Republic of Korea] military exercises [...] do not provoke North Korea. The study’s findings demonstrate that these summer and fall exercises, like the spring Foal Eagle and Key Resolve exercises, have a ‘null effect’ on North Korean provocations from 2005 to 2016. This is despite periodic claims by Pyongyang and the media that these annual military exercises provoke

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25. “CSIS, “*Beyond Parallel*,” Washington, D.C., Center for Strategic and International Studies, 2018, <<https://beyondparallel.csis.org/databases/>> (date accessed September 12, 2018).
 26. The numbers described per each month in Figure 6 indicate the ranking of that month’s polarity out of all months of the year. So, for example, a number 1 next to “N” in March would indicate March has the highest level of negative sentiment out of any month of the year, for all years combined from 2002-2017.

Figure 6: Sentiment by month of all KCNA reporting, January 2002 to August 2017



North Korean belligerence.”²⁷

This incongruity of findings creates an interesting opportunity for future research.

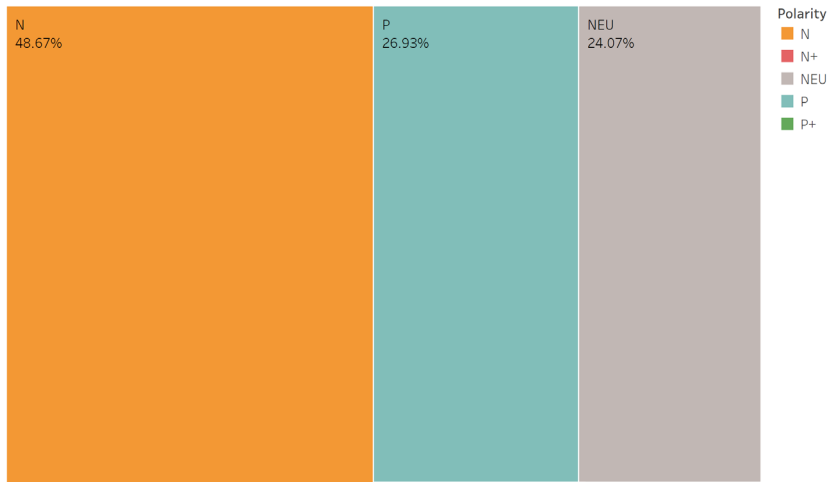
Economic

For this category, the term sanction was used as a proxy for North Korea’s sentiment toward the economic category of DIME, based on outside states targeting Pyongyang with economic sanctions. Interestingly, there is almost no very negative (.18%) or very positive (.15%) sentiment, as shown below.

At 49%, this finding shows the North responds 15-20% less

Figure 7: Sentiment of reporting on ‘sanction’, January 2002 to August 2017

2002-2017 KCNA - ‘sanction’



27. Victor Cha, Lee Na Young, and Andy Lim, “DPRK Provocations and U.S.-ROK Military Exercises, 2005 to 2016,” *Beyond Parallel*, Washington, D.C., Center for Strategic and International Studies, August 2016, <<http://beyondparallel.csis.org/us-rok-exercises-not-provoke-dprk/>> (date accessed September 12, 2018).

negatively to economic sanctions than it does to military exercises. However, nearly all recent sanctions on the North have come as part of diplomatic measures, largely from the UN. This made disaggregation of economic from diplomatic measures difficult—the term *sanction* is often used in reports that discuss diplomatic measures, so the findings include a mix of diplomatic and economic tools. Even with the combination, however, the negativity levels are 15-20% lower than with military exercises.

Diplomatic

Thanks to the length of time available in the KCNA data, the research was able to look at recent United Nations Security Council (UNSC) resolutions (2270 in March 2016 and 2371 in August 2017), as well as older resolutions: 1718 (from 2006), 1874 (2009), and 2087 (from 2013). First, a graph shows reaction to all diplomatic efforts (resolutions 1718, 1874, 2087, 2270, and 2371) combined, followed by separate graphs looking at each resolution independently.

Three unique points are evident in the data above. First, neutral sentiment often, and overall, outweighed positive or negative sentiment. Second, there is no *very negative* or *very positive* sentiment expressed for any of the resolutions throughout the entire 15-year time period. Third, there are spikes in reporting based on resolution timelines and announcements, with some variance in sentiment levels—we will examine this variance below, when looking at each resolution individually.

The first resolution in our dataset is UNSC Resolution 1718, passed on October 14, 2006. UNSC 1718 expressed “grave concern” over North Korea’s nuclear program and test and imposed sanctions.^{28 29} Noting

28. Security Council Report, “UN Documents for DPRK (North Korea),” *Security Council Report*, New York, NY, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed January 9, 2018).

29. United Nations, Security Council, UNSC Resolution 1718, October 14, 2006. S/RES/1718.

Figure 8: Combined sentiment of reporting on UNSC resolutions, January 2002 to August 2017

2002-2017 KCNA - Combined UNSC Resolutions

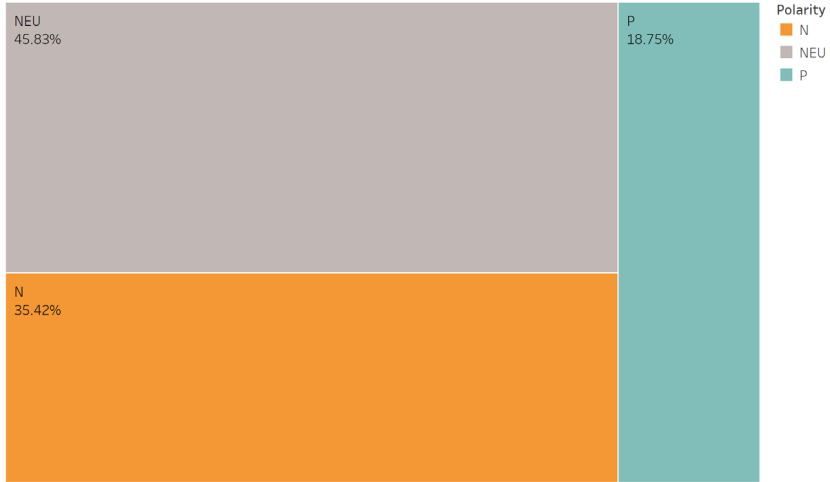
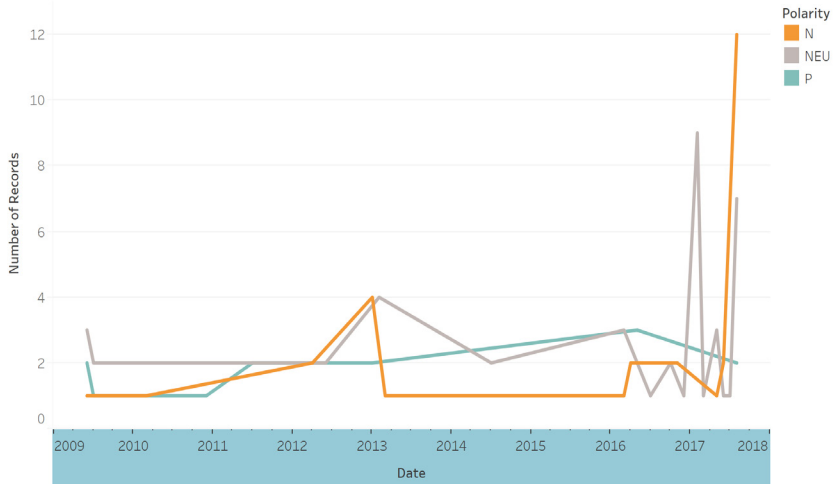


Figure 9: Timeline of combined sentiment of reporting on UNSC resolutions, January 2002 to August 2017

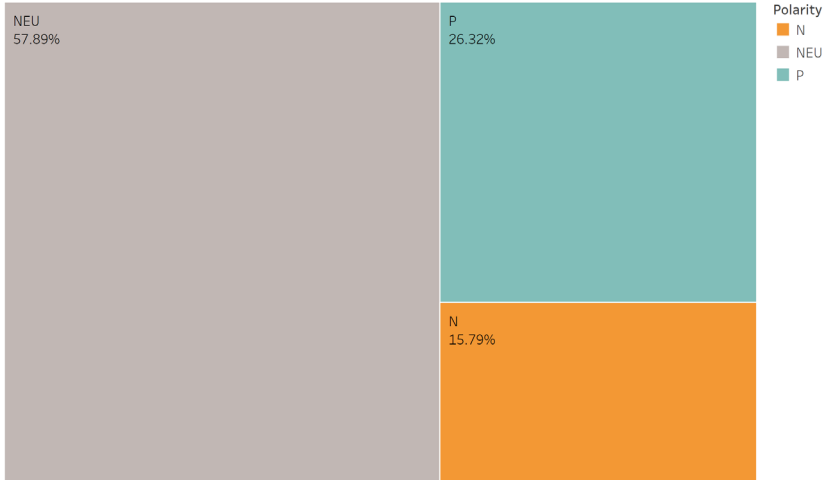
2002-2017 KCNA - Combined UNSC Resolutions Timeline



this, the resolution is a combination of both diplomatic and economic tools.

Figure 10: Sentiment of reporting on UNSC resolution 1718

2002-2017 KCNA - UNSC '1718'



The main sentiment expressed in reaction to this resolution is neutral, with negative sentiment the least expressed. As we will see throughout this section, neutral sentiment is often quite large, especially in comparison to the other DIME categories. Additional research is required to understand why this outcome was so neutral, especially given the combination of two tools of statecraft (economic sanctions and diplomacy).

The next resolution in our chronological order is UNSC Resolution 1874, from June 12, 2009, which greatly expanded sanctions on the North, while again expressing “grave concern” in response to a nuclear test conducted by Pyongyang.^{30 31}

30. Security Council Report, “UN Documents for DPRK (North Korea),” *Security Council Report*, New York, NY, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed January 9, 2018).

31. United Nations, Security Council, UNSC Resolution 1874, June 12, 2009.

Figure 11: Sentiment of reporting on UNSC resolution 1874

2002-2017 KCNA - UNSC '1874'

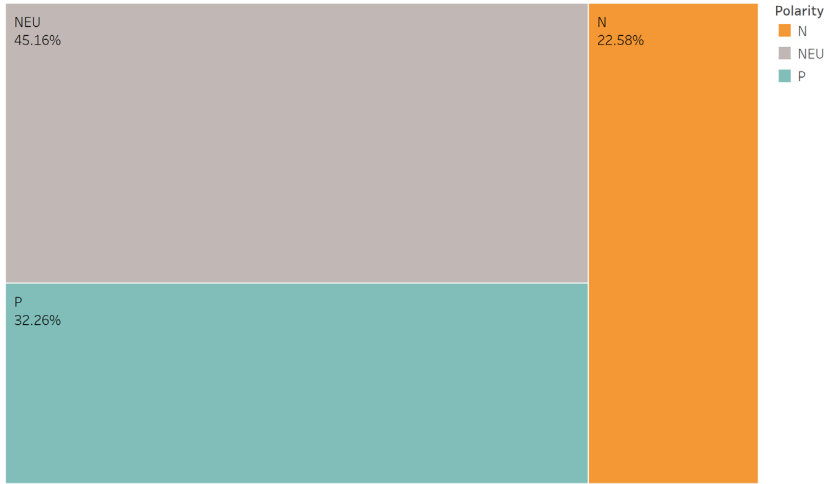
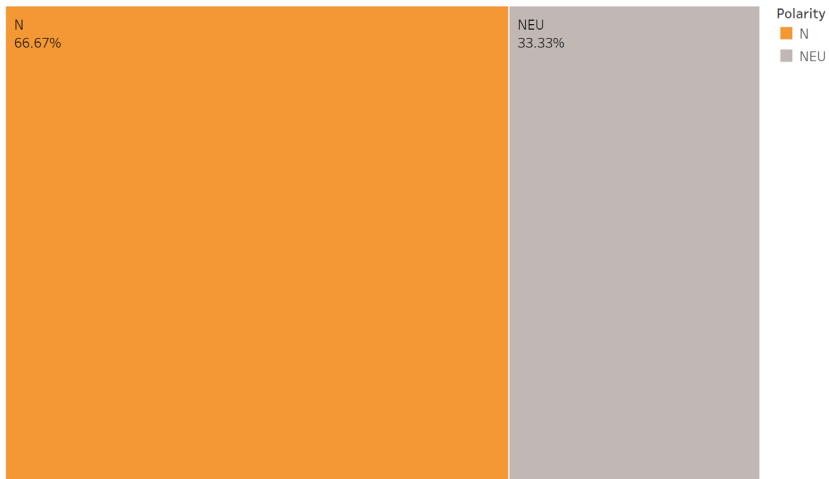


Figure 12: Sentiment of reporting on UNSC resolution 2087

2002-2017 KCNA - UNSC '2087'



Again, the results show neutral as the most common sentiment, with negative as the least common. The next resolution, 2087, shows Pyongyang reacting more in accordance with expectations, with negative becoming the dominant sentiment. Resolution 2087 differs from the previous two in at least two aspects: it occurred after Kim Jong-il had died (December 2011) and his son Kim Jong-un had taken power in the North; second, it came in response to a ballistic missile launch and test rather than a nuclear test. As with the other resolutions, however, 2087 combines both sanctions and diplomatic pressure.^{32 33}

North Korea's response here was much more negative than with previous resolutions, with no positive sentiment at all and negative sentiment at nearly 67%—even more negative than *military exercise*. This result is an outlier compared to the other reactions to Security Council resolutions.

The next resolution, UNSC 2270 from March 2016, again combines diplomatic pressure with economic sanctions, condemning the North for violating previous resolutions by conducting a nuclear test and using ballistic missile technology.^{34 35} However, as shown below, the North's response remains predominantly neutral.

Finally, the last resolution in our dataset is UNSC Resolution 2371, from August 2017. This resolution again toughened sanctions and condemned North Korea's use of ballistic missile technology.^{36 37} Like

S/RES/1874.

32. Security Council Report, "UN Documents for DPRK (North Korea)," *Security Council Report*, New York, NY, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed January 9, 2018).

33. United Nations, Security Council, UNSC Resolution 2087, January 22, 2013. S/RES/2087.

34. Security Council Report, "UN Documents for DPRK (North Korea)," *Security Council Report*, New York, NY, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed January 9, 2018).

35. United Nations, Security Council, UNSC Resolution 2270, March 2, 2016. S/RES/2270.

36. Security Council Report, "UN Documents for DPRK (North Korea)," *Security Council Report*, New York, NY, <<http://www.securitycouncilreport.org/un-documents/dprk-north-korea/>> (date accessed January 9, 2018).

Figure 13: Sentiment of reporting on UNSC resolution 2270

2002-2017 KCNA - UNSC '2270'

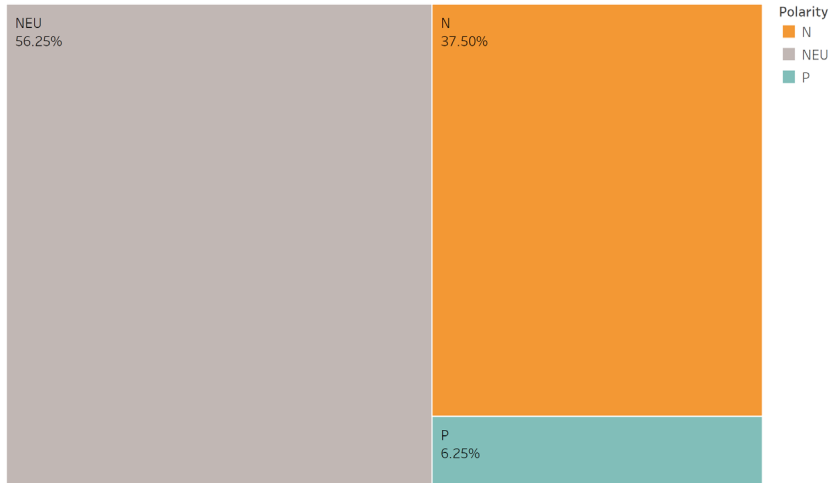
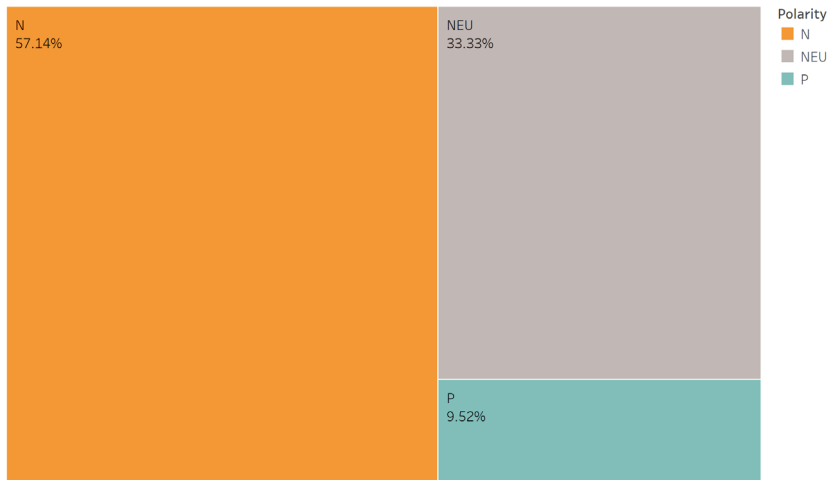


Figure 14: Sentiment of reporting on UNSC resolution 2371

2002-2017 KCNA - UNSC '2371'



resolution 2087 above, 2371 focuses on punishing the North for ballistic missiles, rather than nuclear tests. Also, as shown below, 2371 has more negative than neutral sentiment.

Two cases are too limited of a dataset from which to draw conclusions, but the only UN resolutions surveyed that focused on missiles, rather than nuclear tests, were also the only ones to see negative sentiment outweigh neutral sentiment. If these examples were to hold true under additional testing, a finding that the North reacts more strongly to criticism of missile testing than nuclear testing would be a salient, policy-relevant finding.

Overall, the North's response to UN resolutions that combined diplomatic and economic pressure was predominantly neutral, making these measures the least negative of the three tools examined thus far. Negative sentiment outweighs neutral sentiment in only two cases, both focused on missile testing and launches.

Information

Finally, the KCNA research turns to the information category, examining the North's reaction to the use of loudspeakers, what it terms *psychological warfare*, and the term *leaflet*. This last term is in reference to leaflets sent over the border, often by NGOs using large balloons, from the South into the North.

First, two notes on *loudspeaker* and *leaflet* before viewing the illustrations: for the *loudspeaker* search term, curation was necessary to remove a large number of false positives from the search results. The KCNA commonly discusses "agitation teams" sent to the countryside or factories to encourage workers to increase output; these teams often use loudspeakers as part of their work (e.g. exhorting laborers to greater production), resulting in their appearance, and subsequent removal from, the search results. Additionally, in KCNA parlance, "right-wing

37. United Nations, Security Council, UNSC Resolution 2371, August 5, 2017. S/RES/2371.

Figure 15: Sentiment of reporting on 'psychological warfare', January 2002 to August 2017

2002-2017 KCNA - 'Psychological Warfare'

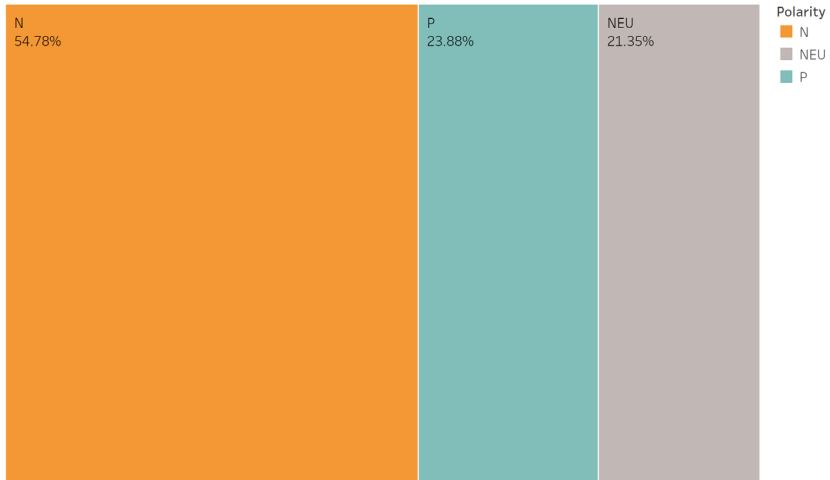
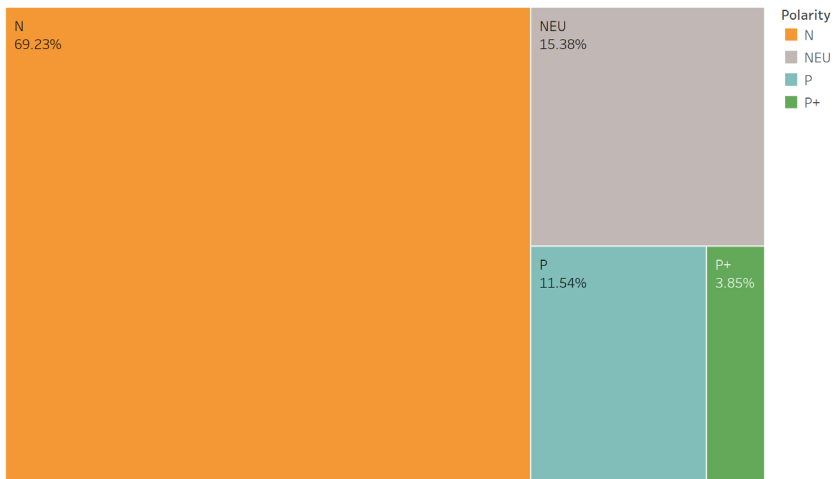


Figure 16: Sentiment of reporting on 'loudspeaker', January 2002 to August 2017

2002-2017 KCNA - 'loudspeaker'



Japanese gangsters” commonly harass the offices of Chongryon³⁸ in Japan using loudspeakers mounted on vans parked in front of the association’s buildings. These results were also removed from the research.

Second, the term leaflet also required manual curation of the data to remove stories discussing the use of leaflets in South Korea and Japan. In both countries, demonstrators commonly distribute brochures and one-page handbills (both often referred to by the term *leaflet* in North Korean media) as part of their demonstrations. Stories referencing these activities were removed from the data.

From the graphs, at 69% loudspeaker was more negative than *psychological warfare* (55%), with *leaflet* in the middle at 58%. This ranks loudspeaker as the second-most negative finding in the North Korea study, behind only the Foal Eagle military exercises. The elevated levels of negativity in the information category, compared to the baseline, the diplomatic, and the economic categories, support the introduction’s survey of scholarship that stressed the importance of information control to Pyongyang.

Loudspeaker remained relatively steady throughout the period surveyed; however, *psychological warfare* had more pronounced spikes, per the graph below, which also shows a significant negative spike in August 2015. This was the month Seoul resumed loudspeaker broadcasts into the North in an ultimately successful effort to win some form of apology from Pyongyang for planting landmines that maimed Southern soldiers along the DMZ.

The timeline for *leaflet* is also interesting, capturing the improvement in relations between the North and South in the early 2000s, before turning negative at the end of the decade. The largest spike was in November 2014, after a ‘leaflet-scattering operation’ launched from the South resulted in an exchange of gunfire across the border in October 2014.

38. Chongryon (<http://www.chongryon.com/>) is an association of Korean residents in Japan, many with ancestral ties to the northern half of the peninsula, who often favor Pyongyang over Seoul.

Figure 17: Sentiment of reporting on 'leaflet', January 2002 to August 2017

2002-2017 KCNA - 'leaflet'

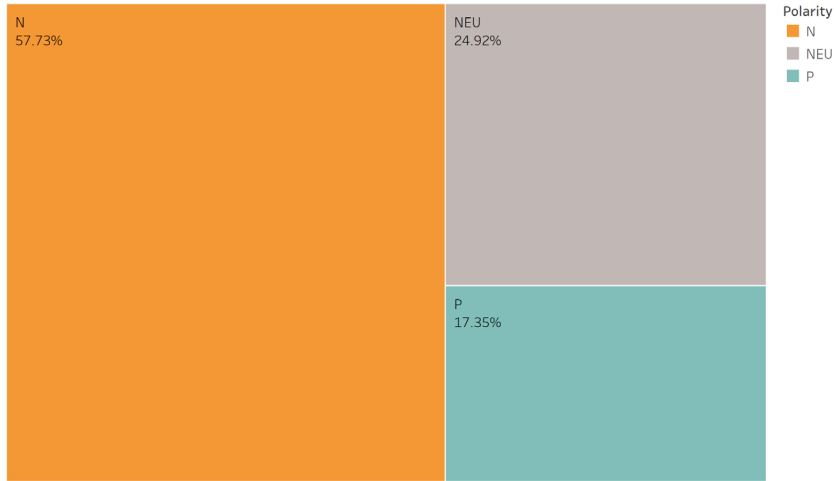


Figure 18: Timeline of sentiment of reporting on 'psychological warfare', January 2002 to August 2017

2002-2017 KCNA - 'Psychological Warfare' Timeline

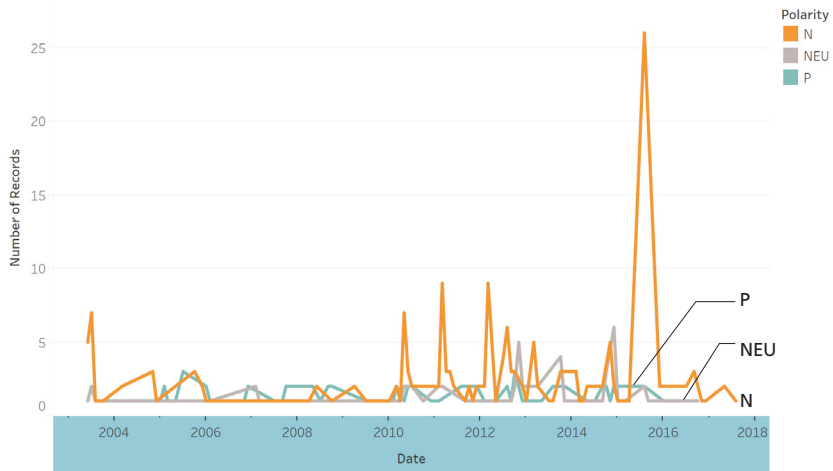
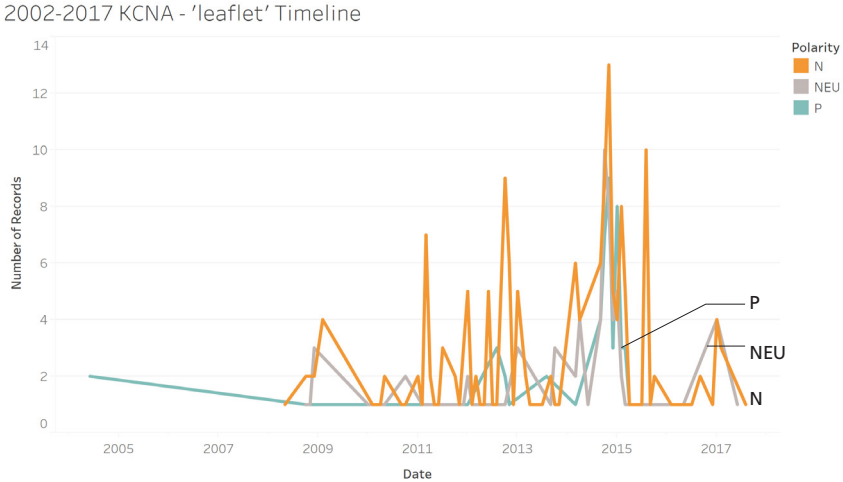


Figure 19: Timeline of sentiment of reporting on 'leaflet', January 2002 to August 2017



Sentiment Conclusion

The results for the KCNA show the Foal Eagle military exercises generated the most negative sentiment from the North. The second-highest negative reaction was generated by *loudspeaker*, which garnered a more negative reaction than sanctions, the broad term military exercises, and the diplomatic and economic search terms.

While the sentiment, at 58% negative, was not as high for *leaflet* as some of the other terms, it generated a military response from the North that resulted in an exchange of gunfire across the border.³⁹ Similarly, South Korea’s decision to use loudspeakers in August 2015 generated a military response from the North (artillery fire into the South) and led to an exchange of artillery fire across the border.⁴⁰ We will look at North

39. Choe Sang-hun, “Koreas Exchange Fire After Activists Launch Balloons Over Border,” *The New York Times*, October 2014, <<http://www.nytimes.com/2014/10/11/world/asia/koreas-exchange-fire-after-activists-launch-balloons-over-border.html>> (date accessed September 12, 2018).

40. Yonhap, “(5th LD) Two Koreas Exchange Shells over Western Border,” Yonhap,

Korean actions in response to the four DIME tools in greater detail below, but note here that information tools, unlike any of the other DIME tools, generated two separate military responses from the North.

In addition to the finding that Pyongyang reacts most negatively to the military and information tools of statecraft, the study also found that North Korean sentiment is most negative during March and August, the months that normally feature joint U.S.–South Korean military exercises. Sentiment then swings to the highest monthly positive levels in April and September, the months immediately following the exercises.

The findings from the KCNA support the hypothesis that Pyongyang exhibits a strongly negative reaction to having its information control challenged. Only the military tools of statecraft rivaled those of information, which proved more negative than diplomatic and economic activities.

Actions

Aside from expressing varying sentiment, what does North Korea actually do in response to the outside use of tools in the four DIME categories? Can any of these activities even be linked to outside use of a DIME tool? To answer these questions, this section will focus on ‘kinetic incidents’ between North and South Korea. A kinetic incident is defined as the use of small arms, artillery, or naval weaponry by at least one side, during the period under survey here, January 2002 to August 2017.⁴¹

According to a database of North Korean ‘provocations’⁴² maintained by the *Beyond Parallel* research project at the Center for

August 20, 2015, < <http://english.yonhapnews.co.kr/search1/2603000000.html?cid=AEN20150820011155315>> (date accessed January 12, 2018).

41. As a reminder, our KCNA data covers January 1, 2002 to August 2017.

42. It is important to note that *Beyond Parallel* and CSIS use the term provocation for a broad range of North Korean activities (rocket testing, firing short-range missiles, artillery fire near the DMZ/border) that may simply be part of North Korea’s routine military development, training, and exercise activities and unrelated to ‘provoking’ outside countries. Rather than *provocation*, the research here uses the terms *incident* and *activity* to describe similar North Korean actions.

Figure 20: Timeline of kinetic incidents involving North Korea, January 2002 to August 2017

Beyond Parallel Kinetic Incident Database, 01-2002 to 08-2017

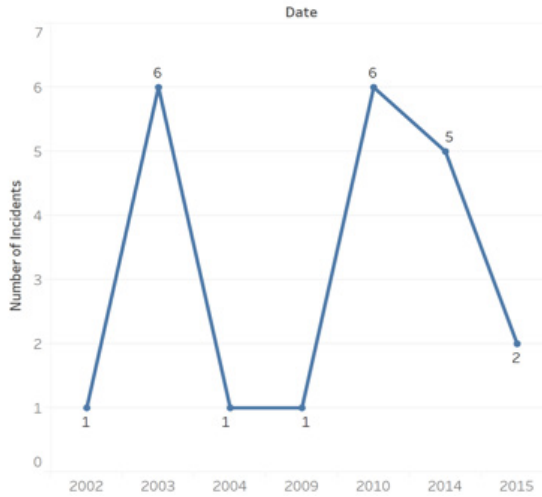
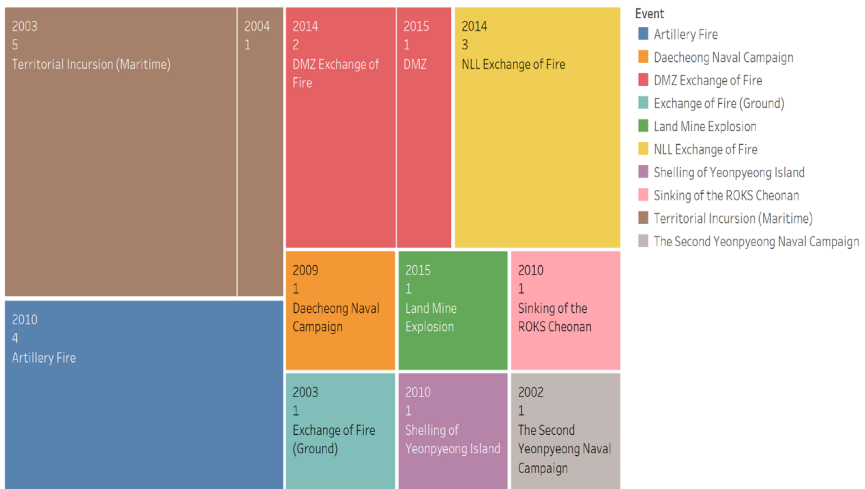


Figure 21: Types of kinetic incidents involving North Korea, January 2002 to August 2017

Beyond Parallel Kinetic Incident by Type



Strategic and International Studies (CSIS), kinetic incidents as they are defined here took place 22 times between 2002 and August 2017.⁴³ The most recent incident occurred in August 2015, meaning approximately two incidents occurred per year from 2002-2015 (a November 2017 incident of shots fired by the North at one of its soldiers attempting to escape across the border to the South is outside our timeline).

The timeline below shows that 2003 and 2010 each contained six incidents, 2014 contained five, and all other years contained between zero and two. Further below, we can see the incidents broken down by type, number, and year.

From the graph, we can see six of the 22 incidents are classified as maritime territorial incursions (all occurring in 2003-4). This reflects a dispute between the North and South over the sea border between the two countries in the West (Yellow) Sea. The North does not agree with the current position of this sea border, also called the Northern Limit Line (NLL), and both fishing vessels and naval craft from the North routinely travel south of the line and into waters claimed by South Korea, often during peak fishing seasons. From the data, in six incidents the presence of South Korean naval vessels (including warnings by ship-mounted loudspeakers) was not sufficient to dispel the North's ships and warning shots were fired (bringing the incident into this research). For all six of these incidents, the warning shots resolved the situation and no further action occurred.

Though shots were fired, these incidents resulted in no casualties or property damage. An examination of the timing and related reporting finds no reason given for the incidents' timing or cause, rather, they appear to be part of an ongoing border dispute and unrelated to the specific use of any DIME tools.

Related to the maritime incursions, though more serious, are the three exchanges of fire in the NLL, all in 2014 (top-right corner, above). In these incidents both sides fired at or near the other, though there were no casualties or property damage. Like the incidents above, where only

43. CSIS, "Beyond Parallel," Washington, D.C., Center for Strategic and International Studies, 2018, <<https://beyondparallel.csis.org/databases/>> (date accessed September 12, 2018).

one side fired, there is no clear reason given or assessed for their timing or cause. Again, they appear to be part of an ongoing border dispute that is unrelated to the use of any specific DIME tools.

We have examined 9 of the 22 incidents and found no connection to the use of foreign policy tools. The next set of incidents, four episodes of artillery fire (all from 2010), are similar. Each incident appears to involve North Korea conducting artillery drills by firing near and/or into the sea around the NLL. Three of the four incidents occurred in January (on consecutive days from January 27-29, 2010), following the November 2009 Daecheong Naval Campaign (above, in the middle) that saw a North Korean naval vessel damaged (with reports of one North Korean sailor killed and three wounded) after crossing the NLL into the South's waters and engaging South Korean naval vessels.⁴⁴ Based on this timing, and lack of a reoccurrence, these four (a similar exercise/incident occurred in August 2010) artillery incidents could be a warning for the South and training for the North's artillery forces in case they are needed to support a future engagement near the NLL. Making these four incidents, like the nine already examined, more related to the disputed border than the use of a particular DIME tool.

The Daecheong Naval Campaign, which resulted in North Korean casualties and possibly produced the artillery incidents examined above, also appears related to the disputed border. The timing of this incident, a week before President Obama was due to start a week-long visit to Asia that included meetings with the South Korean president to discuss North Korea's nuclear weapons program, may have a connection to diplomacy, but the tie is unclear.⁴⁵

So far, of the 14 incidents examined, there is one possible connection to diplomacy. The next category of incidents, exchanges of gunfire in the DMZ, changes that, finally making a clear connection to one of the

44. Choe Sang-hun, "Korean Navies Skirmish in Disputed Waters," *The New York Times*, Seoul, Korea, November 2009, <<http://www.nytimes.com/2009/11/11/world/asia/11korea.html>> (date accessed September 12, 2018).

45. Choe Sang-hun, "Korean Navies Skirmish in Disputed Waters," *The New York Times*, Seoul, Korea, November 2009, <<http://www.nytimes.com/2009/11/11/world/asia/11korea.html>> (date accessed September 12, 2018).

DIME categories. The 20 August 2015 exchange of artillery fire in/ around the DMZ, the most recent incident in our dataset, was an explicit North Korean response to, and targeting of, loudspeakers the South had started using to broadcast across the border.⁴⁶ The South's use of the loudspeakers, which had been silent for years under a previous North-South agreement during sunnier times on the peninsula,⁴⁷ came as a response to the early August planting of land mines by the North that wounded two South Korean soldiers on the South's side of the DMZ.⁴⁸

In addition to the attack over the loudspeakers, the exchanges of fire in the DMZ also included a 10 October 2014 incident when North Korean soldiers fired small arms (machine guns) at leaflet-filled balloons being sent into the North from the South by an NGO. South Korea responded by engaging with its own small arms fire.⁴⁹ Prior to the engagement, the North had warned the South, saying Pyongyang would consider a launch of the leaflet balloons, "a declaration of war."⁵⁰ As with the loudspeaker incident discussed above, this incident is a response to the use of information as a tool to influence the North.

The final exchange of fire in the database occurred nine days after the incident over the leaflets. In this case, after issuing warnings, the South fired on a group of North Korean soldiers moving toward the South's side of the DMZ on October 19, 2014. The North briefly returned

46. Choe Sang-hun, "North and South Korea Trade Fire Across Border, Seoul Says," *The New York Times*, August 20, 2015, <<http://www.nytimes.com/2015/08/21/world/asia/north-korea-and-south-korea-exchange-rocket-and-artillery-fire.html>> (date accessed September 12, 2018).

47. CNN, "Koreas Agree to Military Hotline," *CNN*, Seoul, South Korea, June 4, 2004, <<http://www.cnn.com/2004/WORLD/asiapcf/06/03/koreas.agree/index.html>> (date accessed September 12, 2018).

48. Choe Sang-hun, "South Korea Accuses the North After Land Mines Maim Two Soldiers in DMZ," *The New York Times*, August 10, 2015, <<http://www.nytimes.com/2015/08/11/world/asia/north-korea-placed-mines-that-maimed-2-south-korean-soldiers-at-dmz-seoul-says.html>> (date accessed September 12, 2018).

49. Choe Sang-hun, "Koreas Exchange Fire After Activists Launch Balloons Over Border," *The New York Times*, Seoul, South Korea, October 10, 2014, <<http://www.nytimes.com/2015/08/11/world/asia/north-korea-placed-mines-that-maimed-2-south-korean-soldiers-at-dmz-seoul-says.html>> (date accessed September 12, 2018).

50. *Ibid.*

fire, but there were no reported casualties or damage to property.⁵¹ Coming so soon after the leaflet balloons and related exchange of fire, this incident may also be linked to the leaflets, though any connection is not explicit.

Out of 18 incidents examined, one had a possible tie to diplomacy, one a possible tie to information, and two had explicit ties to information. Next, the research turns to the four remaining incidents: the 2002 Second Yeonpyeong Naval Campaign, a 2003 exchange of groundfire, 2010's Shelling of Yeonpyeong Island and the Sinking of the ROKS Cheonan. For ease of reference, the chart is shown once more, below.

The Second Yeonpyeong Naval Campaign, June 29, 2002 (the first was in June 1999), was one of the deadliest confrontations between the North and South since the Korean (6/25) War, with 13 North Koreans reportedly killed and 25 wounded, while the South suffered 6 killed and the loss of a patrol boat.⁵² This incident also occurred in/around the disputed NLL sea border, but came at a time (2002) of generally better relations between the two countries—though during a peak in the fishing/crabbing season when tensions in the area can run higher than normal. It is unclear what caused this incident, but it does not appear related to the use of a foreign policy tool.

Next, a 17 July 2003 exchange of groundfire in/near the DMZ that resulted in no casualties for either side, is also unclear in its exact cause. KCNA records show no statement on the incident by the North, with the timing apparently unrelated to any outside activities.

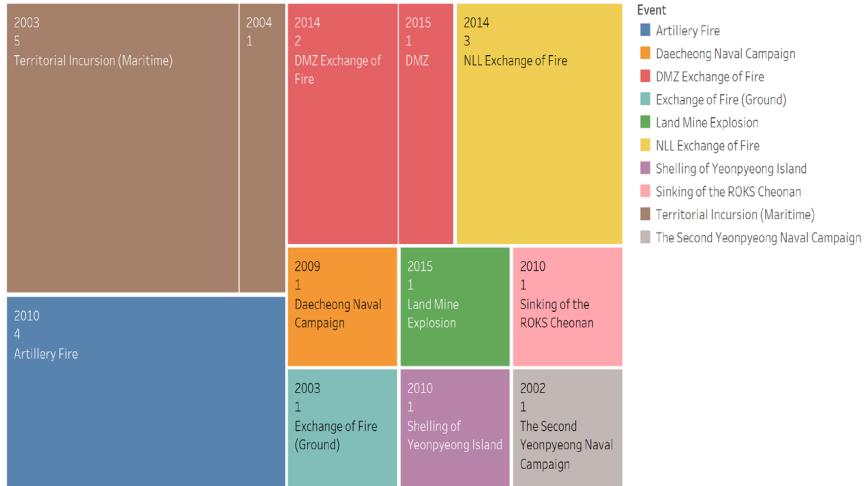
Finally, 2010 saw two deadly incidents between the North and South. First was the March sinking of the South Korean naval corvette Cheonan by a torpedo, allegedly fired by the North. The ship was just

51. Choe Sang-hun, "Gunfire Exchanged across Korean Boundary," *The New York Times*, Seoul, South Korea, October 19, 2014, <<https://www.nytimes.com/2014/10/20/world/asia/gunfire-exchanged-on-korean-boundary.html>> (date accessed September 12, 2018).

52. "CSIS, "Beyond Parallel," Washington, D.C., Center for Strategic and International Studies, 2018, <<https://beyondparallel.csis.org/databases/>> (date accessed September 12, 2018).

Figure 22: Types of kinetic incidents involving North Korea, January 2002 to August 2017

Beyond Parallel Kinetic Incident by Type



south of the NLL at the time it was attacked, but the North denied involvement. A clear finding for why the attack occurred awaits future research, possibly post-reunification. The second incident, the Shelling of Yeonpyeong Island in 2010, again involved an area near the disputed NLL sea border. In this incident, North Korea shelled Yeonpyeong Island, near the NLL, killing four South Koreans and wounding others, while an unknown number of North Koreans were wounded or killed after South Korean Marines returned artillery fire.⁵³ This incident, occurring a few months after the sinking of the Cheonan and several maritime incursions by the North across the NLL, is also unclear in its cause. As one of the few times the North has targeted a civilian area of the South since the end of the Korean War, it is a serious incident but lacks a clear motive. As with the sinking of the Cheonan, a clear finding

53. Yoo Jee-ho, "Marines Recall Yeonpyeong Shelling with Anger, New Perspective," *Yonhap*, Yeonpyeong Island, South Korea, November 21, 2011, <<http://english.yonhapnews.co.kr/national/2011/11/18/12/0301000000AEN20111118002400315F.HTML>> (date accessed September 12, 2018).

for why the shelling occurred awaits future research with better access to North Korean archives.

From this examination of kinetic incidents between the North and South from 2002-2017, several points are clear:

1. Nearly all of the incidents occurred in and around the disputed sea border between the North and South;
2. 2010 was the peak year in terms of both the number of incidents and their seriousness, with the sinking of the Cheonan and the artillery barrage of Yeongpyeong Island killing a total of 48 military personnel and 2 civilians in South Korea alone;⁵⁴
3. Most importantly for the research here, only 2 of the 22 incidents can be explicitly tied to a foreign policy tool; in this case, the information category, as the North reacted violently to South Korean leaflets and loudspeakers. Two other incidents have possible ties to a category, one to diplomacy and one to information, but lack the explicitness of the loudspeaker and leaflet incidents.

Conclusion

The findings show North Korea reacts as negatively to two information tools as it does to military exercises in the South. Further, the North reacts more negatively to the information tools surveyed than to economic sanctions, UN resolutions, or a combination of sanctions and resolutions. Both the sentiment analysis of North Korean state media and the analysis of 'kinetic incidents' support previous scholarship, outlined at the start of the paper, regarding the critical

54. The sinking of the Cheonan killed 46 South Korean sailors (see: Anna Fifield, "S. Korea Agrees to End Broadcasts as North Expresses Regret for Provocations," *Washington Post*, Tokyo, August 24, 2015, <https://www.washingtonpost.com/world/asia_pacific/north-korea-hates-those-loudspeakers-because-they-make-fun-of-kim/2015/08/24/439f6039-3f37-490b-9fa1-e3b8022893e6_story.html?utm_term=.22ecaee52e73> (date accessed September 12, 2018); the shelling of Yeonpyeong was responsible for the remaining casualties.

importance of information control to North Korea's rulers. Information is of such importance to Pyongyang that threats targeting only the fraction of the populace living within range of South Korean loudspeakers and leaflet balloons produce a level of negativity and violent reaction unsurpassed by any other tool of foreign policy.

These findings support the hypothesis that North Korea responds more negatively to the use of information tools than the other DIME tools. While military exercises produced a negative reaction on par with information, they did not generate the kinetic responses found with leaflets and loudspeakers.

In terms of the research approach, the overlap between the sentiment analysis and 'kinetic actions' sections, especially in terms of information tools, lends credence to the methodology and findings. The findings are also in line with related research conducted by the author on other authoritarian states (Russia and China). Why the North, inter alia authoritarian states from Eritrea to Iran, China to Russia, reacts so strongly to information tools, even the relatively minor ones examined here, raises several interesting questions, not least of which is why does the North react this way? Are information tools viewed as a greater threat to regime stability than sanctions or UN resolutions? Are such tools viewed as a possible precursor to an invasion? Commonly used during the Cold War, both on the Korean Peninsula and more generally in West-Soviet relations, did the decline in their use after the start of the Sunshine Policy in the South (and end of the Cold War) inadvertently sharpen their impact when reintroduced? Could Cold War era scholarship on the use of information tools assist in answering the questions raised here? Exploration of these questions awaits future scholarship.

Finally, in terms of policy, these results show that information can be a key tool for use in relations with North Korea. Specifically, in negotiations with Pyongyang, proposals based on the economic or diplomatic tools of statecraft are less likely to impact the North's decision-making calculus than military or information tools. Second, in terms of deterrence, the demonstrated sensitivity of the North to information tools may offer an option for deterring and punishing cyber

and related attacks—a salient finding for those in the South and elsewhere facing North Korean cyber and information campaigns.

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