

Foreign Policy and Journalistic Assumptions: Incorporating Background Semantics Into Machine Learning Models of Event Interpretation

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Three goals

- **Three goals**

- Project
- Announcements and interpretations
 - An example: the Federal Reserve
 - An example: U.S.-Russian relations
- Facts and figures
- Annotation of articles: specifying interpretations
- Monetary policy
- Foreign policy 1
- Foreign policy 2
- Foreign policy 3
- Background semantics
- Machine learning
- Semantic tagging 1
- Semantic tagging 2

- Overview of our project: announcements and interpretations
- Background semantics: domain, topical, and general
- Machine learning considerations on syntax and semantics

Project

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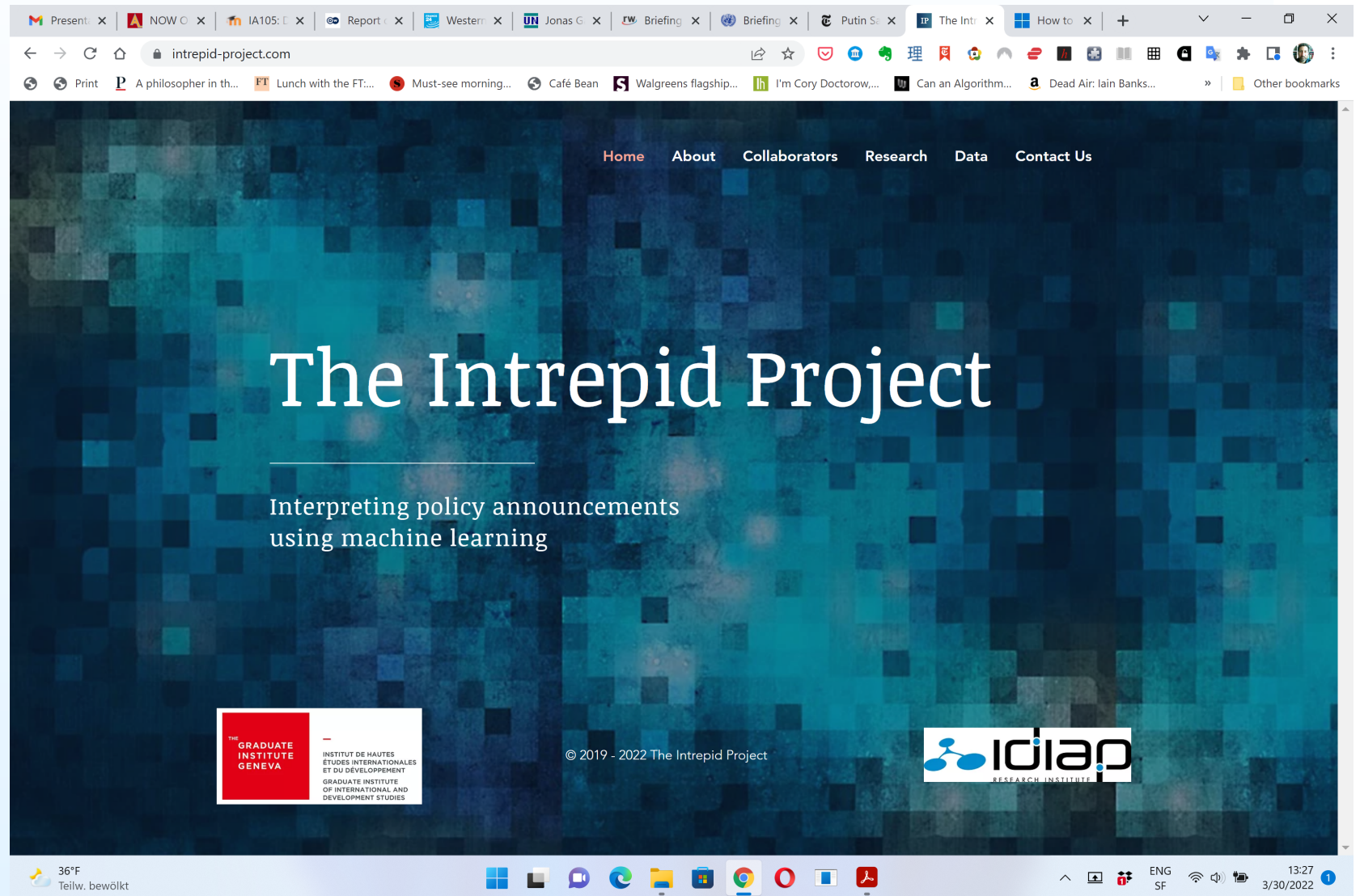
- Foreign policy 3

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Announcements and interpretations

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- State agencies and officials routinely make announcements about policy (press releases, speeches, answers to questions)
- These are interpreted by various actors: politicians, business executives, investors, interested citizens, foreign leaders – and journalists (our focus)
- The interpretations characterize announcements as:
 - What policy is, or was, or will be
 - What policy might or will not be
 - Reasons for the policies and their goals and timing
- Use ML techniques, with syntactic and semantic information, on the announcement-interpretation pairs to generate interpretations from announcements

An example: the Federal Reserve

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“The F.O.M.C. meeting ended at 12:55 PM; there is no further announcement.” (Fed press release, December 22, 1998)

“The Federal Reserve voted today to hold interest rates steady, judging that three rate reductions in the fall had given the economy a big enough kick to keep it growing at a healthy pace into the new year.” *NYT* article, December 23, 1998

Semantic information: what the F.O.M.C. is and what it usually does; also knowledge about the world and recent decisions.

An example: U.S.-Russian relations

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“We already, as you know, provide non-lethal aid. We do everything working with the London 11 and a group of partners, some of whom provide other things to the opposition coalition. And we will continue ... as President Obama said, standing next to President Hollande to look at every option that is open to us to see what else we can do to be helpful.” (State Dept. background briefing on Syria, February 14, 2014)

“Diplomats here said the administration might consider stepping up an existing covert program to train and arm the moderate Syrian opposition or even weigh the threat of military force to compel the delivery of humanitarian aid.” *NYT* article, February 15, 2014

Semantic information: what the U.S. and U.S. allies are doing, what “helpful” means. Syntactic information: what the temporal scope is of “will continue ... to look”

Facts and figures

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- Two issue areas: monetary policy and foreign policy
- Two cases: U.S. Federal Reserve and U.S. policy towards Russia
- Fed policy: approximately 1,700 separate announcements from 1967-2018
- Fed policy: approximately 5,500 *New York Times* articles (multiple passes using different search parameters)
- Russia policy: no final count yet on announcements (still annotating; many more sources than for Fed case), from 1993-2016
- Russia policy: so far (1997-2016), approximately 5,400 articles (searching much more complicated)

Annotation of articles: specifying interpretations

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- Standardized sentence (StSt) (container):
- Reference document (announcement) (**required**)
- Act (**required**; text plus summary)
- Actor (**required**)
- Motives (goal)
- Evidence (what spurred policy)
- Scope (when occur, how long)
- Attribution (if a recommendation)
- Russia Link (**required** for foreign policy case; text plus summary)

Annotation is done in TagTog
Output is a file in JSON format

Monetary policy

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"1" "TheFed'sMessage:Exhale.STAT_2017-03-15....The economy will keep growing just enough to put more Americans back to work, but without overheating to generate excessive inflation. American workers will see gradual pay raises that keep compensation rising faster than inflation. Interest rates will rise gradually, while staying low by historical standards. And that's all before accounting for any major stimulative policies that may emerge from the Trump administration and Congress. That was the view of the economy sketched by the Federal Reserve chairwoman, Janet Yellen, at her first news conference of 2017 on Wednesday. In short, the Fed believes that after nearly eight years of trying to nurse the economy back to health, its work is nearly done. The general sense of rosiness isn't really anything new -- for years, Ms. Yellen and her predecessor, Ben Bernanke, have forecast that the economy will steadily converge toward a Goldilocks-like state of being neither too hot nor too cold. Two things have changed. First, that day now feels imminent, with the unemployment rate at 4.7 percent and inflation closing on the 2 percent the Fed thinks best. That is a key reason the Fed raised its interest rate target Wednesday. Second, markets now believe the Fed's message that higher rates are on the way; bond markets suggest that the Fed will actually follow through with its intentions on gradual interest rate rises. You couldn't say that a year ago. "The simple message is: The economy is doing well," Ms. Yellen told reporters. The overwhelming message was of gradualism -- both on the rate of economic improvement and the Fed's own efforts to wind down its era of low interest rates. She suggested no urgency toward a tightening of the money supply that might suggest a hair-trigger readiness to accelerate interest rate increases. Ms. Yellen evinced little fear that the Fed is behind the curve, suggesting that two more interest rate increases are on the way over the remainder of 2017. This will, if these plans stay in force, remain the slowest cycle of interest rate increases in modern history. She also displayed little of the fear of setback that has been pervasive at the Fed for years. The central bank has spent the last eight years trying to help the recovery along with a series of monetary interventions; more than any other institution in Washington, it owns the recovery. That has also meant that the Fed has acted with haste to signs of softening. In the winter of 2016, for example, barely a year ago, the central bank backed off plans for more rate increases after a steep stock market sell-off and a rise of economic pessimism. After years of persistently undershooting its 2 percent goal for inflation, the Fed explicitly, if subtly, raised the possibility on Wednesday of erring in the other direction. The central bank's policy committee said it would be monitoring "actual and expected inflation developments relative to its symmetric inflation goal." In this context, "symmetric" implies that it aims for 2 percent inflation and would be equally displeased by inflation that was too high or too low. That implies that the Fed is not inclined to overreact to the possibility that inflation could drift slightly -- and in the Fed's view temporarily -- above 2 percent in the coming months. After the announcement, the interest rates on Treasury bonds actually fell. That implies that markets were ready for signals of even more aggressive rate rises. And the clearest signal that the Fed is in steady-as-she-goes territory was in how Ms. Yellen talked about the possibility of new tax cuts or

Document Labels

Document_note

Document_note

Entities

total 28 not normalized 28

Group/filter entities ▼

● The economy will keep growing just enough to put more Americans back to work, but without overheating to generate excessive inflation. American workers will see gradual pay raises that keep compensation rising faster than inflation. Interest rates will rise gradually, while staying low by historical standards. And that's all before accounting for any major stimulative policies that may emerge from the Trump administration and Congress. That was the view of the economy sketched by the Federal Reserve chairwoman, Janet Yellen, at her first news conference of 2017 on Wednesday. In short, the Fed believes that after nearly eight years of trying to

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Example 1: 105_2012-03-08

nytimes-2006
nytimes-2007
nytimes-2008
nytimes-2009
nytimes-2010
nytimes-2011
nytimes-2012
nytimes-2013
nytimes-2014
nytimes-2015
nytimes-2016
nytimes-2017
nytimes-2018

Filters

TODO

Folder actions

➕ Add new

✎ Rename

airstrikes in Syria. On Monday Mr. McCain became the first senator to call for airstrikes, describing them as "the only realistic way" to stop what he called a slaughter. The United Nations has said more than 7,500 civilians have been killed in the year-long uprising against President Bashar al-Assad of Syria. But Mr. Panetta said intervention could expedite a civil war in the country and make an explosive situation worse. He said bluntly that the Obama administration recognized "that there are limitations of military force, especially with U.S. boots on the ground." Both Mr. Panetta and General Dempsey said repeatedly that Syria was far different from Libya, where an American-led air campaign established a no-fly zone before the fall of Col. Muammar el-Qaddafi last year. General Dempsey told the committee that although "we can do anything," Syria had five times the air defenses that Libya did, and because of that establishing a no-fly zone would take "an extended period of time and a great number of aircraft." He said the early stages of an air campaign would "almost unquestionably" be led by the United States, as was the case in Libya, because of American electronic warfare capabilities. Senator Jack Reed, Democrat of Rhode Island, tried to draw General Dempsey out on what he saw as a potentially protracted operation. "So from a perceptual view alone, the opening stages in any military operation would be an extended, almost exclusive air campaign by the United States against Syria, presumably supported politically by the Arab League, NATO, the E.U. and everyone else. But the kinetic part of the operation would be ours for several weeks before we actually decided even going in and effectively protecting Syrians. Is that a fair judgment?" "It is a fair judgment," General Dempsey replied. Mr. Panetta and General Dempsey both predicted civilian casualties in an air campaign because forces loyal to President Assad are intermingled in dense urban areas with the general population. In addition, both said the opposition was so splintered that it was difficult to know whom the United States should potentially supply with arms. "In Libya, there were leaders who came to the front," Mr. Panetta told the committee. But in Syria, "it's very difficult to be able to know who we deal with in terms of an opposition." General Dempsey said the opposition was composed of as many as 100 different groups. In the meantime, General Dempsey said the Pentagon was preparing options that had been requested by President Obama for review, ranging from humanitarian airlifts, naval monitoring, aerial surveillance of the Syrian military and the establishment of a no-fly zone. **A further complication, General Dempsey said, is that both Iran and Russia are supplying Syria with weapons.**

Entities

total 5 not normalized 5

Group/filter entities ▾

- A further complication, General Dempsey said, is that both Iran and Russia are supplying Syria with weapons. **StSNumber: 1 50%** labels
- A further complication, General Dempsey said, is that both Iran and Russia are supplying Syria with weapons. **Act: The US criticized Russia for supporting Assad militarily** labels
- General Dempsey **Actor: USA 50%** labels
- said **ReferenceDocument: https://www.dropbox.com/s/...** labels
- both Iran and Russia are supplying Syria with weapons **RussiaLink: Russia is supporting Assad militarily...** labels

Act label: The US criticized Russia for supporting Assad militarily
Russia Link label: Russia is supporting Assad militarily

Foreign policy 2

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Example 2: 98_2012-02-06

nytimes-2005
nytimes-2006
nytimes-2007
nytimes-2008
nytimes-2009
nytimes-2010
nytimes-2011
nytimes-2012
nytimes-2013
nytimes-2014
nytimes-2015
nytimes-2016
nytimes-2017
nytimes-2018

Filters

TODO

Folder actions

+ Add new

Remove

may or may not yet be a civil war, but already bears the hallmarks of a prolonged struggle pitting a still relatively cohesive leadership against an opposition that has gained control of territory in some places, while crumbling before the government's onslaught in others. The violence Sunday, centered in long rebellious areas, including the city of Homs, killed 31 people, according to activists, adding to a death toll that the United Nations set at 5,400 before it stopped compiling figures. Even before the predictions of intensified conflict, the government's citadels of support -- Damascus and Aleppo -- had begun, after months of relative quiet, to feel the brunt of a contest that emerged nearly 11 months ago in the countryside. In some of the capital's suburbs, military forces have recently begun to act like an occupying army, with residents reporting instances of looting and pillaging. And a cancerous sectarianism that wrecked Syria's neighbors to the east and west, Iraq and Lebanon, has become so pronounced that some military defectors have vowed to attack religious sites. The events this weekend seemed sure to serve as benchmarks in an uprising that now stands as one of the Arab world's bloodiest. The collapse of the United Nations Security Council's effort to pressure Mr. Assad, after vetoes by Russia and China on Saturday, came just hours after the military shelled Homs in what opposition leaders called the deadliest assault since the uprising began in March. They said more than 200 were killed, a toll that Syrian officials flatly denied. **Secretary of State Hillary Rodham Clinton on Sunday called the quashing of the Security Council resolution a "travesty" and said the administration would renew efforts to stop the flow of arms to Syria.** The Assad government hailed the action by Russia and China as a rejection of intervention in Syria's conflict, and a state newspaper signaled that the leadership would be more determined than ever to crush the uprising. It promised that the government would "restore what Syrians had enjoyed for decades." Over all, the domestic media's coverage of the Security Council's vote suggested it was seen in Syria as an important sign that the government retained at least some legitimacy in the eyes of the world. That sense of the government's hand being strengthened by the failure in New York was so pronounced that Human Rights Watch, echoing critiques by Western and Arab diplomats, warned Syria not to use the veto "as a green light for even more violence." Armed defectors, joined by civilians who have taken up arms, number only in the thousands, diplomats say, but they, too, hinted at a determination to shift from what they saw as their mission months ago -- protecting protesters -- and toward a more traditional insurgency. That shift has been most visible in Homs and the northern region of Idlib. "Only military options are on the table," Col. Riad al-Assad, a defector and commander of the Free Syrian Army, said in a telephone interview from his base in Turkey. "The political options have failed. This regime won't end except through force." Though Colonel Assad's control over the defectors remains debatable -- many diplomats and residents describe the armed opponents as far more atomized -- there seems little question that the opposition is growing more militarized and determined. While it retains a peaceful component, giving rise to a vibrant culture of protest, defectors have steadily gathered numbers and boast of their ability to control many areas of Homs, the central city assaulted on Saturday. An activist in Idlib relayed a recent chant: "Enough for being peaceful,

Entities

total 5 not normalized 5

Group/filter entities ▼

Secretary of State Hillary Rodham Clinton on Sunday called the quashing of the Security Council resolution a "travesty" and said the administration would renew efforts to stop the flow of arms to Syria.

StsNumber: 1 50%

labels

Secretary of State Hillary Rodham Clinton

Actor: USA: 50%

labels

on Sunday

ReferenceDocument: https://www.dropbox.com/s...

labels

called the quashing of the Security Council resolution a "travesty"

Act: The US criticized Russia for vetoing a Secur...

labels

quashing of the Security Council resolution

RussiaLink: Russia vetoed a Security Council res...

labels

Act label: The US criticized Russia for vetoing a Security Council resolution on Syria

Russia Link label: Russia vetoed a Security Council resolution on Syria

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Example 3: 135_2009-07-27

Remove

Georgian opposition." But mass protests -- the kind that swept Eduard Shevardnadze out of power and replaced him with Mr. Saakashvili -- dropped off after a few weeks. The opposition was leaderless and split over tactics, and the government took care not to repeat the mistakes of Nov. 7. By the time Mr. Biden arrived, the movement had dwindled away to a handful of mock cells in front of Parliament. And then even they disappeared. "One could call it coincidence or not, but his visit completed the political cycle," said Ghia Nodia, a leading analyst of Georgian politics. "The mock cells were gone on the day of his arrival. So that's the end of the cycle." Mr. Biden's visit aroused wistful memories of 2005, when a loose, affectionate President George W. Bush shimmed to Georgian folk music and told a crowd, "Sakartvelos Gaumarjos," or "Georgia forever." Mr. Saakashvili's staff members pushed for Mr. Biden to participate in an unscripted event, in hopes of projecting some personal warmth. They got it in an informal meeting with refugee children from South Ossetia. Mr. Biden's reserve melted, and he spoke in raw, plain terms about his anger at Russia. **As he returned to the United States, he leveled blistering criticism at Russia in an interview with The Wall Street Journal -- infuriating Russian officials, and delighting Georgian ones.** Anyone expecting Mr. Biden to criticize Mr. Saakashvili, or reinvigorate this spring's protests, was disappointed. "Everyone in Georgia was thinking America would try to create a new king," said Kakha Katsitadze, a military expert who has been allied with the opposition New Rights Party. "What he did was much better. Now every Georgian understands that our fate is our responsibility." The anger that emerged over the spring has not gone away, Mr. Nodia warned. But the political center of gravity has shifted to mayoral elections, which Mr. Saakashvili rescheduled from October to May as part of a package of reforms intended to placate the opposition. Many are looking to the race in Tbilisi -- the heart of antigovernment opposition -- as an indicator of who might run to succeed him when his term ends in 2013. That is not to say that Mr. Saakashvili's troubles are over; the \$1 billion pledged by Washington in the aftermath of the war has been disbursed or earmarked, and the unemployment rate has climbed to 17 percent. Nugzar Zurashvili, 43, who was selling belts on Rustaveli Avenue, rolled his eyes at questions about Mr. Biden's impact on Georgian politics, and said Mr. Saakashvili should pay less attention to the opinion of the West. He went on to complain about health care and high electricity and gas bills. "He has to look after ordinary people if he wants to survive," Mr. Zurashvili said. "He has four years to survive."

Entities

total 5 not normalized 5

Group/filter entities ▾

- As he returned to the United States, he leveled blistering criticism at Russia in an interview with The Wall Street Journal -- infuriating Russian officials, and delighting Georgian ones. [labels](#)
- United States [labels](#)
- he leveled blistering criticism at Russia [labels](#)
Act: Biden criticized Russia for trying to assert its ...
- Russia [labels](#)
RussiaLink: Russia is no longer an empire. 50%
- interview [labels](#)
ReferenceDocument: https://www.dropbox.com/s

Act label: Biden criticized Russia for trying to assert its authority over former Soviet republics
Russia Link label: Russia is no longer an empire

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- Standard approach: mapping from announcements to interpretations
- Problems of background semantics
 - Domain (e.g., “tightening”; “hard-liner” in monetary vs. foreign policy)
 - Topical (e.g., “tightening” for bank-lending requirements vs. interest rates)
 - General (e.g., “quash”; “travesty”; and pragmatics: reference as criticism)
- Mapping requires meta-rules; hence problems of
 - Infinite regress
 - Novelty

Machine learning

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- Train the program on the actual StSts, with an eye to generating them from the announcements
- One announcement can generate many interpretations: differ by level of detail (optional elements) as well as by modality (see next slide)
- Size problem: on the one hand, the corpora are small by computational linguistics standards; on the other hand, the announcements are too large and require either preliminary tagging or repeated sampling

Semantic tagging 1

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- (Will skip over various types of syntactic tagging.)
- Semantics 1: (“a company-size contingent of paratroopers from the U.S. Army Europe’s ... will arrive in Poland ... since Russia’s aggression in Ukraine, we have been constantly looking at ways to reassure allies and partners, and these exercises, they’re ...”). Hence: specify semantic role (who did what to whom) to permit ML to generate Poland as an ally
- Semantics 2 (from above example): named entity recognition to permit ML to generate actor as US
- Semantics 3 (ditto): words associated with “aggression” and “reassure”: BERT (Google; from huge corpus)

Semantic tagging 2

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