# A social network approach to critical discourse studies

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## Abstract

Viewing discourse as a social practice, one important task of critical discourse studies (CDS) is to unveil inequality, power, and ideologies through linguistic and discoursal analysis of social events, social identities, and social relations represented in oral or written texts. As such, it lends itself to social network analysis (SNA) which aims to discover relation patterns and structures among such social actors as people, organizations, and political entities. This article proposes an integration of SNA techniques into CDS and explores this possibility via an example in diachronic study on international relations represented in news reporting on China in *The New York Times* between 1980 and 2020 by examining subject-direct object pairs to approach the target relations between national actors. It is shown that the coupling of these two approaches effectively reveals international relation relation relation retworks surrounding key national actors in the news reports. Considering the fact that SNA consists of a great variety of network statistics, which can be broadly categorized into those related to the relative position of the actor in the network and those concerned with the structure of the network itself, there is vast space for the utility of SNA metrics in aiding CDS in further research.

# **1** Introduction

Targeting the semiotic dimension of social phenomena, critical discourse studies (CDS) aim to unveil how power abuse and unequal social relations are produced and sustained by written or oral texts (van Dijk, 1988; Fairclough, 1995). Viewing discourse as a social practice, CDS holds that discourse is in a dialectical relationship with social reality: on the one hand, discourse is shaped by social circumstances such as power relations and ideology; on the other hand, discourse also 'represents, creates, reproduces and changes social reality' (Reisigl, 2018, p. 51). Specifically, discourse helps construct systems of knowledge and belief, social events, social identities, and social relations (Fairclough, 1992, p. 64). Thus, one central concern for CDS is to reveal social relations represented in discourse and the embedded inequality, dominance, and ideology. Foucault (1980, p. 142) argues that social relations are largely relations of power. Furthermore, according to Emerson (1962, as cited in Reisigl and Wodak, 2016, p. 26), power in social relations resides not only in mutual dependence between two social actors but also in a power network of more than two actors. As such, social relations in discourse need to be studied as networks.

Social network analysis (SNA) is a quantitative research method that aims at discovering regularities in relationships among people, organizations, political entities, and other social units (Marsden, 2005, p. 819). Over the past few decades, this approach has been used in a wide range of social sciences to explore, among many other topics, the network structure of research communities, companies, characters in a literary work, online social media users, students involved in classroom interactions, and the international community (Maoz, 2011; Scott, 2012; Panda et al., 2014; Wagner and González-Howard, 2018; Ruegg and Lee, 2020). SNA allows for better explanation of social phenomena by uncovering interconnections among social entities rather than focusing on their discrete characteristics (Chiesi, 2015, p. 518). As such, there is great potential in applying SNA to CDS to better account for the networked nature of social relations as represented in discourse. However, to the best of our knowledge, no study in the field of CDS has thus far adopted SNA in the analysis of social relations.

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Therefore, the aim of this study is to explore the contribution SNA can make to CDS. To show how SNA can be applied in the field of CDS, this article carries out a case study to examine international relations represented in media discourse, which are very important but relatively under-explored in the academia of discourse studies. Undoubtedly, the ways international relations are represented by media are heavily influenced by dominant ideologies and national interests of a given society (Wang, 2017; Chen and Wang, 2022), and these representations can in turn exert direct or indirect impacts on public perceptions of governments' foreign policies and relations between nations (Fairclough and Wodak, 1997, p. 258; Oddo, 2014). Specifically, by integrating SNA techniques with CDS, this study seeks to address the following questions: (1) How are networked social relations (international relations in our case study) discursively constructed? and (2) How can the application of SNA to CDS provide insights into representations of social relations and underlying ideological and socio-political factors?

## 2 SNA: an example of fictional network

In this section, we first use a fictional network as an example to illustrate some basic concepts of SNA relevant to the case study. Assume there are eight social actors (A–H), among which some actors are linked to each other. The number of times a certain pair of actors cooccurs is shown in Table 1 as an adjacency matrix. These actors and their connections can be graphically represented by a network graph (Fig. 1, generated by *Pajek*, a free software program for network analysis).<sup>1</sup>

In a network graph, each actor is represented as a 'node' (also called a 'vertex'). Related nodes are connected by lines, and an arrow can be added to signal the direction of a connection. In addition, each line in a network graph may carry a 'weight' indicating the strength of the relation, which is usually marked by the line width/thickness. In Fig. 1, the line width corresponds to the frequency of a certain pair of nodes. In the case of a bidirectional link (e.g. the link between Nodes A and G), the weight of a link in a certain direction is further distinguished by the size of the arrow pointing to that direction.

Not all nodes in a network are equally important and some nodes are more popular, influential, or central than the others (Scott, 2017, p. 96). A number of metrics have been proposed to capture the centrality of a node from different perspectives. Among them, 'degree centrality' and 'betweenness centrality' are commonly used. Degree centrality is one of the simplest and most intuitive metrics, which counts the number of direct links a node has (i.e. degrees), under the assumption that the more contacts a node has in its immediate

 Table 1. Frequencies of co-occurring pairs in a fictional network

Node	Α	В	С	D	Ε	F	G	Η
А		0	0	0	9	2	4	4
В	10			0	0	0	0	0
С	0	2		0	0	0	0	0
D	0	2	0		0	0	0	0
E	0	0	0	0		6	0	0
F	5	0	0	0	0		0	0
G	8	0	0	0	0	0		0
Н	3	0	0	0	0	0	0	



Figure 1. A fictional network

environment, the more central it is. Furthermore, we can use 'weighted degree centrality' to incorporate both the number of direct ties of a node and the weights of its links. The node size in Fig. 1 is proportional to the weighted degree centrality of a node. By comparison, betweenness centrality measures to what extent a node serves as a bridge or intersection between pairs of the other nodes in the entire network. A node with a high betweenness centrality usually acts as an important intermediary, though it may not have many direct links.

Take the fictional network in Fig. 1, for example Node A has the highest weighted degree centrality, as indicated by its largest node size. On the other hand, although Node B has a similar node size (i.e. weighted degree centrality) than those of Nodes E, F, and G (14 versus 15, 13, and 12, respectively), it has a much larger betweenness centrality (0.24 versus 0, 0.07, and 0, respectively), which highlights Node B's role as a bridge: for C and D to get to A, they have to pass through B.

Centrality measures such as (weighted) degree and betweenness centrality are used to describe the connectivity of individual nodes in a network. On the other hand, 'average degree' can be used to describe how well a network is interconnected as a whole, calculated by averaging over the degrees of all the nodes in a network. This measure also allows for comparison between different networks (Nooy *et al.*, 2018, p. 76). In this example, the average degree of the network is 2.5.

Such analytical tools developed in SNA help to represent relations between social actors both visually and mathematically, enabling researchers to move beyond isolated actors to investigate network structures and relational patterns among actors. However, when investigating discursive representations of social relations, it is necessary to integrate SNA into corpus-based CDS. On the one hand, corpus tools help to extract linguistic patterns encoding related social entities from a sizable collection of texts, which serve as raw materials for SNA. On the other hand, statistical findings and graphs obtained by SNA provide entry points (e.g. the highlighting of certain social actors or relations) for detailed, corpus-based analysis of discursively constructed social relations. On this basis, researchers can proceed to examine the convergence and/or divergence between the represented social relations in discourse and the relations between social actors in the real world, as informed by CDS.

## 3 Creating relational data

In order to apply techniques of SNA to help explore discursive representations of social relations, it is necessary, in the first place, to extract relational pairs from discourse. It is relatively straightforward to find such pairs in a somewhat structured text (e.g. a conversation involving clear turn-taking; cf. Wagner and González-Howard, 2018; Ruegg and Lee, 2020). However, it is much more of a challenge to extract relational pairs in unstructured texts (e.g. a news report). In the latter case, relational pairs between actors have mostly been operationalized in the literature as co-occurrences of their names in a certain stretch of texts. In the context of international relations, for example, Barnett et al. (2017) compared the network patterns of international relations on Facebook and Weibo (China's Twitter) based on co-occurring pairs of country/region names within the unit of an online post. In addition, to examine how relations surrounding North Korea were represented in American media discourse, Kim (2014) extracted countries and cities that were among the top collocates of North Korea as well as countries in the phrasal structure '[countries] like North Korea' in a corpus of US media reports.

It can be seen that in the above studies, the cooccurrence of social actors was often loosely defined, such as that within a short passage (e.g. an online post) or a fixed window of adjacent words (e.g. five words to the left/right of the node word). Such operationalizations of co-occurrences often fail to take into consideration the order of the pair of actors in a sentence, nor their syntactic roles. Besides, even if two actors appear in the same sentence (let alone a short paragraph), they are not necessarily related in a meaningful way (e.g. *After the performances in China, the company will travel to Italy...*). Regarding a special phrasal pattern such as '[countries] like North Korea', while the relatedness between two actors can be established, they are nonetheless restricted to a very short textual window.

One way to overcome these shortcomings is to create relational pairs based on dependency parsing. Unlike constituency parsing, which analyzes a sentence into a hierarchy of phrases (in the tradition of generative grammar), dependency parsing somewhat simplifies the matter by trying to determine the grammatical relationship between words in a sentence (Osborne, 2019). An asymmetrical relationship exists between such a pair of words: one word is the *head*, which determines the grammatical category of the relation, and the other is called the *dependent*. For example, *apples* are the head and *delicious* is the dependent in the pair of *deli*cious apples, where delicious is the adjectival modifier (amod) of *apples*. In a graphical representation of a dependency-parsed sentence, an arrow is conventionally used to point from the head to the dependent. Figure 2 shows the graph of a dependency-parsed example sentence.<sup>2</sup>

In Fig. 2, *China* (the first word) is the nominal subject (nsubj) of the verb *rivals* (the 9th word), which takes as its object (obj)*the United States* (the 10th, 11th, and 12th words). This example also illustrates another advantage of dependency parsing that it allows for the extraction of related actor pairs over a long distance (Evert, 2009, p. 1223), which is impossible via the traditional window-based collocation extraction method or a particular phrasal frame.

A pair of countries that are tagged nominal subject (nsubj) and *direct object* (dobj), respectively, within the same sentence will be loosely defined in the present study as a subject-object pair of countries, which allows us to incorporate cases where the two countries are adjacent (e.g. China\_nsubj overtook the United States dobj...) or separated by some distance (e.g. China\_nsubj is on track this year to surpass Canada\_dobj). The case study below will use subjectobject pairs of countries as a window into their interrelations. According to Halliday's Systemic Functional Linguistics (Halliday, 1994), we use language to construe our experience of the external and internal world into six processes (the material, mental, relational, verbal, behavioral, and existential processes, which make up the transitivity system). When the verb within a subject-object pair of countries is taken into account, this



Figure 2. A Dependency-parsed sentence

structure can potentially encode a material process (e.g. *China supported Thailand*), a mental process (e.g. *Vietnam considered China as* ...), or a verbal process (e.g. *China persuaded North Korea to* ...). In other words, it can help capture 'who is doing what to whom'. In this way, we are able to capture the relations between countries involving different processes and then conduct detailed critical analysis.

# 4 A case study

To testify the practicality of applying SNA to CDS, a case study was conducted to critically examine how the relations between China and other countries are diachronically represented in news reporting on China by an influential national newspaper of the USA, *The New York Times*, over four decades (1980–2020). This case study attempts to address the following research questions: (1) How do subject–object pairs of countries connect into networks in each period in the related reports? (2) How are some salient national actors and their power relations discursively constructed by the newspaper? and (3) what are the underlying ideological or socio-political factors?

#### 4.1 Data and methods

To answer the research questions, news articles with a focus on China in *The New York Times* (1980–2020) were collected by searching for the term combination 'China or Chinese or PRC or Sino' in the online news database *LexisNexis*. The year 1980 is the earliest full year for news articles of *The New York Times* to be included in *LexisNexis* and 2020 is the closest full year at the time of data collection. To enhance thematic relevance, initial search results were ranked via the 'Relevance' filter of the platform to screen out articles that make a mere mention of *China* but are not strongly related to it as a whole. Articles that do not belong to the genre of hard news (e.g. editorials, opeds, letters, etc.) were also excluded. After this step, a total of 35,092 articles were obtained.

The collection of articles was divided into four subsets corresponding to four periods (Table 2). The first period (1980–90) witnessed China's gradual opening up to the outside world following the launch of its reform and opening-up policy in 1978. The beginning of the second period (1991–2000) marked the collapse of the former Soviet Union and the end of the Cold War,

Table 2. The composition of the corpus

Period	No. of articles	Word types	Word tokens
1 (1980–90)	5,227	61,450	3,911,693
2 (1991-2000)	5,047	58,076	4,317,684
3 (2001–10)	9,912	86,729	8,700,461
4 (2011–20)	14,906	106,059	14,728,096

which greatly influenced the relations between large countries such as the USA, China, and Russia. For example, China and Russia moved closer and forged a constructive partnership in 1994, which was upgraded to a strategic partnership of coordination in 1996 (Guan, 2022). In terms of the USA, both the George H. W. Bush and Clinton Administrations embraced the 'constructive engagement' policy which seeks to strike a balance between expanding ties with China and addressing American concerns about fair trade, human rights, etc. (cf. Wang, 1993). With China joining the WTO in 2001, the third period (2001-10) saw China opening wider to the world and overtaking Japan as the world's second-largest economy in 2010. In the fourth period (2011-20), while China as a world power played an increasingly active role in the global arena, it also began to get embroiled in markedly more clashes with other countries, particularly with the USA. For example, the release of the Obama administration's 'pivot toward Asia' policy in 2011 signaled a major shift in the US' strategy in the Asia-Pacific, the primary aim of which was to counter China's growth (Shambaugh, 2013). Frictions between the two countries became more intense following the US-China trade disputes beginning in 2018. In addition, territorial disputes in the South China and East China Sea heightened in the early 2010s between China and its neighboring countries such as Japan and the Philippines (Zhao, 2012; Yoshihara, 2014).

As the next step, the body part of each article was segmented into sentences. Using a self-written R code (R Core Team, 2019), sentences with two or more country names were retained.<sup>3</sup> These sentences were then subjected to dependency parsing via the *Spacy* backend offered by the R package *cleanNLP* (Arnold, 2017). Next, countries that constitute subject–object pairs along with their associated verbs were extracted and manually checked. In particular, subject–object pairs that refer to historical backgrounds were

excluded as well as those in which country names are metonymies of national sports teams (e.g. *Brazil beat Chile*). If a verb occurs along with a (semi-)negator, it was then manually marked by 'not\_' to aid subsequent analysis. For example, in the sentence *The United States has no intention of penalizing China*, the act of *penalizing* is negated by the phrase *has no intention of* and thus the verb was marked 'not\_*penalize*'.

In the next stage, a frequency list of subject-object pairs was compiled for each of the four periods. These frequency lists were then fed into *Pajek* and centrality measures including weighted degree and betweenness centrality, as well as the overall network connectedness measure average degree, were calculated for each period. A network graph was also drawn for each period with each node's size in proportion to its weighted degree centrality. Finally, guided by the statistics and visualizations generated by *Pajek*, a corpus-based critical discourse analysis of the discursive features of certain relations was carried out.

## 4.2 Results

The four datasets corresponding to the four periods were analyzed separately but considered diachronically. In what follows, the specific findings for each period are given in detail.

# 4.2.1 Period 1 (1980-90)

In this period, 158 subject-object pairs among 25 countries are found. Pairs with a minimum frequency of two are listed in Table 3. Among the 158 subject-object pairs, the pairs between *China* and *the United* 

**Table 3.** Country pairs and their frequencies in Period 1 (minimum frequency = 2)

Country (subject)	Country (object)	Frequency	
China	United States	30	
United States	China	16	
China	Vietnam	15	
China	Russia	13	
China	Iran	6	
Russia	Vietnam	6	
Vietnam	China	6	
China	Britain	4	
China	Pakistan	3	
Japan	China	3	
Russia	China	3	
Britain	China	2	
Canada	China	2	
China	Japan	2	
China	North Korea	2	
China	South Korea	2	
Kuwait	China	2	
Russia	United States	2	
United States	Japan	2	
United States	Russia	2	

States are the most frequent (*China–United States*: 30; United States–China: 16), which are followed by *China–Vietnam* (15) and *China–Russia* (13) pairs. The above comparatively more frequent pairs point to the relations between *China* and these other countries highlighted in the news of the period. Besides, it can be noticed in Table 3 that apart from pairs involving *China*, there are also pairs without *China*, notably, the *Russia–Vietnam* pair (6). Further inspection of their co-text shows that such pairs often link back to China through certain intermediary countries and are involved in intricate interactions with China.

Therefore, a frequency list of isolated country pairs is ineffective for describing the complex relations among the countries. From a network perspective, on the other hand, these isolated pairs can be combined into an interlinked network so that their interactions can be more easily observed. Moreover, certain prominent countries and their relations can be highlighted by relevant network metrics. The top five countries in terms of weighted degree centrality and betweenness centrality are listed in Table 4, and the network comprising the twenty-five countries is shown in Fig. 3, where the size of each node is proportional to its weighted degree centrality, and the line width coupled with the arrow size represents the frequency of a certain pair of nodes in a certain direction.

Unsurprisingly, as the focus of these reports, China has the highest weighted degree centrality (116), which indicates that it has high intensity of interactions with other countries. Other high-ranking countries on this measure include the United States (55), Vietnam (29), and Russia (28), but their values are much lower than that of China. The large discrepancy between China and the other countries in terms of weighted degree centrality suggests that it is the one-to-one relationship between China and another country rather than the interplay among China and other countries that is highlighted in the news reports in Period 1. In addition, with regard to betweenness centrality, the top-ranking countries include China (0.357), the United States (0.104), Vietnam (0.060), and Russia (0.053), suggesting their important bridging roles in the network and the potential of being a third-party actor in a bilateral relationship (Mukoyama, 2018).

 Table 4. Top five countries by weighted degree and betweenness centralities (Period 1)

Weighted degree centrality	Betweenness centrality	
China (116)	China (0.357)	
United States (55)	United States (0.104)	
Vietnam (29)	Vietnam (0.060)	
Russia (28)	Russia (0.053)	
Japan (8)	India/Israel (0.029)	



Figure 3. Network of countries in Period 1

The above results show that China and the United States are the two most prominent actors in the network. A closer examination of the subject-object pairs between the two countries reveals that the proportion of China versus the United States serving as the subject is highly imbalanced, with China being almost twice as likely to take the subject role (30 versus 16). When China serves as the subject, the most frequently associated verbs include accuse (6), warn (3), ask (2), assure (2), and criticize (2), most of which encode verbal processes of disapproval. Coupled with the tendency for China to be much more frequently placed in the subject position, this suggests that China tends to be represented as ready to pick a quarrel in Sino-US relations. In contrast, when the United States serves as the subject, the most frequent verb is ask (4), which is neutral in tone. For example:

 Hewing to its current policy of active alignment with the third world, *China* has accused both the *Soviet Union* and *the United States* of a lack of sincerity in their disarmament proposals. ('China Makes Issue of Soviet Missiles', 7 October 1983)
 In recent weeks, *the United States* has repeatedly asked *China* to stop supplying Silkworm missiles to Iran because of their use against shipping in the Persian Gulf. ('US will Penalize China on Missiles', 23 October 1987) In addition, *Vietnam* is also a salient actor in the network in terms of both weighted degree centrality and betweenness centrality. When it comes to the subjectobject pairs between *China* and *Vietnam*, an inspection of the intervening verbs reveals that *accuse* makes up the majority of the cases (twelve out of fifteen cases for *China–Vietnam* pairs, and five out of six cases for the *Vietnam–China* pairs). This clearly constructs an antagonistic relationship between the two countries. On the other hand, China is represented as more likely to instigate finger-pointing given its higher likelihood of being the subject than Vietnam (15 versus 6). One example is given below:

3) *China* accused *Vietnam* today of trying to encroach on its territory by claiming vast areas of the Tonkin Gulf and two disputed island groups. ('China Says Vietnam is Trying to Seize Parts of Tonkin Gulf', 29 November 1982)

In this example, China is placed in the subject position, which actively performs the action of 'accusing'. The rest of the sentence proceeds to elaborate on China's accusation, namely Vietnam's encroachment on its territory. However, it is worded that China's accusation is based on its own 'claim', which means it is an assertion pending further validation. Moreover, the adjective *vast* as in 'vast areas of the Tonkin Gulf' seems to give the impression of a greedy and aggressive China, while another adjective *disputed* directly calls into question the legitimacy of China's claim.

In addition, the salient role of *Vietnam* as a bridge is particularly manifested by its triangular interplay with Russia and China. As shown in Table 3, the frequency of the subject-object pairs between Vietnam and Russia (6) is relatively high. Among the six cases, Russia always acts as the subject, and verbs including provide (2) and support (1) appear in half of the cases. This highlights the former Soviet Union's roles as a benefactor and an ally to Vietnam during the Cold War. Taken together, the discursive construction of the triangular interplay among China, Vietnam, and Russia places China at odds with Vietnam as well as the former Soviet Union. This is corroborated by an inspection of the sixteen subject-object pairs between China and Russia which shows that their bilateral relationship is mostly portrayed in a negative light. The following example illustrates the interactions among the three countries:

4) The Prince said he is worried that the *Soviet Union*, which **supports** *Vietnam*, and *China*, which backs the Cambodian insurgents, might strike a deal on Cambodia, to the country's detriment. ('Sihanouk's Son Joins Father's Fight', 3 January 1987)

In this indirect quote from a Prince of Cambodia, a coordinative structure can be found where a united front between the former *Soviet Union* and *Vietnam* is made explicit by the verb *supports*, while since China backs Vietnam's foe Cambodia at the time, China is portrayed as an opposing country. This quote also implies the dominant roles played by the two world powers, the former Soviet Union and China, in the conflict between Vietnam and Cambodia. In other words, Vietnam and Cambodia are represented as being at the mercy of the negotiation of interests between their then respective patrons, even to the *detriment* of the patronized.

#### 4.2.2 Period 2 (1991-2000)

In Period 2, there are 273 subject–object country pairs among 30 countries. The top 5 countries in terms of the two centrality measures are given in Table 5, and the network graph is presented in Fig. 4.

Compared with Fig. 3 in which several countries stand out, Fig. 4 seems to have *China* and *the United States* dominating the scene. Furthermore, the discrepancy between *China* and *the United States* on weighted degree centrality also becomes narrower (Period 1: 116 versus 55; Period 2: 215 versus 146). This indicates that Period 2 sees a significant rise in the influence of

 Table 5. Top five countries by weighted degree and betweenness centralities (Period 2)

Weighted degree centrality	Betweenness centrality	
China (215)	China (0.321)	
United States (146)	United States (0.177)	
Japan (26)	Iran (0.081)	
Russia (21)	Japan (0.028)	
North Korea (20)	Iraq (0.026)	

the United States as a participant in the international network surrounding *China* represented in the news reports. By comparison, the weighted degree centralities of the other countries are much lower than those of *China* and the United States, such as Japan (26), *Russia* (21), and North Korea (20). When it comes to betweenness centrality, the top-ranking countries include *China* (0.321), the United States (0.177), Iran (0.081), Japan (0.028), Iraq (0.026), etc.

With regard to China–US relations, within the subject-object pairs between the two countries, the United States acts more frequently as the subject than China (67 versus 45), which reverses the trend in the network of Period 1. This seems to project a more active role played by the USA. In terms of the intervening verbs, the most frequent verbs within the United States-China pairs include press (4), ask (3), block (3), criticize (3), isolate (3), accuse (2), bring (2), give (2), ignore (2), need (2), not\_contain (2), and wish (2), while those within China-United States pairs include accuse (4), surpass (4), ask (3), anger (2), blame (2), denounce (2), rebuke (2), tell (2), and threaten (2). It can be noticed that although there continues to be a fair proportion of verbs encoding the verbal process of accusation in China-United States pairs as in Period 1, such verbs can also be found in the United States-China pairs. Moreover, some verbs in the United States-China pairs in Period 2 represent physical actions (e.g. block, isolate) against China. Together, these patterns contribute to portraying increasing friction between China and the USA. For example:

5) But the officials also said that the *United States* is still **pressing** *China* to agree to end its cooperation with Iran on technology that could enable the Iranians to produce poison gas and other weapons of mass destruction. ('China's Leader is Rebuked by American Legislators', 31 October 1997)

In this example, the verb *press*, which is also the most frequent verb in the *United States-China* pairs, indicates a verbal process of coercion. This helps to construct an unequal power relation in which the USA has the power to make China act in conformity with American interests. It can also be seen that in this



Figure 4. Network of countries in Period 2

sentence, China is placed along with Iran in the negative 'them' group. On the other hand, such verbs in the *United States–China* pairs as *need* (2), not\_*contain* (2), and *wish* (2) point to the US policy of 'constructive engagement'. One example sentence is given below:

6) To them, Mr. Clinton said: 'I hope more of them understand that *America* wishes *China* well, that we are not bent on containing China, and that our human rights policy is not an excuse for some larger strategic motive. It's what we really believe. We believe it's morally right, and we believe it's best for them as a practical matter over the long run.' ('Clinton in China: The Overview; Clinton Optimistic on China's Future as He Heads home', 4 July 1998)

The above example consists of a long direct quote from the then President Clinton. This constitutes a perspectivization strategy (Reisigl and Wodak, 2016, p. 33) which not only positions the journalist as an objective reporter but also helps to highlight the pragmatic approach of constructive engagement held by the USA at that time. Within the quote, the verbs *wish* and not\_*contain* suggest the willingness of the USA to build a strategic partnership with China. On the other hand, an unequal power relation is constructed in which a much stronger USA can choose either to engage with or contain China.

It is also of note that all the cases of one of the two top-ranking verbs in the *China–United States* pairs, *surpass*, occur in hypothetical context. For instance, in the following sentence, the verb *surpass* is preceded by *likely to*, indicating that for the USA at the time, China is considered a potential but not imminent risk. Nonetheless, the sentence helps to sound the alarm about China's possible challenge to the established power relation between China and the USA.

7) Before many more years go by, *China* is likely to surpass *the United States* as the world's biggest economy. ('China's Rush to Riches', 4 September 1994)

In addition, it is noticeable from Table 5 that while *Iran* is not among the top five countries in terms of

Table 6. Country pairs involving Iran in Period 2

Country (subject)	Verb	Country (object)	Frequency
China	provide	Iran	4
Argentina	turn down	Iran	1
Brazil	turn down	Iran	1
Germany	turn down	Iran	1
Russia	Sell	Iran	1
Iran	Help	China	1
Iran	(could) hit	United States	1

weighted degree centrality, it ranks third regarding betweenness centrality. This points to *Iran*'s important bridging role in the network. To further investigate how its links with other countries are represented, the subject–object pairs containing both *Iran* and other countries are shown in Table 6.

It can be seen from Table 6 that *China* and *Russia* seem to be in a cooperative relationship with *Iran*, as evidenced by such verbs as *provide*, *help*, and *sell*. On the other hand, *the United States* and three other countries (*Argentina*, *Brazil*, and *Germany*) are placed on the opposite side, as evidenced by the verb *hit* and the verbal phrase *turn down*. Again, an 'us versus them' division is discursively constructed (van Dijk, 1998, p. 267).

#### 4.2.3 Period 3 (2001-10)

A total of 436 subject–object pairs of countries among 43 countries are found in Period 3. The top five countries by weighted degree and betweenness centralities are listed in Table 7, and the network graph of the period is displayed in Fig. 5.

It can be seen from Fig. 5 that *China* and *the United States* stand out with the highest weighted degree centralities (232 and 223, respectively). In addition, compared with the network graph of Period 2 (Fig. 4), there are some other relatively large-sized nodes such as *North Korea* (95), *Japan* (71), and *Iran* (47). In addition, among the countries with the highest betweenness centralities are *China* (0.222), *the United States* (0.179), *Iran* (0.10), *Russia* (0.033), *Germany* (0.021), and so on.

With regard to the links between *China* and *the United States*, verbs that occur at least twice within *China–United States* pairs include *overtake* (7), *surpass* (7), *trail* (4), *join* (3), *pass* (3), *press* (3), *replace* (3), *urge* (3), *criticize* (2), *displace* (2), not\_*surpass* (2), and *tell* (2). On the other hand, the most frequent verbs for the *United States–China* pairs include *press* (5), *accuse* (3), *persuade* (3), and *see* (2). Noticeably, *China–United States* pairs far outnumber the *United States–China* pairs (64 versus 37) in this period, reversing the trend in Period 2 and implying an increasingly active role played by China in the two countries' relations as

 Table 7. Top five countries by weighted degree and betweenness centralities (Period 3)

Weighted degree centrality	Betweenness centrality	
China (232)	China (0.222)	
United States (223)	United States (0.179)	
North Korea (95)	Iran (0.10)	
Japan (71)	Russia (0.033)	
Iran (47)	Germany (0.021)	

represented by the newspaper. Compared with the networks of the preceding two periods, the verbs within China-United States pairs are much less dominated by ones denoting verbal processes but are featured by such action verbs as overtake, surpass, pass, and re*place*. These verbs turn the spotlight on China's rapid progress, which is represented as posing a serious challenge to America's dominant status in the power relation between the two countries. Moreover, these verbs appear not only in hypothetical but also in realistic contexts. In the following example, the present perfect tense of the verb replace coupled with the adverb already underscores the existential threat from China. Besides, a nomination strategy (Reisigl and Wodak, 2016, p. 33) is used to define China metaphorically as a red-hot economy to emphasize its strong growth momentum. Together, these linguistic features add to the narrative of strategic competition between China and the USA.

8) *China* has already **replaced** *the United States* as Japan's biggest trading partner, and many Japanese now see their nation's and their own personal future as linked to Asia's red-hot economies. ('Technologists See Brighter Prospects in Other Parts of Asia', 24 May 2007)

Apart from the Sino-US relations, *Iran* also stands out since, despite its being No. 5 in the rankings of weighted degree centrality, its betweenness centrality ranks third, which highlights its potential role as a key intermediary among other countries. This is substantiated by the forty-seven subject-object country pairs containing *Iran* where a number of countries are involved. It is also worth noting that among the forty-seven cases, *Iran* acts as the subject eleven times and the object thirty-six times, suggestive of its passive role in the relational network. These forty-seven pairs and the associated verbs are shown in Table 8.

Table 8 shows that the verbs within the subject-object pairs between *Iran* and *the United States* contribute to a portrayal of their bilateral relationship as one involving both tension and communication. On the one hand, it seems that they are at daggers drawn as suggested by such provocative verbs as *attack*, *deter*,



Figure 5. Network of countries in Period 3

Table 8. Country pairs invo	Iving Iran in Period 3	(frequencies in parentheses)
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Country (subject)	Verb	Country (object)
United States	persuade (1), not_persuade (1), stop (2), attack (1), deter (1), force (1), induce (1), prevent (1), punish (1)	Iran
China	urge (2), allow (1), ask (1), bringaround (1), prevent (1), not_report (1) <sup>a</sup>	Iran
Russia	supply (2), allow (1), accuse (1), penalize (1), <sup>b</sup> not_report (1), not_sway (1)	Iran
Germany/France	dissuade (1), persuade (1)	Iran
Britain	persuade (1)	Iran
Cuba/Syria/Venezuela	not_refer (1) <sup>c</sup>	Iran
India/Pakistan	not_penalize (1)	Iran
North Korea	supply (1)	Iran
Iran	approach (1), provide (1)	India
Iran	accuse (1)	Britain/France/Germany
Iran	approach (1)	China
Iran	lead (1)	Egypt/Saudi Arabia
Iran	grant (1)	Japan
Iran	threaten (1)	Israel
Iran	deter (1)	United States

Not\_report (Iran to the UN Security Council).

<sup>b</sup> As called upon by the Bush administration.

<sup>6</sup> Not\_refer (*Iran* to the UN Security Council).

force, stop, prevent, and punish. On the other hand, verbs including persuade and induce suggest the possibility for the United States to resolve its rivalry with Iran in a less confrontational way. A similar pattern can be found in the relationships between Iran and some traditional allies of the USA. For example, when

*Iran* acts as the subject, it *threatens Israel* and *accuses Britain*. However, it can also be found that *Britain persuades Iran* when the latter serves as the object. These mixed lexical choices reflect the confrontation and cooperation involved in the dynamic power relations between Iran and the USA as well as its allies. In comparison, countries such as *China*, *Russia*, and *North Korea* are represented as being more or less friendly with *Iran*, given the absence of such provocative verbs as those used between *the United States* and *Iran*. With regard to *China*, the verbs *allow* (1) and not\_*report* (1) indicate China's intention to maintain its friendly ties with Iran. On the other hand, verbs such as *urge* (2), *ask* (1), and *bring...around* (1) are used to indicate that China is trying to persuade Iran to keep its nuclear program in check, thus to some extent joining the ranks of *the United States*. This is further corroborated by the verb *prevent* (1) which can also be found in the *United States–Iran* pairs. One related example is given below:

9) China and the United States both want to prevent Iran from acquiring nuclear weapons, but their 'approach may differ' on the best tactics to achieve that result, Deputy Secretary of State Robert B. Zoellick said Wednesday after a round of meetings on the subject in Beijing. ('US and China Agree on Keeping Nuclear Arms from Iran, but May Differ on How, Envoy Says', 26 January 2006)

In this example, *China* and *the United States* appear in a conjunctive structure linked by *and*, followed by the adverb *both* that adds emphasis to the statement. These linguistic patterns clearly signal the two sides' shared stance toward Iran's nuclear program. However, despite their consensus on this point, in the second clause introduced by *but*, their differences in dealing with *Iran* are underscored, thus sustaining a dichotomy of 'us versus them'.

### 4.2.4 Period 4 (2011-20)

There are 427 subject–object pairs among 50 countries in this period. Table 9 shows the top five countries by weighted degree and betweenness centralities, and Fig. 6 presents the network graph of the period.

It can be seen that *China* and *the United States* are the two most prominent countries in terms of weighted degree centrality in the network, largely overshadowing the other countries. In addition, as regards betweenness centrality, the top-ranking countries include *China* (0.400), *the United States* (0.079), *Iran* (0.045),

**Table 9.** Top five countries by weighted degree and betweenness centralities (Period 4)

Weighted degree centrality	Betweenness centrality	
China (298)	China (0.400)	
United States (230)	United States (0.079)	
Japan (38)	Iran (0.045)	
North Korea (35)	Venezuela (0.024)	
Russia (32)	India (0.020)	

*Venezuela* (0.024), *India* (0.020), *Japan* (0.018), *Russia* (0.017), etc.

An inspection of the verbs within *China–United States* pairs reveals that the verbs that occur at least twice include *surpass* (13), *overtake* (8), *accuse* (5), *challenge* (4), *push* (3), *alarm* (2), *ask* (2), *blame* (2), *join* (2), and *urge* (2). The salience of such verbs as *surpass*, *overtake*, and *challenge* once again seems to emphasize that a stronger China has tilted the balance of power in China–US relations, strengthening Chinathreat narrative.

On the other hand, the verbs that appear at least twice within the United States-China pairs are accuse (9), push (6), urge (5), punish (3), attack (2), criticize (2), force (2), not\_accuse (2), not\_contain (2), persuade (2), press (2), tell (2), and treat (2). These verbs suggest that in response to China's increasing threat to its superpower status, the USA not only continues to verbally lash out at China (e.g. accuse, attack) but also begins to resort to more concrete, hard-line countermeasures (e.g. push, punish, force), especially under the Trump administration. In the following example, the verb punish creates a highly unequal power relation in which the USA has the capability to inflict heavy penalties on China.

10) One potentially big obstacle in the way of reaching a deal is how *the United States* **punishes** *China* if it doesn't meet its obligations. ('Trump Says U.S. May Delay China Trade Deal Deadline', 12 February 2019)

In addition to China and the United States, Japan is another prominent actor whose weighted degree centrality takes 3rd place and whose betweenness centrality ranks 6th. A closer look reveals that among the subject-object pairs of countries containing Japan, those between China and Japan are the most frequent (China-Japan: 12; Japan-China: 5). The verbs within China-Japan pairs include overtake (2), alarm (1), accuse (1), alienate (1), discourage (1), force (1), not\_invite (1), manipulate (1), press (1), not\_provoke (1), and starve (1), while the verbs within the Japan-China pairs include accuse (1), fear (1), not\_invoke (1), replace (1), and thwart (1). The higher frequency of China serving as the subject along with the negative connotations of the accompanying verbs seems to portray China as more of a hardliner in China-Japan relation. In addition, the top verb overtake (2) within China-Japan pairs seems to align Japan with the USA as being under the threat from China due to the latter's rapid development.

On the other hand, it can be seen from Fig. 6 that *Japan* is also connected with *the United States* in a bidirectional way. More specifically, the most frequent



Figure 6. Network of countries in Period 4

verb in the Japan–United States pairs is join (2), and that in the United States–Japan pairs is urge (2). Two examples are given below:

11) Japan joined the United States and the European Union in filing the case, the first time that Tokyo has brought a trade case against its much larger neighbor. ('In Cities across China, Protests Erupt Against Japan over Disputed Island', 19 August 2012)

12) The United States has been urging Japan and South Korea to pick up more of the burden of defending against China and North Korea, but the countries' latest standoff over islets that sit between them, known as Takeshima in Japan and Dokdo in Korean, contributed to South Korea's decision to back out of an agreement to share military intelligence with Japan. ('Islands Reflect Japanese Fear of China's Rise', 22 August 2012)

The above two examples reflect the interplay among the USA, Japan, and China. In the first example, the verb *join* indicates a united front between *the United States* and *Japan* (as well as the European Union). Moreover, toward the end of the sentence, China is referred to as [Japan's] much larger neighbor. This nomination strategy not only describes China's bigger territory but more importantly helps to construct an unequal power relation where China appears to be a bully. In the second example, on the one hand, the syntactic role of the United States as the subject, combined with the coercive verb urge, depicts another unequal power relation between the United States and Japan (as well as South Korea) in which the former seems to be able to manipulate the latter countries. On the other hand, they are on the same side against their shared enemies, namely China and North Korea, which are constructed as the negative 'them'.

As shown above, in the news reports on China over the four periods, an increasing number of countries are brought into the picture across time (twenty-five, thirty, forty-three, and fifty countries, respectively), signaling China's growing involvement in the global community portrayed by *The New York Times*. Furthermore, the connectedness of the networks also sees a generally rising trend with the average degree being 2.96, 4.13, 5.44, and 5.20 for the four periods, respectively. This suggests that in these reports, China and the related countries become increasingly interconnected. For example, in Period 1, although *China* is linked to both *Iran* and *the United States*, the latter two countries are not linked through the subject–object dependency. By comparison, in Period 2, the three countries are linked to each other.

#### 4.3 A summary

In relation to the first research question, the SNA results yield four distinctive networks corresponding to the four periods. These networks demonstrate the complexity of international relations as constructed in news discourse. The increasing cohesiveness of the networks coincides with China's gradual integration into the world after the inception of its reform and opening-up policies in 1978, which indicates that the reporting of The New York Times generally reflects China's expanding global reach over the four decades. During the four periods, the USA consistently occupies a pivotal place, which may be explained by the focus of The New York Times on its home country and the significant role played by the USA in the international network surrounding China in reality. This US-centered perspective and the proclaimed 'mission' of the newspaper to reflect 'social reality' can also be used to explain the highlighting of some other nations. For example, Vietnam stands out mainly in the network of Period 1, during which China was involved in border conflicts with the country. By comparison, countries such as Russia, Iran, Japan, and North Korea are given more consistent attention in the reports as the USA has had a great stake in their relations with China.

To answer the second research question, corpusbased linguistic and discoursal analysis helps to shed light on the specific ways in which some salient national actors and their connections are discursively constructed. The results show that the power relations between these countries constructed in the news reports generally project a powerful America, which serves to reproduce and sustain its status as the No. 1 superpower in the world. On the other hand, China is typically represented as a country seeking to challenge established international power relations. In such cases, China is often portrayed as a hardliner, a competitor, and even a bully. This tendency echoes that of Tang (2021), who conducted a corpus-assisted critical discourse analysis of China's image in American mainstream newspapers and found that China was often negatively represented as the Criticized, the Punished, the Helped, etc.

Regarding the third research question, it can be seen from the above discussion that as an American national newspaper, *The New York Times* tends to report on the international network surrounding China through the Western lens and with an Americentric bias which is based on America's national interests. Specifically, it is shown that the newspaper tends to promote a highly ideological categorization of the international community into an 'us' group, consisting of the USA and its allies, versus a 'them' group, consisting of America's enemies or competitors. For example, it is revealed through looking at the intervening verbs between Iran and other countries in Periods 2 and 3 that the newspaper seems to create an 'us versus them' division among countries based on the US-Iran relation, with the USA and its allies clustered together, as opposed to countries more friendly to Iran such as China, Russia, and North Korea. This alignment can be attributed to the longstanding tense relation between the USA and Iran after they severed diplomatic ties in 1980 following the 1979 Iranian Revolution. Over the last four decades, the USA has imposed a total embargo on trade with Iran in 1995, declaring Iran as a member country of the 'axis of evil' in 2002, increasing sanctions on Iran over its nuclear program over the last decade through multiple statutes and executive orders, etc.<sup>4</sup> On the other hand, China has been Iran's top economic partner and has maintained a strategic relationship with the country, which poses a serious challenge to the 'USled international order' (Green and Roth, 2021, p. 3).

# **5 Discussion**

This exploratory study illustrates that the approach of SNA offers a new analytical angle for CDS with the assistance of corpus tools. As a form of critical social research, CDS seeks to offer 'problem-oriented explanatory critique', which entails its focus on exposing power relations internalized in discourse (Chouliaraki and Fairclough, 1999, p. 62). On the one hand, discourse encodes a number of social actors forming complex relational patterns and structures, and on the other hand, SNA is precisely intended to explore networked social relations mathematically and graphically. As such, the application of SNA in CDS stands to achieve synergy due to their overlapping concerns from a theoretical perspective.

From a methodological perspective, as CDS is problem oriented and thus aims to analyze and interpret 'social phenomena that are necessarily complex' (Wodak and Meyer, 2016, p. 2), it has to draw on insights from various disciplines in order to gain a better understanding of 'how language functions in constituting and transmitting knowledge, in organizing social institutions or in exercising power' (Wodak and Meyer, 2016, p. 7). As a result, CDS has been distinguished for its interdisciplinarity and methodological heterogeneity. This study shows that SNA is another promising addition to its methodological repertoire. It may prove especially valuable when investigating social relations as they can be too complex to be effectively captured by such traditional corpus linguistics tools as concordance, collocation, or keyword analysis. In addition, as the old saying goes, 'a picture is worth a thousand words'. One of the biggest advantages offered by SNA is that the visualization of how social actors are interconnected can contribute to an intuitive understanding of the network, highlighting salient actors and relations from within for further analysis.

Guided by relevant metrics and graphs from SNA, detailed linguistic and discoursal analysis of selected social actors in co-text can be carried out with the help of corpus tools. The findings are in turn to be interpreted in broader socio-political contexts from the perspective of CDS to obtain a deeper understanding of the social identities of the relations between the represented actors in discourse, making it possible to answer such questions as 'how relations between social actors are discursively represented' and 'why are they represented in this way rather than another way'.

As a final note, this article proposes the following workflow when integrating SNA into CDS, especially for unstructured texts. First, the researcher may utilize some techniques based on natural language processing (NLP) (e.g. dependency parsing) to generate relational data from texts, which are a prerequisite for SNA. Importantly, a relatively sizable corpus is necessary to obtain sufficient instances. Next, the statistics and visualizations yielded by SNA can help to highlight certain actors and relations and thus provide potential entries for detailed, corpus-based linguistic and discoursal analysis, on the basis of which underlying ideological and socio-political factors can be interpreted.

# 6 Conclusion

This article explores the potential of integrating techniques of SNA into corpus-based CDS through a case study on the representation of international relations in the news reports on China by *The New York Times*. With insights from relevant metrics and visualizations of SNA, combined with corpus-based linguistic and discoursal analysis, the case study reveals the ways the international relations surrounding China are diachronically constructed in the news as well as the underlying socio-political concerns. Overall, integration of SNA into corpus-based CDS proves valuable in uncovering and critically examining discursive representations of complex social relations.

The present case study acts as an attempt to show how SNA can be applied to CDS and more possibilities can be explored in future research. For example, it is worth extending the method proposed in the present study to the analysis of other social relations in discourse (e.g. those between people or companies) as well as other language patterns. What is more, SNA consists of a great variety of network statistics, which can be broadly categorized into those related to 'the relative position of the actor in the network' and those concerned with 'the structure of the network itself' (Chiesi, 2015, p. 521). The present study draws on only a few of the basic ones, and there is vast space for the utility of other SNA metrics in aiding CDS in further research.

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# Notes

- 1. Available at http://mrvar.fdv.uni-lj.si/pajek/.
- It was generated on https://corenlp.run/, accessed on Sep. 18, 2021. The example was taken from "China Creates a World Bank of Its Own, and the U.S. Balks", *The New York Times*, 4 December 2015.
- The country names are based on the list of United Nations' member states (https://www.un.org/en/about-us/memberstates.). Some variants of a certain country's name were aligned (e.g., USA, America, and the U.S. were all replaced by United\_States).
- 4. See https://www.state.gov/iran-sanctions/.

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