Public Diplomacy on Social Media:
Analyzing Networks and Content

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Measurement has been and still is a challenging issue in the practice and study of public diplomacy. In this article, we propose a model to assess the impacts of public diplomacy projects by creating a link between social media communication campaigns and the perception of nations by audiences—or nation brands. We demonstrate how the model can be used to analyze the digital communication projects of four countries: Australia, Belgium, New Zealand, and Switzerland. Using data sets composed of tweets sent by and about four countries, we focus on the messages crafted by both official public diplomacy projects and nonstate users, and on the relations established as a result.

Keywords: public diplomacy, country images, nation branding, 4D model, Twitter, social media, Australia, Belgium, New Zealand, Switzerland

Measurement is a lingering question in public diplomacy. The challenges are multilayered, ranging from the length of time it takes public diplomacy projects to reach their objectives to the intangible nature of their outcomes (Banks, 2011). Various success criteria for these projects have been recommended, such as helping achieve foreign policy goals (Sevin, 2017), building relations (Zaharna, 2014), increasing public presence (Yun, 2006), and the infamous "winning the hearts and minds of people" arguments. This research contributes to the discussions on measurement and evaluation in public diplomacy practices by proposing a framework that captures a specific set of public diplomacy outcomes on Twitter that are run or funded by government offices in four countries: Australia, Belgium, New Zealand, and Switzerland.

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Date submitted: 2018–01–16

We argue that such a framework is necessary and advances our appreciation of measurement in three ways. First, we move measurement from preset success criteria. Public diplomacy projects can be measured in terms of their effectiveness in reaching the success criteria set in the planning phases. However, an overreliance on these criteria carries the risk of turning them into objectives, thus decreasing the effectiveness of public diplomacy projects. The experience of the U.S. State Department with paid Facebook advertisements is an illustrative case for this point. In an attempt to increase engagement, practitioners have invested $630,000 on paid campaigns and attracted more likes to the pages affiliated with the State Department (Gates, 2013). The measurement criterion—number of likes—became the ultimate objective. Despite the increased number of likes, it is not possible to argue that these campaigns created meaningful relations with target audiences. For practitioners, the number of likes became a target rather than a criterion to measure the success of relationship building. Following Goodhart's law, we argue that these preset criteria cease being good measures as soon as they turn into targets themselves (Hoskin, 1997).

Second, we propose a measurement system that examines not only country images but also relationships formed between practitioners and target audiences. We posit that it is necessary to combine content and social links, following two different yet interrelated approaches to public diplomacy: informational and relational (Zaharna, 2014). The former approach sees public diplomacy as an endeavor to disseminate messages, whereas the latter highlights the importance of interactions with audiences and relationship building. Our measurement framework captures both the content and the flow of messages, and thus the informational and relational aspects of public diplomacy projects.

Third, our model creates a link between social media communication campaigns and the perception of nations by audiences—or nation brands. Public diplomacy projects have the inherent objective of managing the international environment through communication processes (Cull, 2009). Therefore, we posit that the reputation and perception of a country could and should be seen as an outcome of public diplomacy. We further argue that social media presents a unique platform for individuals to present their honest opinions and thus is a reliable arena for data collection. Our model focuses on identifying the relationships individuals form while discussing matters related to country images and on unearthing the topics they accentuate.

The Need for Measurement: Nation Brands, Public Diplomacy, and Social Media

Contemporary communication processes are influenced by the rising adoption of digital technologies—such as tablets and smartphones—which enable individuals with Internet access to broadcast messages and interact with other users (Cormode & Krishnamurthy, 2008). In addition to initial financial savings, social media platforms enable interaction between countries and users as well as among users themselves.[2] Whereas viewers of a television show have no ability to communicate with one another through their television sets, Twitter users can send messages to each other. The dual understanding of interaction and user-generated content constitutes the basis of social media platforms such as Facebook, Twitter,

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[2] Our argument here is not that running social media projects requires a smaller budget. Recent studies (e.g., Manor, 2016) have shown that maintaining a global social media presence is a costly endeavor. However, the initial cost of starting a Twitter account, for instance, is lower than starting a radio station.

Instagram, and Snapchat. All these outlets encourage users to voice their own opinions and form communities (boyd & Ellison, 2007).

Public diplomacy is not exempt from this new approach to communication. Given the objective of managing the international environment through communication (Dasgupta, 2011; Yun, 2012), social media platforms are instrumental in engaging with target audiences. In the digital public diplomacy era, projects can take place on platforms where users can actively create and share content (Arsenault, 2009). These new platforms are not solely tools; rather, they influence the structure of communication (Ross, 2011). Mass media enables the practitioner countries to send their messages to audiences unilaterally, such as through international broadcasting projects. In digital public diplomacy, audiences can (1) interact with the messages on the same platform, (2) disseminate their own content, and (3) create their own networks (Arsenault, 2009). Therefore, on such projects, the content shared by official practitioners might be modified, ignored, or even displaced by other content. For example, Voice of America can control everything it broadcasts, but @VOANews, its Twitter account, does not enjoy the same level of exclusive control. The aim of international broadcasting projects is engagement with other users (a reciprocal interaction rather than unilateral outreach), and measurement processes attempt to capture engagement (Metzgar, 2012), such as getting likes on Facebook or retweets on Twitter; in contrast, informational campaigns aim to change public opinion or perception (Goldsmith & Horiuchi, 2009).

Public diplomacy and nation branding have an inherent—albeit complicated— relationship, because both practices involve international communication projects carried out by states. Gyorgy Szondi (2008), in his comprehensive work, introduces five possibilities to explain how these two practices connect. These five explanations cover all the plausible connections, ranging from the two terms describing completely different actions, with public diplomacy focusing solely on political gains and nation branding on economic gains, to being two names given to the same practice of international communication (Szondi, 2008). There is a tendency among marketing scholars to see public diplomacy as a subset of nation branding, because the former involves only a government's communication policies, whereas the latter term refers to how the nation as a whole is presented and perceived (Anholt & Hildreth, 2004). Yet the practice of public diplomacy goes beyond promoting policies and includes communicating a country's ideas and values as well as building mutual understanding and relationships (Wang, 2006). In other words, limiting public diplomacy to policy promotion is not an accurate explanation of the practice (Anholt, 2006). Rather, public diplomacy "should be seen in the context of the changing architecture of international relations in an increasingly interdependent and interconnected world" (Ang, Isar, & Mar, 2015, p. 371). Within this environment, nation branding and public diplomacy are "distinct but not entirely dissimilar responses to the increased salience of countries' identities" (Melissen, 2007, p. 19). Our research positions nation branding as an activity that primarily involves the management of how country images are portrayed and perceived by target audiences (Fan, 2010; Fitzpatrick, Fullerton, & Kendrick, 2013; Pamment, 2011), whereas public diplomacy is an overarching term that explains the engagement with foreign societies not only through image-related messages but also through cultural relations, policy communications, and relationship management (Melissen, 2007).

The observation that the practices of public diplomacy on social media have the potential to influence how a nation is perceived by target audiences constitutes the basis of this research. A country's

image is basically the "network of associations in the consumer's mind based on the visual, verbal, and behavioral expression of a place" (Zenker & Braun, 2010, p. 5). Audiences create their own perceptions of a country based on what the government communicates through its communication campaigns on different media platforms, through its actions in the international arena, or through its historical, cultural, and natural landscape (Kaneva, 2011). The messages on digital media—crafted by either states or nonstate users—can influence a country's visual and verbal expressions and further highlight certain behaviors over others (Sevin, 2017). Therefore, these digital interactions have the potential to change the way a country is perceived.

        The intersection of country images, public diplomacy, and social media also presents two major obstacles to measurement practices: operationalization and causality. How can a model capture the entire network of associations and also argue that the social media messages have a role in the establishment of the said network? The growing importance of nation brands in international relations and the institutionalization of practices of country brand management have increased the demand for models and measures that allow for respective empirical analyses of the country image and its effects. Research domains such as marketing and social psychology have devoted considerable empirical attention to understanding the constitution and effects of country images from their field perspective. Zenker and Braun (2010) categorize these attempts into three groups: qualitative/free associations, quantitative/attributes, and mixed methods/networks. Current practices of public diplomacy and nation branding rely on aggregated indices such as the Nation Brands Index, Best Country Score, and Country RepTrak, all of which are quantitative measures. The results generated tend to favor ease of reporting over in-depth explanations. Given the lack of details, it is possible to argue that the existence of nation brands depends on these indices because nation brands do not have a presence beyond the figures and rankings assigned to them (Merkelsen & Rasmussen, forthcoming). Yet the applicability of nation brand indexes is of limited value to communication professionals, because it is virtually impossible to discuss the associations in the minds of the target audiences through these tools. The academic literature on public diplomacy and nation branding widely favors a conceptual or a historical focus on country brand images (Kunczik, 2016; Nye, 2004). Recently, however, new empirical instruments are discussed. Insch and Florek (2008) focus on resident satisfaction as a method to measure brand images. Sevin (2014, forthcoming) recommends using semantic network analysis to pinpoint the brand associations.

        At its essence, the difference between all these approaches is based on a choice between breadth and depth. Quantitative methods help researchers create scores and scales that can be used to compare countries' brands. The Nation Brands Index follows such an approach and compares the brands of 50 countries each year (GfK, 2017). But this index does not provide in-depth information about which dimensions are the value drivers of the country images. The results in 2017 rank Germany, France, and the United Kingdom as the top three countries (GfK, 2017); however, it is not possible to infer further information from this ranking. Another quantitative survey study approach is driven by the idea that the different country image dimensions can be operationalized and measured by various items and analyzed via a partial least squares structural equation (PLS-SEM) approach, allowing for an in-depth assessment of the relevant value drivers in each of the country image dimensions as well as on target variables such as word-of-mouth communication, investing, or travel behavior (Ingenhoff & Buhmann, 2016; Ingenhoff, Zhang, Buhmann, White, & Kiousis, forthcoming). With the help of PLS-SEM, an additional importance-performance

analysis allows public diplomacy practitioners to develop specific communication strategies across different countries and cultures. Qualitative methods highlight the unique aspects of brand images and present all the associations in the minds of target audiences. Yet in-depth analysis makes it difficult to carry out a comparison between countries. For instance, the nation brand of Australia might include associations about its beaches, whereas the Swiss brand image might invoke associations about its mountain regions. Comparing associations about mountains and beaches is not likely to yield meaningful results—because they are unique aspects of countries—unless a category that brings these associations together is devised.

To overcome this challenge in empirical terms, we rely on a definition of country brand images as subjective attitudes toward nations and their state consisting of four different but closely interrelated dimensions: functional, normative, aesthetic, and sympathetic (see Buhmann & Ingenhoff, 2015; Ingenhoff, White, Buhmann, & Kiousis, forthcoming, for a longer discussion on the topic). Based on the two-component model of attitudes (Ajzen, 2001), the functional, normative, and aesthetic dimensions constitute the cognitive component, while the sympathetic dimension constitutes the affective component of the country image. The functional country image dimension, which covers beliefs about a country's competences and competitiveness, is specified with reference to the attributes of national economy and political organization. It consists of beliefs about the state of the economy and national businesses, the competitiveness of a country's products and services, its labor markets and educational system, the competences and effectiveness of the political system as well as the country's performance in research and technology. The normative country image dimension, which covers beliefs about the integrity of a country, is specified in relation to the attribute of norms and values and consists of specific judgments regarding both the social and ecological responsibilities of a country. The aesthetic country image dimension, which covers beliefs about the aesthetic qualities of a country, is specified by drawing on the country's attributes of public culture, traditions, and territory. It comprises judgments regarding the attractiveness of a country's culture and traditions as well as the beauty of its landscapes and scenery. Finally, the sympathetic country image dimension, which constitutes the affective component of the country image construct, consists of general feelings of liking and fascination for a country. It is thought of as an outcome or result of the cognitive beliefs that people hold about a country.

Overcoming the causality requires linking nation branding messages with audience perceptions. Yet, because these perceptions might be influenced by variables other than nation branding campaigns— such as personal experiences, policy decisions, or other competing messages—it is not possible to use the changes in the networks of associations to argue for the effectiveness of messages. Consequently, in this model, the causality argument presented is not a direct one. In other words, we do not posit that demonstrating the relations and messages together proves a direct causal link between perception change and nation branding projects. Rather, our cautious claim is that combining relations and messages helps us make more credible contributory causality arguments within the complex nature of the international communication scene.

In social media environment, the link between digital public diplomacy and nation brands is based not only on the content but on the flow of the messages. We acknowledge that, despite their investment in digital diplomacy projects and attempts to engage with users on social media platforms (Manor, 2016), countries are not the only message resources available to audiences. Each Internet user meets the

infrastructural requirements to disseminate messages. This is why a proper measurement instrument needs to encompass the entire network (Benkler, 2011), including the content and the relations. The next section provides further details on our operationalization of country brands and networks.

Capturing the Associations: Relations and Messages

Answering the need for a more inclusive measurement method, our framework proposes to capture both the content of the messages and the structure of the networks built as a result of engagement among users on social media. The former refers to the ideas expressed in the messages, and the latter includes actions that create links between users, such as retweets and mentions on Twitter and page likes on Facebook. This section presents the details of the framework through a comparative study of nation branding projects on Twitter. We chose to use Twitter as an example of digital communication for three reasons. First, the platform enjoys wide usage across the world (Alexa, 2016). Second, all four countries selected for the study have active projects on Twitter, making it possible to design a comparative study. Third, the usage patterns of Twitter provide a unique opportunity to study both the content shared and the networks created. Each tweet contains a text that can be analyzed with respect to the country image dimensions addressed. Moreover, users who are not necessarily connected can interact with one another through mentions and retweets. For instance, on Facebook, a previous friend status with other users or a like with organizational pages needs to be established prior to engagement. On Twitter, users can easily retweet or mention other users without establishing a following/follower relationship. Therefore, the interactions among users are based on the subject matter.

The objective and originality of our framework are based on its capacity to present an inclusive explanation of the perception of nation brands through four dimensions of images while using the network structure and relations to help overcome the causality obstacle. This research defines a Twitter network as being composed of users who tweet using the same hashtags. A network is composed of various actors coming together for a specific purpose. A hashtag is used on Twitter to tag content and associates such content with others using the same hashtag (Chang, 2010). A hashtag-based search yields all content related to an event or a subject. For instance, a search query on #Switzerland yields all tweets that contain the identified hashtag.

Our analysis addresses three research questions. First, following a relational approach to public diplomacy, we attempt to identify two aspects: the actors included and the structure of their relations (Zaharna, 2014). Our first research question involves these actors. We aim to identify the Twitter users who show high levels of activity.

RQ1:   Who are the actors in Twitter networks?

The structure of a network depends not only on the actors but also on the relationships between them. In our study, a relationship takes place when a user mentions another user or retweets content created by another user. Such interactions increase the prominence of a user as other users include him or her in their conversation.

RQ2:   What is the structure of the networks?

To present a more inclusive picture of communication taking place on digital media and analyze the value drivers of each country image dimension addressed in these tweets, we also include an analysis of the content. In addition to the number of tweets, retweets, and mentions, we are interested in the content of the message to assess the nation brand perception of countries. We are interested in uncovering which dimensions are most prominent in each country and the respective networks as well as which topics are used within the dimensions.

RQ3:   Which dimensions of country brand images are included in the messages?

With these three research questions guiding our work, we carried out a comparative study of four nations practicing public diplomacy: Australia, Belgium, New Zealand, and Switzerland. We use these four countries as illustrative cases to build our measurement framework (Levy, 2008) because all of them are active practitioners of digital public diplomacy. The governments either directly control or fund the projects and the Twitter accounts through, respectively, the Australia Unlimited, Focus on Belgium, 100% Pure New Zealand, and House of Switzerland projects and the @AusUnlimited, @belgiumbe, @purenewzealand, @HofSwitzerland Twitter accounts. We included two countries from two continents to ensure comparability across geographic regions while expanding the coverage of our illustrative case selection (Gerring & Cojocaru, 2016). Last, all four countries have individualistic cultural traits (Hofstede, 2016). In collectivist cultures, the digital relations might have been influenced by off-line relationships and expectations. However, in individualist cultures, it is expected that these digital relationships and interactions will be based on communication needs rather than on a cultural propensity to create communities.

Data Gathering

Our data gathering process was composed of three steps, all taking place on Twitter, using R's twitteR package (Gentry, 2013) and BrandWatch—a commercial social media monitoring tool. The first step focused on the official Twitter accounts (@AusUnlimited, @belgiumbe, @purenewzealand, @HofSwitzerland). We scraped all the tweets sent by these accounts (their Timelines) and the list of following and follower accounts. We separated the following/follower lists and interactions (mentions and retweets on Timelines) as network data for egocentric networks. We retained the texts for content analysis.

Second, we carried out a hashtag search query, gathering all tweets that included #Australia, #Belgium, #New Zealand, and #Switzerland between September 1 and October 31, 2016. The dates and duration were selected to generate a volume of data large enough for network and content analyses. Data sets included 261,386 tweets for Australia, 68,843 for Belgium, 779 for New Zealand, and 51,492 for Switzerland. We constructed four dyadic-relation data sets based on mention and retweet interactions. We controlled for the structured use of bots by searching for high volumes of content from unidentified users, frequent content creation from unidentified users, and high levels of interactions starting from unidentified users. Our control process revealed no evidence for structured use of bots. We retained the body of the tweets and hashtags for analyzing their content.

Third, we carried out an in-depth analysis of modularity groups acquired from hashtag-based interaction networks. The modularity measure, drawn from social network analysis literature, argues that the relationships across a network are not uniform and networks will have smaller and denser communities (Wasserman & Faust, 1998). In other words, actors within the same modular group will interact with one another more than they will with actors from other modularity groups. We gathered data about the characteristics of larger modularity groups and interactions between different modularity groups.

Data Analysis

Our data analysis focused on two types of values: texts and links. RQ1 and RQ2 are posed to better explain the interactions with actors regardless of the content of the interaction. We solely focused on social network analysis measures—mainly centrality and modularity measures—to explain the structure of the networks. Two sample tweets—one from the @HofSwitzerland data set and one from the #Switzerland data set—are shown in Figure 1. The instances of interactions between @IAncientOne and @HofSwitzerland and between @DavidRomeiPHD and @NZZ are included as a link.

Figure 1. Sample tweets from the @HofSwitzerland and #Switzerland data sets.

To address RQ1 (actors in the network), we examined the number of tweets and interactions. The number of tweets using a specific hashtag indicates the amount of content created by a user. The interactions are listed as dyadic relations. In other words, we establish a direct tie between users. If user A mentions user B in a tweet, we create a tie where user A is a source and user B is a target. The tweets shown in Figure 1 include one tweet for the user @DavidRomeiPHD and @HofSwitzerland. The interactions are coded as @HofSwitzerland (source), @IAncientOne (target) and @DavidRomeiPHD (source), @NZZ

(target). In directed networks, degree centrality is the sum of *in-degree* and *out-degree* measures: respectively, the number of relations originating from or ending with an actor. The interaction illustrated in the figure constitutes an out-degree count for @DavidRomeiPHD and @HofSwitzerland and an in-degree count for @IAncientOne and @NZZ. Degree centrality numbers show us the users that interact with others.

We used in-degree, out-degree, degree centralities, and tweet volumes to identify prominent actors in the networks. We also used the egocentric network based on the following and follower relations of official accounts. In such a network, each user—apart from the official account—has a degree centrality of one (either follows the official account or is being followed by the official account) or two (follows and is followed by the official account). We further examined the users with degree centrality of two.

To address RQ2 (structure of network), we used degree centrality, betweenness centrality, and modularity measures. The network of interactions among actors using the #Switzerland hashtag is shown in Figure 2. The node size is based on degree centrality, and the color indicates modularity groups. The labels are the Twitter handles for the users with the highest degree centrality in each modular group. We further analyzed these groups to assess why they stand out as separate communities. We also calculated betweenness centrality, which indicates the number of shortest paths that go through a user while two other users try to reach each other. A higher value means that the user has the role of a connector among different modular groups.

To address RQ3 (content of messages), we incorporated both relational and informational understandings of public diplomacy (Zaharna, 2014). From an informational perspective, we focused on the frequency of hashtags used. Our data sets included 100 hashtags per country (see Table 4 for the top 10 hashtags per country). From a relational perspective, we focused on the occurrence of hashtags and tweets that attracted the most interest in specific modularity groups. In other words, we identify the frequency of hashtags in modularity groups and examine the tweets that have been interacted with most frequently by the users in the modularity group.
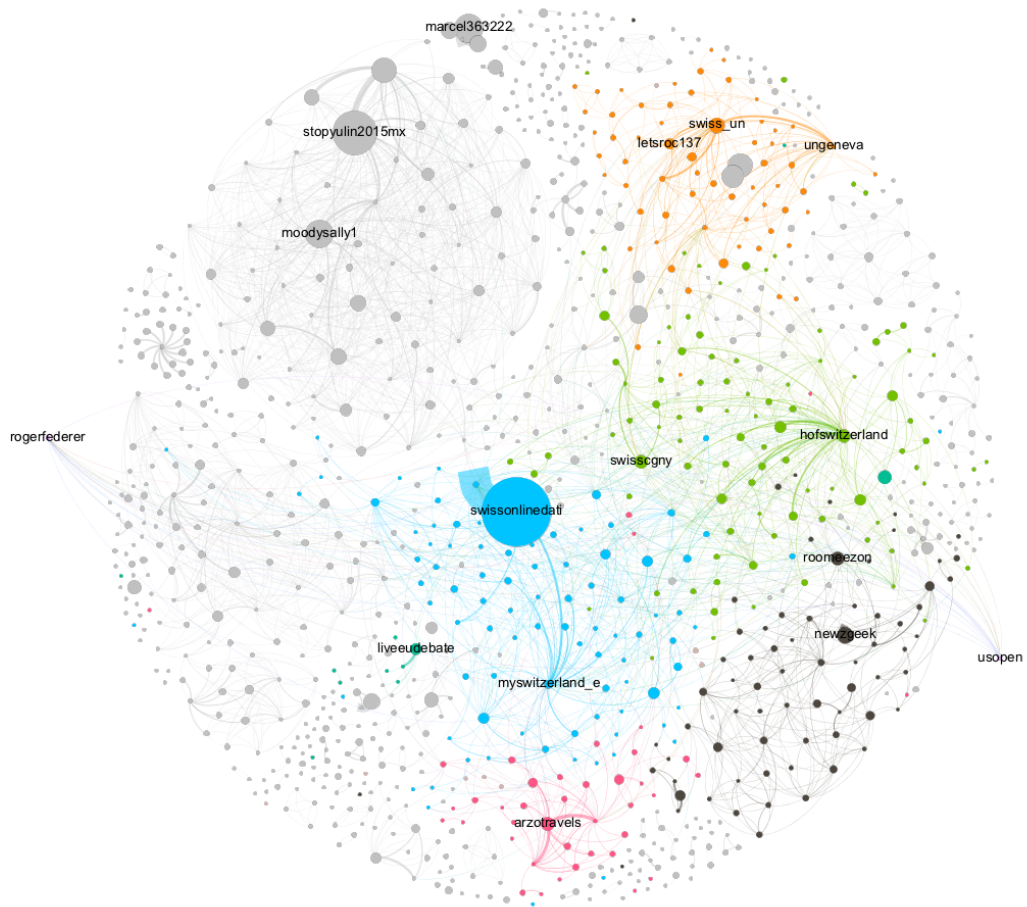
Figure 2. *The network structure for #Switzerland.*

Findings

To understand the actors in networks, we analyzed the accounts following, as well as those followed by, the official accounts. Table 1 shows follower and following numbers, the ratio of following to follower, and the number of accounts that both are followed by the official account and follow the official account.

Table 1. Following and Follower Networks.

	Australia	Belgium	New Zealand	Switzerland
Follower	4,941	24,384	70,930	12,515
Following	2,183	501	9,136	1,633
Ratio	44.18%	2.05%	12.88%	13.05%
Following and follower	712	286	67	490

Australia Unlimited has the highest following-to-follower ratio of all four accounts. Even so, the ratio is below 50%. A total of 712 accounts both follow and are followed by @AusUnlimited. Belgium's @belgiumbe has the lowest following-to-follower ratio with about 2%. There are 286 accounts that both follow and are followed by @belgiumbe. New Zealand has the largest following/follower network with more than 70,000 accounts, but there is a low ratio of following to follower despite the large number of accounts involved. Switzerland presents another case of a low ratio, with only 490 accounts that have the dual interaction.

We inquired further about the types of accounts that are both following and followed by the official accounts. For Australia, it is observed that a variety of individuals might be relevant to the Australian brand, ranging from artists (such as the Mofo Boys, @themofoboys) and scientists (such as Prof. Jenny Fisher, @AtmosJennyF) to official accounts (such as Ambassador Lynette Wood @AusAmb_DE). For Belgium, nearly all the accounts are official accounts, ranging from the Flemish government (Gelijke Kansen, @GelijkeKansen) to tourism offices (Ville de Tournai, @VilledeTournai) to police departments (LP Berlaar-Nijlen, @LPBerlaarNijlen). The 67 accounts in @purenewzealand are mainly travel authors and bloggers (such as David de Rothschild, @DRexplore; Emilie Ristevski, @helloemilie) or travel agencies (such as USIT, @UsitTravel). House of Switzerland, as an account, provides a peculiar study. With a low following-to-follower ratio, it is another example of an official account that does not show much interest in individual users. However, it is interesting that, of the 1,603 users it follows, 1,143 do not follow it back. Although it is not surprising that certain institutional accounts such as @unesco and @cop22 do not follow House of Switzerland back, even some Swiss tourism accounts, such as @myswitzerlandIN (the Swiss tourism office in India), do not follow House of Switzerland.

We concluded our actor analysis by assessing the relatively more prominent users in the networks through weighted in-degree and weighted degree measures. The weighted in-degree refers to the total number of instances, including repeated interactions, in which the account was mentioned. The weighted degree calculates the total number of instances in which an account was mentioned or actively mentioned another user. The top five accounts for all four countries across the measures are shown in Table 2.

Table 2. Actors in Whole Networks.

	Australia	Belgium	New Zealand	Switzerland
Weighted in-degree	imariajohnsen	emekagift	zentoravisas	usopen
	turnbullmalcolm	terrorevents	worldluxurynews	rogerfederer
	ken_go_101	nopressure365	bobclubsnz	hofswitzerland
	debnicolina	daily_express	abc7news	steve_hanke
	b_ubiquitous	sunnyrainer	usmc	websummit
Weighted degree	imariajohnsen	emekagift	zentoravisas	usopen
	turnbullmalcolm	terrorevents	bobclubs	rogerfederer
	ken_go_101	nopressure365	barbyana1	hofswitzerland
	debnicolina	daily_express	worldluxurynews	yostartups
	b_ubiquitous	sunnyrainer	bobclubsnz	steve_hanke

Prominent actors for Australia are mostly people interested in digital markets (such as the search engine optimization marketer @imariajohnsen and Google Ad Sense enthusiast @ken_go_101). One exception to this observation is Prime Minister Malcolm Turnbull (@turnbullmalcolm). The prominent actors in the Belgian network come from various backgrounds, including a newspaper (@daily_express). Conspiracy accounts were also observed in the network.[3] New Zealand's small network was composed of two links shared initially by @zentoravisas (an immigration consulting company) and @abc7news (a local news station). For Switzerland, Roger Federer, the Swiss tennis player, and U.S. Open, the tournament he was a part of, gathered the interest of many. Steve Hanke (@steve_hanke), an American professor, used Switzerland as an example for Brexit negotiations. The other two accounts, @websummit and @yostartups, are prominent due to Swiss start-ups participating in a conference.

Responding to our second question, we present descriptive statistics for overall networks in Table 3. The first row, nodes, shows the number of individual users included in the network. The second row, edges, indicates the total number of unique interactions between these users. The third and fourth rows show the per-user unique interactions and per-user interactions, respectively. The difference between these rows comes from repeated interactions. For instance, if user A retweets user B twice, it counts as one edge and one interaction toward the average degree measurement but two interactions toward the average weighted degree measurement. The fifth row, diameter, shows the maximum distance between any users in the network. A small diameter means that the network is compact. For instance, in the New Zealand network, all the actors are connected with one another. A large diameter means that the actors are indirectly connected. In the Belgium network, it might take up to 11 steps to move from one actor to another. The sixth row, modularity, shows the strength of subgroups in a network. High scores (those that are close to 1.0) mean that users in these subgroups have more interactions among themselves than they do with the other members of the networks. The last row, connected components, shows the number of groups that are

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[3] Conspiracy accounts refer to users who share unorthodox readings of European politics. For instance, @royalnavynews uses Glorious Britain as its screen name and refers to Triple Entente of World War I in its reading of European politics.

connected directly or indirectly. The Australian network consists of nearly 4,500 smaller groups that are not connected with other groups. The New Zealand network is composed of 30 such smaller groups.

Table 3. Descriptive Statistics for the Networks.

	Australia	Belgium	New Zealand	Switzerland
Nodes	58,406	13,105	86	20,163
Edges	89,224	16,658	62	32,045
Average degree	1.528	1.487	0.721	1.589
Average weighted degree	2.046	2.251	0.942	1.786
Diameter	22	11	1	15
Modularity	0.912	0.951	0.912	0.863
Connected components	4,549	1,452	30	1,429

The network structures of countries (with the exception of New Zealand due to its size) are similar. The remaining three networks are large with limited interactions among their members. The average degree measure is around 1.5, meaning that an actor on average has one and a half interactions with the rest of the network. Modularity is high, indicating that actors interact more with other members of their connected components than with the rest of the entire network.

Our third research question focused on the content of the messages. Initially, we focused on the hashtags used by the users to assess the images. Our deductive coding procedure involved going through the prominent hashtags used by the accounts. The popular hashtags used across the four countries are shown in Table 4. In all cases, the hashtags were instrumental solely in making preliminary calls for country brand images, such as mountains and landscapes in Switzerland and the inclusion of other European countries in Belgium.

Considering the popular hashtags used, our findings suggest that normative or sympathetic dimensions of country images are not frequently invoked by the users. Rather, the accounts are more active in outlining competencies and resources in the countries across the board. This does not necessarily mean sympathetic or normative dimensions are not discussed at all but that they are not prominent within the network.

For further textual analysis, we relied on connected components in networks because these groups might be interested in different characteristics of countries. Given that the networks are composed of smaller subgroups that are not necessarily connected with one another, we analyzed modularity groups separately. We examined the content of the tweets that were most interacted with and the hashtags that were most used by the users in the group. The inductive analysis was done by a team of five researchers composed of one of the authors and four graduate research assistants. Each analysis was performed by a group of two research assistants. The results were compared with the analysis carried out individually by one of the authors. Across the four cases, all researchers came to the same conclusions. A summary of the results is shown in Table 5.

Table 4. Popular Hashtags.

Australia		Belgium		New Zealand		Switzerland	
Word	**Freq**	**Word**	**Freq**	**Word**	**Freq**	**Word**	**Freq**
news	21,923	germany	33,369	flight	274	onthemovewithrf	5,683
sydney	16,289	terrorism	31,407	air	273	myswitzerland	4,321
melbourne	15,234	brussels	4,264	tracker	190	zurich	4,224
travel	14,194	comics	2,658	status	83	travel	4,161
usa	10,064	marvel	2,645	india	55	nature	2,339
canada	7,684	france	2,297	travel	50	germany	2,288
jobs	6,635	austria	2,028	mexico	29	mountains	2,100
syria	5,833	europe	2,022	mexicovsnewzealand	26	inlovewithswitzerland	1,819
apple	5,234	spain	1,846	photography	19	europe	1,813
art	4,909	jobs	1,749	newzealand	16	geneva	1,772
brisbane	4,571	russia	1,685	the	16	visitswitzerland	1,699
business	4,499	sweden	1,663	geo	15	love	1,549
india	4,240	ireland	1,553	nat	15	alps	1,430
auspol	4,133	norway	1,479	photooftheday	15	landscape	1,410
love	4,047	travel	1,452	test	15	austria	1,405
photography	3,912	portugal	1,430	underwater	15	photography	1,360
mexico	3,758	italy	1,348	geographic	14	swissalps	1,220
perth	3,708	nederland	1,182	national	14	autumn	1,180

Note. The search strings and country names have been removed.

Table 5. Analysis of Connected Components.

	Australia			Belgium		
	Group 1	**Group 2**	**Group 3**	**Group 1**	**Group 2**	**Group 3**
Number of actors	3,470 (5.94%)	2,141 (3.67%)	1,859 (3.18%)	545 (4.16%)	478 (3.65%)	383 (2.92%)
Number of edges	5,980 (6.7%)	3,715 (4.16%)	3,106 (3.48%)	1,246 (7.8%)	498 (2.99%)	386 (2.32%)
Prominent actors	Turnbullmalcolm art_lilla_music riserefugee abcnews karnkykerry	lonelyplanet brittany_kulick ozmadesimple traveldudes K009034	coalphotography queensland shipwreckphoto australia melbourne	dreynders belgiummfa malmstromeu canembbelux belgiumun	emekagift andybes50484929 nwokolo_leo alexship36 ogbuchukwuebuka	onlinemagazin networksmanager royalnavynews craig1scotty aethonaia
Topics	Politics	Travel and tourism	Tourism	Politics	African Politics	Alternative
Sample Hashtags	#asylum, #humanrights, #tax	#beach, #unesco, #wanderlust	#skyline, #sunrise, #longexposure	#ceta, #nato, #fairtrade	#biafra, #nigeria, #africa	#mh17, #stopgermany, #jihadknifeattacks
	New Zealand			**Switzerland**		
	Group 1	**Group 2**	**Group 3**	**Group 1**	**Group 2**	**Group 3**
Number of actors	8 (9.3%)	7 (8.14%)	6 (6.98%)	5,628 (27.91%)	869 (4.31%)	848 (4.21%)
Numbers of edges	7 (11.29%)	6 (9.68%)	5 (8.06%)	11,244 (35.09%)	1,358 (4.24%)	1,409 (4.4%)
Prominent actors	zentoravisas skmasthanvchev ranikanchan12 behappy8282 rsowmya430	barbyana1 jkumar122003 andreiandrei63 clark_shoe faithtrusthope7	worldluxurynews mocoryo number007bond lebontravel umijjj	usopen rogerfederer aj_adams2 lkim_21rf radriche	hofswitzerland swissinfo_en swissembassyusa wef swisscgny	myswitzerland_e swissonlinedati newlyswissed valaiswallis zermatt_tourism
Topics	Visa News	Visa News	Travel News	Tennis	Politics	Tourism
Sample Hashtags	#visa, #new, #zealand	#visa, #students, #india	#hotel, #new, #zealand	#onthemovewithrf	#europe, #competitiveness #unitednations,	#hiking, #matterhorn #inlovewithswitzerland

For Australia, the first group focused on domestic news, a functional aspect. The remaining two groups both focused on travel and tourism, highlighting aesthetic characteristics of the country. Nearly all the major actors in these groups are travelers and travel agencies. The content across both groups centered on aesthetic characteristics. For Belgium, all three modularity groups shared content on politics—a functional characteristic of the country. Yet it should be noted that these modularity groups had different policy agendas. The first group included official accounts, such as embassies and politicians, and discussed policy events and meetings. The second group included people interested in African politics and calling for European support in the continent. The last group was composed of alternative political issues.[4] Topics included conservative views on Islam and migration, criticism of mainstream media and political correctness, and conspiracy theories. All three groups focused on functional characteristics. For New Zealand, the modularity groups were basically composed of one tweet each. The first two included news articles about the visa regime, and the last one was about luxury travel opportunities—all functional characteristics. In the case of Switzerland, Roger Federer—a famous tennis player—dominated the first modularity group. The second group focused on global politics. The last group focused on tourism in Switzerland. Most of the members were destination marketing organizations. The tweets included information about Swiss regions, culture, and travel tips.[5] Overall, the first two groups had functional and the third had aesthetic characteristics in the content produced and shared.

Discussion

The analysis introduced in this research presents an episode of measurement for nation branding–related outcomes of public diplomacy projects on social media. The structure of our framework contributes to the theoretical and practical discussions on measurement through three points. First, we highlight the similarities and connections between public diplomacy and nation branding. These two practices are inherently linked through country image projection and perception. Second, we present a new alternative to the breadth-versus-depth discussion in measurement. We propose a meso-level approach through four dimensions. Last, our methodology combines informational and relational approaches to public diplomacy. The measurement process is guided by three questions that analyze the characteristics of actors involved (RQ1), the arrangement of the relationships (RQ2), and the content of messages (RQ3).

Applying the framework to the communication projects of Australia, Belgium, and New Zealand reveals the complexity of measurement. Additionally, the findings of the three-step analyses provide examples for the unique capabilities of the framework. In terms of actors involved in nation branding projects, the first finding highlights the low following-to-follower ratio of practitioners. A further look at the account types shows that practitioners follow other official accounts from their country. Therefore, it is difficult to argue for direct engagement with users. Additionally, degree centrality measures demonstrate the existence of unofficial accounts that disseminate content about the countries. A user is more likely to be engaged by these unofficial accounts than by official accounts. This particular finding was most intriguing

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[4] @craig1scotty had one tweet about Belgian craft beer. His tweet was widely shared by other accounts that create their own content involving political themes.

[5] One of the most prominent actors (see Table 5) is a dating website (@swissonlinedati), but the account shared some content regarding Swiss tourism and tourist destinations through Google News alerts.

in the case of Australia. Of the four accounts examined in the study, @AusUnlimited was the only one that did not make it to the top 50 list, having very low scores across all centrality measures. This is partially because the search parameter was looking for "Australia," and the account handle did not contain the entire country name. We would argue that this result should not be seen as a limitation of the research. The choice of handle actually limits the interaction of the account with individuals who conduct keyword-based searches on Twitter.

The structural focus (RQ2) reveals a larger network than individuals that directly engage with official accounts. The reception of messages extends beyond the initial layer of engagement. Across the four cases, it is not possible to identify a single connected structure. Indeed, all four networks are composed of smaller connected groups. The largest of these groups belonged to Switzerland, amounting to nearly 25% of the entire network. Additionally, the engagement was not repeated. The users did not repeat their Twitter interactions. These two findings are not necessarily unexpected. Our analysis focuses on a two-month period during which actors convened on certain topics for a certain time period but did not necessarily devote their entire time to discussing the countries. However, this particular low-intensity and dispersed interaction should be taken into consideration in practice.

The content question (RQ3) demonstrates the large number of topics discussed, as shown in the hashtag analysis. Most of these hashtags are not initiated by the public diplomacy projects but still have an impact on nation brands. For instance, on October 6, 2016, three police officers were stabbed by a terrorist that sympathizes with ISIS in Belgium. The terrorist attack is partially responsible for the increased volume of tweets using #terrorism. Roger Federer tweeted pictures of himself in the Swiss mountains as he missed the U.S. Open tennis tournament in 2016. There were more than 5,000 retweets of his photos. Australia was debating marriage equality laws. The debates on social media and the use of hashtags can be swayed quickly by events. Our limited data set caused these events to appear to be more prominent than they would be in a long-term perception of events. However, a multiyear data collection and repeated observations will alleviate this shortcoming.

The hashtag analysis was complemented by a close examination of connected components because the former yields a limited analysis of the content of the tweets, based on popular hashtags. Once hashtags are removed from the context in which they are used, they might lose some of their meanings. For instance, #swissalps refers to the aesthetic dimension of Switzerland as a hashtag. But "Another amazing day in the mountains with a crystal-clear view of the Matterhorn #Matterhorn #Switzerland #toblerone #swissalps" expresses the sympathetic dimension. Highlighting the text and context of the most-interacted tweets presents a more nuanced content explanation. For Australia, one of the groups interacted mostly with tweets that mentioned Malcolm Turnbull (@TurnbullMalcolm) and presented personal views on the Turnbull administration's policy choices (mostly on migration), one shared tweets by Lonely Planet (@lonelyplanet)— a travel guide book publisher—and a third one included predominantly domestic tourists and photographers. For Belgium, a group was most interested in the announcement by the Belgian Ministry of Foreign Affairs (@belgiummfa) on signing a trade deal with Canada. Another group presented repeated requests for the release of Nnamdi Kanu, a prominent member of the Biafran separationist movement in Nigeria. For New Zealand, two groups were interested in visa regulations and a third one interacted with an advertisement for a luxurious vacation opportunity in the country, explaining the aesthetic dimensions in detail. The fourth

network, Switzerland, had the only case where the official message attracted the most interest. House of Switzerland's (@HofSwitzerland) animated video about Switzerland facts was the most-interacted tweet. Other content in the group included topics ranging from events in embassies and consulates to declarations by international organizations. The other two groups were interested in Roger Federer and Swiss tourism. Audiences are interested in different characteristics of countries and therefore should be engaged accordingly. A one-size-fits-all content creation and engagement on social media is not likely to be successful.

Conclusion

Measurement has been, and still is, a difficult challenge to tackle, and our model is not without its limitations. First, a pretest and posttest approach has the potential to strengthen the causality arguments. Yet the logistical constraints make it virtually impossible to set up such an observation pattern. Future research can implement an approach through quasi experiments in which researchers can follow the messages disseminated by nation branding campaigns. Similarly, it is possible to build a study following true experimental designs. Such a design will make it possible to test whether and how certain messages influence the associations in the minds of subjects. Second, social media data are still open to manipulation through paid advertisements and other types of deceitful involvement (such as bots, trolling, and astroturfing). Although we looked at average number of tweets sent per day to uncover bots, other types of nongenuine accounts could have been included in our study. However, their impact would be limited because such undetectable attempts to sway the public opinion might also be successful in influencing perceptions. Third, our demonstration focused on major topics, which limited country images to functional and aesthetic images. Throughout the research process, we observed normative and sympathetic dimensions at lower volumes. However, because our design was based on identifying stronger dimensions, we solely reported major topics. Last, our study examined four countries, one of which did not yield a high volume of data. Smaller countries and projects might face similar challenges.

Our objective with this article is to propose a model to assess the impacts of public diplomacy projects by creating a link between social media communication campaigns and the perception of nations by audiences. We are aware that our study is not the first attempt to assess such messages on social media (such as Bjola, 2016; Manor, 2017; Sevin, 2014). The uniqueness of our model comes from its methodological reach that combines textual and relational analyses and its theoretical framework that facilitates a meso-level measurement. We used social network analysis to explore the relational performance and a four-dimensional model of country images to analyze the informational outcomes of public diplomacy projects. Social network analysis made it possible to analyze the interactions between the practitioners and audiences as well as among the audiences. The four-dimensional model was instrumental in carrying out cross-country comparisons.

Our findings are likely to have theoretical and practical implications. From a practical perspective, our presumption to situate the perception of countries as an outcome of public diplomacy presents the practitioners with an exhaustive yet feasible measurement criteria. We support this

argument by demonstrating how social media presents a unique platform for individuals to present their personal opinions; thus, it is a reliable arena for data collection.

Furthermore, we acknowledge the inherent and interdependent relationship between the nature of digital public diplomacy and measurement practices (Bjola, 2016, p. 352). Given that the former practice is about building relationships and engaging with target audiences to influence the nation brand associations, the latter needs to highlight the relationships individuals form while discussing matters related to country images. In other words, using this particular model will enable practitioners to identify not only what the prominent messages are but also who the influential actors are and how the messages are traveling within a network. We have used a modified version of this model for a state enterprise that wanted to engage with target audiences, and the model was instrumental in demonstrating the subnetworks within the larger Twitter network and in identifying prominent actors in these smaller segments.

Our model contributes to the study of public diplomacy by showing that country images are complex and multifaceted phenomena that cannot be easily deduced and ranked. Furthermore, we build on Zaharna's (2014) categorization of relational and informational public diplomacy. Our methodology combines these relevant categories and proposes a robust framework that acknowledges the importance of both messages created and relationships established. The two-step analysis in identifying the actors in the networks used to answer RQ1 provides insights into how official accounts operate on Twitter. Our findings for RQ2 demonstrate that actors on average had limited interest in the networks. This observation led to a focus on modularity groups for content analysis rather than on the universe of all texts. The modularity group analysis (RQ3) demonstrates how a nuanced approach to audiences based on the network structure might yield further insights into the messages.

The conclusions point to three areas for future research. The analysis of modular groups indicates that individuals who are not affiliated with the projects have the potential to start conversations about countries. In other words, we observed the role of influencers in digital public diplomacy projects, which warrants further study on influencer marketing (Uzunoğlu & Kip, 2014). Additionally, our analyses of modularity groups and networks were independent from each other. Future studies could improve our understanding of relations among these groups through a network of networks understanding by replacing individual users with modularity groups and networks as the actors in the analyses. Last, our content analysis was limited to topics and did not necessarily account for attitudes. Incorporating sentiment analysis will help future research yield more nuanced results.

Succinctly stated, our answer to the measurement questions in public diplomacy has multiple layers. By focusing on a specific outcome, we created a manageable subset. By focusing on social media, we facilitated data collection by ensuring we received content that included honest opinions and observed relationships formed among users. By combining relational and informational approaches, we presented an inclusive picture of how country images are perceived by different audiences. Our implementation of a four-dimensional model of country images introduces a way to overcome the breadth/depth dilemma in measurement. Despite its limitations, our model is likely to contribute to both the understanding and practice of measurement in public diplomacy.

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