Exploring the Role of Brands in Public Diplomacy

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“The atom is the icon of the 20th century.
The atom whirls alone. It is the metaphor for individuality.
But the atom is the past. The symbol of the next century is the net” (Kelly, 1999)

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Abstract
As international relations develop into a network-like arena, new public diplomacy receives more attention, both in research and in practice. At the same time, with the increasing role of non-state actors in international relations, their significant roles and functions have come under substantial scientific analysis. While companies engage in business abroad, unintended results may emerge, affecting the image of their country of origin. One of them is the effects that brands and products have on the perception of their home countries’ foreign policy.

This article examines the role of brands in public diplomacy. The question is whether it is scientifically reasonable to assign a public diplomacy role to brands. While such a relation has not been treated in previous research, the authors of this article try to explore and analyze the various elements of this relation to find a well-founded answer. Our analysis uses the national image as a mediator concept between brands and public diplomacy. It starts with a definition of new public diplomacy and its differences with the classical one. It then continues along the concept of corporate diplomacy, national image, the country of origin (COO) effect, and its inverse version. In the end, the most possible and clear answer, according to currently available literature, will be discussed.

Keywords: corporate diplomacy, country of origin effect, inverse country of origin effect, national image, new public diplomacy.
Introduction

In a world where states are no longer the only actors, it seems that it is necessary to study the role of non-governmental organizations, global social movements, and multinational companies (MNC). Sometimes, the role of international companies in public diplomacy could be even more influential than the role of official diplomatic channels. One could imagine that the British East India Company and the Dutch East India Company had been involved in public diplomacy affairs several hundred years ago, even before nation-states were established. Their respective states turned to foreign nations only when they decided to negotiate their differences or to start a war, while these companies needed to constantly keep in touch with local elites and be accepted in an alien community in order to soften the business. Nowadays, more foreign employees and businesspeople are living in remote territories, than diplomats and state officials. These companies spend more money on their public relations than their respective states, although the relations are different in nature. According to a 2003 statistic, US companies have spent 222 billion dollars for promoting their products, while the US government has spent only one billion dollars to promote its image across the world (Oglesby, 2003). Likewise, more money was spent on Redbull©’s brand promotion than Austria’s public communication (White, 2012, p. 111). It seems surprising that politicians and diplomatic officials do not consider these effects seriously. A considerable number of research projects on the COO effect have been conducted. Marketing sections of MNCs constantly develop strategies for conducting COO effect; they make plans to improve it or to distance themselves from its possible side effects.

For the inverse COO effect, the effect of businesses and their products on their respective country of origin has been under
investment in few research projects while the governments themselves pay close attention to their image and its effects on companies and their sales efforts. For example, Peijuan et al (2009) investigated China’s efforts to solve the problem of its ill-suited “made in China” image on Chinese producers. The next question is how these companies can help officials to promote the national image and its foreign policy among people who use these companies’ products and listen to their messages.

With the advent of the New Public Diplomacy, which concentrates on the role of non-state actors, the unintentional effects of products and brands attract more attention. This brings the field of public diplomacy closer to the field of public relations. A significant number of public diplomats use methods that companies use for promoting their image in the eyes of their customers in order to promote their country’s image. However, certain scholars believe it is not appropriate to treat foreign policy as a product. Wally Olins once revealed that when he first mentioned the idea of nation branding or the brand of a nation, he was accused of treating the nation like washing liquid (Melissen, 2005, pp. 169-170). However, scholars’ views have somehow changed: marketing is now becoming prevalent in various fields to the point that certain scholars are proposing the idea of faith-based marketing (Abreu, 2006; Einstein, 2008; and Kuzma et al. 2014). There is no need to stand on ceremony in this regard.

**Method**

This article uses the national image as a mediator concept between brands and public diplomacy. It is needless to say that this connection, its formation, and its elements depend on different cases. The question is whether there is any meaningful relation between the image of a brand that consumers have in their minds
and the image created by the foreign policy that the brand’s country of origin follows.

To find the answer to this question, we try to explore the relevant literature by discussing the new generation of public diplomacy, especially its difference with the other instruments used by foreign policy. In the subsequent section, corporate diplomacy will be discussed to legitimize our expectations concerning the possible roles of private corporations in public diplomacy. Then, the effect of a brand on its country of origin’s image will be explored and finally, the concept of the national image and its elements will be investigated. Consequently, the concatenation of reasoning will be completed by a mediatary concept: national image. The brand will affect the national image and the national image will affect the perception of foreign policy as illustrated in the following model:

**figure 1: the interrelation of brand, national image and public diplomacy**

**source: authors**

![Diagram showing the interrelation of brand, national image, and public diplomacy](source: authors)

In order to shed light on the foundations of the current discussion, concepts related to the topic, from the most general to the most specific will be discussed. The schema below presents a graphic presentation of the concepts to be discussed.
In this figure, the boxes provide the most important notions to be discussed in the article. As illustrated in the diagram, Corporate Diplomacy is an independent topic, related to corporates that make/present their country of origin’s national image. The national image is a topic in public diplomacy, which is traditionally managed by official government authorities. However, in new public diplomacy, it is mostly dominated by private actors such as NGOs and private companies. The concept of “COO effect”, borrowed from public relations or marketing management and its inverse version will be discussed below.

New Public Diplomacy

According to Encyclopedia Britannica, diplomacy is “the established method of influencing the decisions and behavior of foreign governments and peoples through dialogue, negotiation, and other measures short of war or violence” (Freeman & Sally, 2016). Based on this definition, the concept of public diplomacy can be inferred by replacing the word “government” with the word
“people”. As a result, public diplomacy is a method of “influencing the decisions and behavior of foreign peoples through dialogue, negotiation, and other measures short of war or violence”.

The term “public diplomacy” was first used by Edmund Gullion in the mid-1960s (Melissen, 2005). Public diplomacy endeavors have a long history in the US. According to Zaharna (2010), to receive the French government support of the US independence from the UK, Benjamin Franklin used methods that can be categorized today as public diplomacy. Moreover, he stated that 79 days after the Pearl Harbor incident and the US engagement in WW2, the first US radio station, aimed at German audiences, was launched, and was later named Voice of America. He continued that After WW2, when the world realized how effective political propaganda could be, as it had been for Nazi Germany, they decided to utilize it for their agenda or against rogue states. In addition, he mentioned that with the establishment of the United States Information Agency (USIA) in 1953, public diplomacy initiatives were accelerated and grew constantly during the Cold War area, but after the Cold War, they were declined and the USIA merged with other agencies in the US Foreign Affairs ministry, leading to a significant decrease in human resource and budget. America’s image worsened worldwide. Public diplomacy was an important factor for the USA to win the Cold War. However, post-cold war public diplomacy did not help the US foreign policy, especially regarding Iraq war after 9/11, or the entire US public diplomacy in Islamic countries. This concerns for example the US relations with Pakistan. In fact, the Trump administration repeatedly uttered the concern that the US support for Pakistan barely lead to the formation of friendly attitudes towards the US from the Pakistani side (Henne, 2017). Something was therefore not correct. It is not only the US, but also the EU who lacks sufficient persuasive diplomacy. It resulted in public mistrust
towards European institutions that hindered EU integration recently. The recent rise of the far right and anti EU groups is an example of the important role of MNCs in public relations. The metaphor of McDonaldization, and for others the Starbucks lifestyle are signs of cultural interference from outsiders that have crucial implications in public diplomacy. This is the rhetoric harvested by far right parties in Europe against americanization.

After September 11, 2001, public diplomacy programs restarted. However, this time, the international arena had changed compared to the Cold War era. The main difference was the engagement of non-state actors. New public diplomacy is essentially different from the old one and dates back to 9/11. It is not inappropriate to define public diplomacy according to Nicholas J. Cull’s definition (2009) in his article “Public Diplomacy Lessons from the Past”. He defines diplomacy as “the mechanisms short of war deployed by an international actor to manage the international environment” (Cull, 2009, p. 2). As he distinguishes later, traditional diplomacy is performed “through engagement with another international actor” and public diplomacy is exercised through engagement with a foreign public. His argument can be visualized in figure 3.

Figure 3: The difference between 'public' and 'traditional' diplomacy.

source: (Cull, 2009)
In this figure, D cannot be diplomatic relations because it is definitely a war. A is a two-way relation between states without a war, which is called traditional diplomacy. B is a one-way relation between a state and the public of another state to manage the international environment. B is public diplomacy, but it does not refer to new public diplomacy. This kind of relationship might be a two-way relation as well. C is called new public diplomacy and as Cull (2009, p. 13) states, it accentuates “people to people contacts,” while states “playing the role of facilitator”. This type of relationship will be discussed in this article.

According to Nicholas J. Cull (2009), the duty of public diplomacy department inside governments has changed from “sending targeted messages” to “relationship building”. This is rather natural by the growing power of public opinion. “The consensus is that it is made necessary by economic interdependence, possible by the communications revolution, and desirable by the rise in democratic and popular expectations” (Sharp, 2005, p. 106).

Therefore, it is important for government departments to pay more serious attention to this “public to public” relations as part of their efforts in public diplomacy. Since this happens outside the realm of state authority, officials cannot intervene on their own behalf. What they can do, however, is to take this dynamism into their own calculations when they are setting agenda for their public diplomacy programs.

**Corporate Diplomacy**

In this section, the question that will be discussed is whether it is reasonable to expect companies to take an active role in public diplomacy. This will lead to further investigation about the role of their brands in public diplomacy and their subsequent plans to
improve their results in public diplomacy. If they have an impact, the question remains to be whether it will be fair to expect such private entities to spend money for such public goods.

As explained earlier, public diplomacy is a general term to describe the role of non-state actors in diplomatic affairs. There are various kinds of non-state actors such as universities, media, parliaments, municipalities, and companies. Each of these actors creates its own version of diplomacy. Corporate diplomacy is the one that is related to businesses, which is the main focus of this article. Companies benefit from a friendly image that they may bring about and are responsible for the current indignation among the public. Since the times of post-colonialism, the majority of people in third world countries have an unfriendly feeling towards western powers. MNCs records in these countries are one of the main causes of these unfriendly feelings. This image hinders any efforts for rapprochement. For example, many European large companies such as Airbus, Total, and Peugeot believe that Iran’s deal with 5+1 will benefit them economically. There is no doubt that decision makers in Iran will be affected by public opinion about the west, and public opinion, in turn, will be affected to a certain extent by the image of the west that has been produced by these companies’ operation. People in third world countries see WTO, IMF and other international trade and financial institutions as an instrument to secure MNCs’ interests at the cost of public well-being. Again, this belief has emerged and can be touched by MNC’s behavior in these communities. In a conceptual article, White (2015) collected different definitions of corporate diplomacy and its differences with business diplomacy and proposed himself a unique definition of the concept. According to him, corporate diplomacy is a situation in which companies try to behave “in a diplomatic manner, internally and with external constituents, in
order to implement favorable conditions to achieve their business goals” (White, 2015, p. 309). He then stresses that corporate diplomacy is different from commercial or economic diplomacy. Economic diplomacy is the negotiations for the government’s economic policy. Commercial diplomacy is used to pursue interests of businesses and for commercial development. Both economic and commercial diplomacies are led by the government while corporate diplomacy is conducted by private corporations. He also differentiates between business diplomacy and corporate diplomacy. Business diplomacy only seeks profit-making purposes, while corporate diplomacy pursues both profitable goals and the interests of the nation. In order to meet these expectations, corporate diplomacy uses various tools such as Corporate Social Responsibility (CSR) and cultural diplomacy.

Moreover, corporate diplomacy sometimes needs to cooperate with government officials in order to achieve its goals. However, it is probable that companies are not interested in engaging in politics. White (2015, p. 315) claims that companies are “more concerned with their corporate identity than their national identity”. Despite these facts, White (2015) discovers that the US companies have helped enhance the US image overseas; for example, certain US companies have engaged in health or sanitation projects in Romania. Such projects were a prerequisite for Romania’s membership in the EU. He continues that part of these projects have been performed without formal cooperation with the US government. It is true that part of these activities have public diplomacy results, but one should keep in mind the fact that the main objective of these companies is building smooth and friendly relations with the local people and officials. Donna Lee (2004) offers two ways for a mutual cooperation between private and public sectors: the first step for political diplomats is to identify
active business diplomats. She claims that such an action is being performed in the UK and the next one is including corporate diplomacy in CSR activities.

Rigo and Duarte (2009, p. 556) made another point on corporate diplomacy, claiming that celebrities like José Mourinho or Cristiano Ronaldo were more effective in promoting Portuguese products and services than corporations in public diplomacy. However, later they listed impact variables of corporate diplomacy. One of these variables is “familiarity with corporation as a way toward familiarity with the country” and its indicator is “the company and its operations as the symbol of the country and its values”.

Westermann et al. (2015) extend the idea of corporate diplomacy to include MNCs’ political role in less developed countries. They argue that MNCs can play an important role or even be forced to address social problems and “governance gaps” that exist in that part of the world. They use the concept of governance gaps addressed in the literature on peace through commerce. This is mainly the case in conflict-prone areas, where MNCs have a greater influence on conflict resolution efforts. They discuss cases where MNCs “implement corporate diplomacy through peacemaking or peacebuilding to accomplish both private and public goals” (Westermann et al., p. 387).

To conclude, corporate diplomacy is a linking concept between public diplomacy and private companies’ public relations. What is not clear is the direction of the causation. More likely, it is a two-way road, at least unintentionally. As discussed at the beginning of this section, one can expect that public diplomacy must plan to help companies, but companies’ help to public diplomacy usually targets further, probably inconclusive, discussions. Therefore, it can at least be agreed upon that companies have an unintentional
role in public diplomacy. By this consensus, it is reasonable to move forward.

**Inverse Country of Origin Effect**

To completely understand the way in which the Country of Origin (COO) effect works, a clear definition of the concept is first needed. COO has been investigated and defined in various ways (Verlegha Jan and Steenkamp, 1999; Mohamad et al, 2000; Noorderhaven and Harzing, 2003). Roth and Diamantopoulos (2009), in an article titled “Advancing the country image construct”, categorized the various definitions of COO in three groups presented by different writers. The difference lies on their focal point: the first group focuses on the general image of a country, the second group focuses on a mixed country-product image, and the third group focuses on the product image from a country.

The first group of definitions is helpful for the purpose of this research. A number of the definitions offered in Diamantopoulos (2009)’s article take political structures as one of the essential factors that directly form a national image. For example, Bannister and Saunders (1978, p. 562) see national image as “generalized images, created by variables such as representative products, economic and political maturity, historical events and relationships, traditions, industrialization and the degree of technological virtuosity”. Desborde (1990, p. 44) defines the country of origin's image as “the overall impression of a country present in a consumer's mind as conveyed by its culture, political system and level of economic and technological development”.

MNCs indicate unintentional results for countries’ public diplomacy. These results might be positive or negative. Creating jobs, producing high-quality goods and services, and profit for their
shareholders are among their positive results, while ecological disasters, human rights violations, labor law violations, corruption, consumerism, and wasteful materials are among negative effects. In 2008, it was discovered that the consumption of Korean products formed a picture of a high tech society in the minds of consumers (Lee et al, 2008). In another research, White (2012) illustrated that consummation of products made by a country will have an effect on the image and reputation of that country, which he referred to as inverse COO effect. COO effect is defined as an effect that the name of a producing country has on the perception of a consumer about the quality of a product. With the inverse COO effect, White chose the opposite direction of the effect and examined the way in which the quality of products produced by a country will affect that country’s image in the minds and hearts of consumers. This is important, mainly because as claimed by Lee et al. (2008, p. 283), consumers receive messages passively. White (2012) expressed that consumers’ perception makes no difference between official or non-official sources.

White’s research was based on a survey among 488 respondents, and three brands: Skype© from Estonia, Redbull© from Austria, and Ikea© from Sweden. He concluded that for all brands, the more successful ones have more positive effects on the country image. Estonia resorts to strategic endeavors aimed at relating itself to Skype©, while Skype©, invented by three Estonian software engineers, does not try to relate itself to Estonia. Ikea©, on the other hand, relates itself to Sweden. For Redbull©, neither the country, Austria, nor the company do not try to associate themselves with one another. The author proposed that perhaps Redbull© wants to present itself as an international brand. He noticed that Austria receives benefits partly because the brand Redbull© is more famous than the country. Interestingly, the author
claimed that the effects of the brand on less developed countries such as Estonia and Austria are stronger than developed countries like Sweden (White, 2012).

In another insightful article, Lee et al. (2015) contended that product belief can influence country image. They used the associative network theory of memory to explain the process. The associative network theory of memory holds that human memory is “constructed as an interlinked network of nodes that are used for cataloging and storing information. By encapsulating information, these nodes serve to reduce cognitive efforts during information encoding and retrieval” (Lee et al., 2015, p. 69). They used this model to illustrate the link between product and country. However, what is important for our purpose is the bi-directionality of this link, which means that brands can bring to mind their country of origin.

Lee and colleagues’s research (2015) was based on the results of three surveys in two countries, all of which approve their claim. The article was written in the field of marketing to explain a chain effect, that is, products influence country image and country image affects preference for other products. However, the results of their research is also insightful in the field of Public Diplomacy because it proves the inverse COO effect. The authors of the article determine few boundaries for their results: first, they claim that the product-country congruency is rather important for the COO effect, as in the examples of perfume from France and electronic products from Japan. However, the question is whether this is also true about the inverse COO, to which the authors provide an affirmative answer. The second finding of the article indicates that unfamiliarity with a country entails more positive links between product and country, which means that when consumers know the country, for example, if they have traveled to the country before,
they are less likely be influenced by the inverse COO. The third limitation of their results expresses that these links may occur unconsciously (Lee et al., 2015, p. 68), which explains the reason for which a realistic connection between products and country images cannot be easily planned and exploited.

**National Image**

In common language, national image refers to a situation in which, when hearing the name of a country, for example “Italy”, we spontaneously think of pizza, the Pope, Fiat, and azure as the color of the country’s national soccer team. Certain definitions relate the national image to foreign policy directly and others indirectly. For example, Martin and Eroglu (1993) define national image as a set of descriptive, inferential and informational beliefs about a particular nation. This definition includes the foreign policy perception in an overall belief about a particular country, which may be descriptive, inferential and informational. Another definition of national image is provided by Walter Lippmann (1992): national image is an image that is formed in the minds of people on foreign countries. Kunczik (1997, p. 47) describes it as “the cognitive representation that a person holds about a given country”. To answer the question “why national image matters?”, Kinsy and Chung (2013, p. 6) argue that “a positive national image can influence the country’s ability to build alliances and consequently enlarge the country’s international influence – that is, its soft power”. Kunczik (1997) noticed that “a favorable national image can be a political asset that is more valuable than territory or raw materials”.

According to Melissen (2005), France was the first country that initiated national branding. He claimed that the different eras of the French history, including the kingdom, the empires, and the
republics are ideal cases to study and examine the way in which identities are built and solidified, the way in which they contribute to domestic legitimacy, the way in which they contribute to the preservation of power, and the way in which they impact a country’s relations to neighboring countries. Another research that is helpful for the purpose of this study on national image is the article titled “The 4D Model of the country image, An integrative approach from the perspective of communication management” by Buhmann and Ingenhoff (2015). It analyzes national image from four perspectives. From the perspective of political science, national image is studied in the areas of international relations and political anthropology. In International Relations, national image stands under the title of public diplomacy and in political psychology, national image is defined as the perceptions of different countries where it is closely connected to the concept of national identity and is therefore culturally constructed. According to the authors, national image and reputation are tools for building a country’s image and perception in the international arena, which contributes to the development of a given country’s political capabilities. Yet, to differentiate national image from similar concepts, the authors argue the national reputation is the aggregation of foreign people’s perception, or “aggregated images”, as they call it, while national image is related to each individual or social groups in a foreign country. In addition, national identity is a self-perception by individuals inside the country, while national image is held by people outside the country (Buhmann & Ingenhoff, 2015). Based on Anthony Smith’s book titled *National Identity*, Buhmann and Ingenhoff (2015) illustrate the elements of national image through the following diagram:
This diagram contains no foreign policy; it is not clear whether these are causes or effects to the national image, building it or being built upon it. However, it is not hard to assume that a foreign policy is a result of a number of elements such as “political organization”, “values and norms”, and “history and traditions”. Moreover, foreign policy might be both cause and effect. Foreign policy, on the one hand, can build the image of a country by revealing its political organization or its values and norms, and on the other hand, it can be influenced by this image. This fact is proven by research: for example in the article “Public Images of the Soviet Union: The Impact on Foreign Policy Attitudes”, Hurwits and Peffley (1990) illustrate the connection between USSR image...
on the mind of American policymakers and their foreign policy preferences. In another article by Richard Herrmann et al (1997, p. 403), it is discussed that “perceived strategic relationships can be conceived of as a function of perceived relative power, perceived culture, and the perceived threat or perceived opportunity that a subject believes another actor represents”. However, beyond these findings, all writings regarding constructivism or defensive realism implicitly or explicitly acknowledge that the image of a country has an influence on its foreign policy perception. For example, Schweller (2006), in an article titled “Unanswered Threats Political Constraints on the Balance of Power” argues that the perception of the elites is a key element in decisions on war and peace. Therefore, foreign policy builds national image and is affected by it.

**Conclusion**

This conceptual article explored the role of one of the most important actors in today’s public diplomacy: international companies. It started from the broader area of New Public Diplomacy, which is itself, a newly created branch of Public Diplomacy. The subsequent discussion dealt with corporate diplomacy, which can be categorized as a subset of new public diplomacy although it has been investigated for a longer time than new public diplomacy. National Image is an important concept in the fields of Public Diplomacy and Public Opinion. It helps to understand the COO effect. Since the inverse COO effect has been studied before, this article attempted to explore its implication in different countries’ foreign policy perception. For this purpose, national image was analyzed and broken into its components.

As anticipated before, the juxtaposition of several propositions from different articles can lead the reader to the conclusion that
there is a connection between the images created by international companies and images created by the foreign policy of their countries of origin. As shown in figure 1, national image works as a mediator. It links these two images. According to some writers, commercial brands impacts national image; and according to others, national image impacts perception of foreign policy of a given country, which is termed public diplomacy or, more specifically, new public diplomacy. Therefore the answer to our introductory question, whether there is a relation between brands and public diplomacy, is an affirmative answer. However, there are certain qualifications. Now that we found a yes or no answer for this question, one needs to know how this connection works. It certainly needs a case by case investigation. However, according to the concepts that are being elaborated here, some contribution for future researches can be made.

As illustrated in figure 3, the perception that people in other countries hold about a country’s political organization and its resulting foreign policy is only one of the six factors that form the national image. The analytical results of this research do not reveal which elements are in fact affected by brands. However, this does not devalue the results because these elements have overlapping effects and if, for instance, there is a positive view toward a country’s public culture, there would probably be a positive view toward its foreign policy. Therefore, it is reasonable to expect that a positive attitude toward brands leads to a more positive view toward its country of origin’s foreign policy. However, there are cases that go deep into detail. For example, North Korea is a great country with picturesque landscapes, but many would disagree with its leaders’ foreign policy. In such cases, a more detailed perception map is needed to understand which elements of the national image would be influenced by brands.
Moreover, it is possible to go deeper and break down foreign policy perception into different types of foreign policy, at different times, with different means. The role of brands among friendly countries will be different from their role among enemies, or during wars; it should not be expected that the relations could be affected by such soft criteria. Brands could even be deterred from engaging in politics. During Iran hostage crisis (1979), businesspeople changed the name of “Persian rug” to “oriental rug” to shield themselves from the crisis. Another interesting case would be to study a situation with economic sanctions. What do people in targeted countries think if they see brands from targeting countries? Do they consider the sanctions as a friendly treatment toward civilians and do they believe in the targeting countries’ ability to differentiate officials from the public? Or do they consider this as hypocrisy? Therefore, it may be double-edged.

Additionally, there are other restrictions in our conclusion. There is no direction in the causality between national image and its results, that is, one does not know if these elements form the image or the image forms its components. More specifically, it is not clear whether a country’s foreign policy perception constitutes its national image in the mind of foreign nations or if vice versa, a country’s image forms the perception of its foreign policy.

On the other hand, the findings of this research seem to be highly dependent on location and occasion. For example, western brands seem not to be famous in certain eastern countries. In countries like Iran or India, they are only available for high-status social classes. Even in those few cases, consumers do not know about the brands’ countries of origins or history. Moreover, hard relations between nations are dominant, regardless of their soft meanings. Improving these relations remains for further investigations, especially in the experimental field.
Bibliography


Mohamad, O.; Ahmed, Z.U.; Honeycutt, E.D.Jr. and; Tyebkhan, T.H.


