

## ***When Geopolitics Meet Design: -162°C Trading Power – A Case Study***

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The Barcelona Conference on Arts, Media & Culture 2022

Official Conference Proceedings

### **Abstract**

This paper chronicles and reflects upon a collaborative project between Virginia Commonwealth University in Qatar (VCUarts Qatar) and the Advanced Institute of Industrial Technology in Tokyo (AIIT). Titled *-162°C Trading Power*, this project started as an exploration into the relationships between the two countries of Qatar and Japan, and it resulted in the design, production and exhibition of a kinetic installation at the Wieden+Kennedy gallery in Tokyo, as well as an artbook printed in a limited number of copies. Starting from the analysis of the new taxis of Tokyo, the history and the dynamics of the relationship between Japan and Qatar based on the trade of Liquid Natural Gas are unveiled through this project. The authors of this paper advocate for an approach that makes use of existing designed artefacts as an access point to discover and visualize information about the geopolitics between countries. While reporting about the process and outcomes of the project, the authors reflect on the value and the need for creative projects that highlight the apparently invisible political, economic and cultural links that regulate the world we live in. Conclusively, the approach adopted in this project is put in relation with the one of the emerging GEO–DESIGN platform recently created at the Design Academy of Eindhoven as a master course, highlighting the similarities and the potential that GEO–DESIGN has in expanding and blending the territory of design practice and research.

Keywords: Geopolitics, GEO–DESIGN, Kinetic Installation, Qatar, Japan, LNG

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## Introduction

This project is about the politico-economical relationship between Qatar and Japan. However, before focusing on the relationship between Qatar and Japan – and the project *-162°C Trading Power* – it can be helpful to briefly reflect on how, since humanity has developed long distance trading, the goods that societies design, produce and consume are tangible testimonies of the complex relations between faraway countries (Sudjic, 2009).

As two of the authors of this project are from Torino, Italy, it just seems appropriate to use a local product as an example of a tangible manifestation of the geopolitics that affected the economy and culture of that particular region centuries ago. Culinarily speaking, Torino is most known for its typical chocolate, called *Gianduja* (Mohos, 2010). If you have a sweet tooth, you are certainly familiar with the flavor of *Gianduja* thanks to its most commercial derivative, *Nutella* (Padovani, 2014). *Gianduja* is the result of a particular mix of cocoa and hazelnuts, among other ingredients. Now you might be wondering what *Gianduja* has to do with global geopolitics? Well, sometimes a piece of chocolate can teach us a lot about the complexity of the world we live in. When *Gianduja* was invented, it was the middle of the 19th century. At that time, France and the United Kingdom were battling each other on every front, militarily, culturally and economically. Napoleon Bonaparte, Emperor of France, was then in control of most continental Europe, while the United Kingdom could count on a great global expansion, including the Caribbean territories. In order to boycott the British economy, Napoleon ordered a commercial blockade – known as *The Continental System*, preventing the British from selling their goods in Europe (Cardoso, 2013) (Figure 1).



Figure 1: A map of The Continental System, highlighting territories barred from importing goods from the British Empire.

One of the commodities that was mostly affected by this conflict was cocoa, which then became scarcely available and extremely expensive to European countries. The genius of Piedmont's chocolatiers led them to find alternative solutions to limit the use of cocoa in their recipes, including mixing cocoa powder with pulverized hazelnuts, a local product available in abundance in the Piedmont region, where Torino is located. This operation not only allowed a considerable lowering of the costs, but it also gave birth to a new type of chocolate, *Gianduja* indeed, which then was shaped in its typical trapezoidal form and individually wrapped in golden aluminum paper, each becoming known as *Gianduiotto* (Figure 2).



Figure 2: The classic Gianduiotto of Torino in its typical golden wrapping.

This is an example of how invisible macro-systems often manifest into small, seemingly mundane things. In reality, those small things are what shape our lifestyles and cultures. As designers and design researchers, we are naturally inclined towards analyzing and trying to understand the artefacts around us.

## Background

This collaborative project between faculty at VCUarts (Qatar) and AIIT (Japan) became a possibility in 2018, a time when Tokyo was then preparing for the 2020 Olympics. The Olympics were later delayed because of the Covid emergency. Among the many changes that the city was undertaking in preparation to welcome the many anticipated tourists, a new city taxi was presented. This taxi, produced by Toyota and also known as the JPN Taxi, with its silhouette vaguely reminding of the one of a London taxi, had the characteristic of being powered by Liquid Natural Gas, as shown in Figure 3 (LNG) (Kikuchi, 1980). Just like the *Gianduiotto* in our introductory story, the new Tokyo taxi became for us the access point to a much larger story.



Figure 3: An exploded view of the new Taxi produced by Toyota. The LNG tank is visible behind the rear seat.

As we know, in March 11th 2011, Japan suffered a major earthquake and consequent tsunami, which severely damaged the coasts of Fukushima and Iwate prefectures. Damages were immense. Most notably, the Daiichi Nuclear Power Plant in Ōkuma in the Fukushima Prefecture was heavily impacted, thus forcing the authorities to shut it down (Povinec et al., 2013). As a precaution, most of the other nuclear plants in Japan were also closed, and currently only few of those have started operating again (Hayashi & Hughes, 2013). As a result, Japan found itself in the position of having to import energy in order to meet its industrial, commercial and residential needs. In the same period, Qatar completed its expansion of infrastructure for the production of LNG, nearly doubling its production from 2009, as shown in the graph in Figure 4 (Miyamoto et al., 2012). Japan's demand for energy, and Qatar's supply set the basis for the 10-year agreement struck by the two countries in 2011, marking the shift from nuclear to natural gas as fuel for electricity generation in Japan, as shown in the graph in Figure 5 (Meza & Koç, 2021).

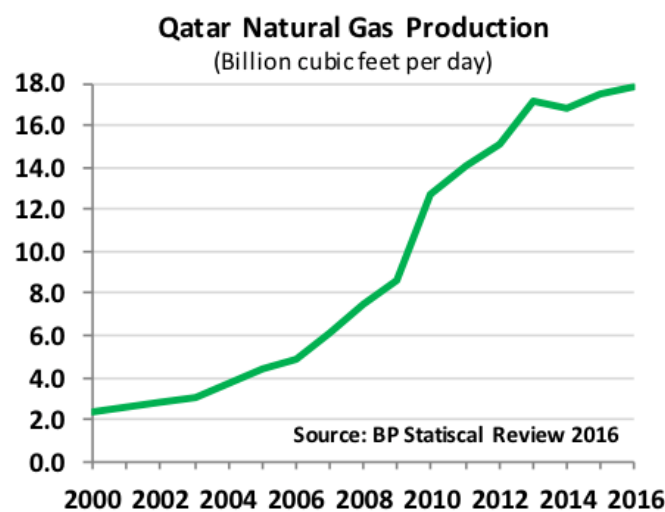


Figure 4. Graph showing the growth in natural gas production in Qatar (source British Petroleum).

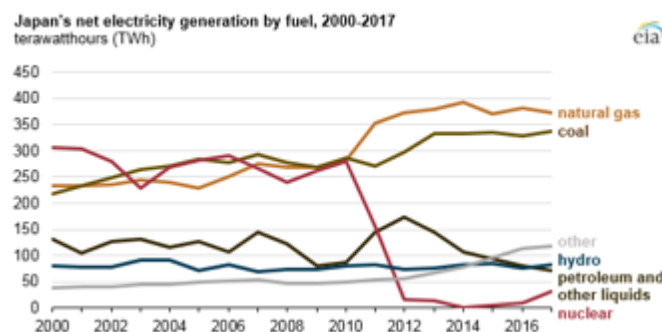


Figure 5. Graph showing the shift in the source for electricity generation.

At  $-162^{\circ}\text{C}$  natural gas becomes liquid, reducing in volume by a factor of over 600, the key innovation that makes it an economically viable commodity to trade (Zhao et al., 2020). LNG is Qatar's main export, with Japan being its largest buyer and a primary source of revenue for this small, yet influential gulf nation. LNG might be odorless, colorless and almost weightless, but in fact, it is very tangible in its uses and outcomes. Once fed into the Japanese pipe system, LNG reaches Japanese citizens' homes allowing them to cook and heat their houses. It also becomes the propellant for public and commercial transportation, including the above-mentioned Tokyo taxis. Furthermore, it is used in the pulp and paper, metals,

chemicals, petroleum refining, stone, clay and glass, plastic, and food processing industries. Similarly, the money that Japan feeds into the cash flow of Qatar is what powers the local economy, its lifestyle, the hectic growth of its capital city, Doha. Although primarily economic, this exchange impacts the culture, lifestyle, and geopolitics of both countries. The project that we were about to begin was concerned with the whole story, including the beginning of the relationships between Qatar and Japan and their impact on both economies and cultures (Al Subaey, 2017; Andressen, 2016; Eggeling, 2017).

While the project was yet to be defined, its topic and direction was certainly identified. Therefore, the team members were able to propose it to a number of galleries in Tokyo, including a gallery space in the area of Nakameguro directed and managed by the international communication agency Wieden+Kennedy. Wieden+Kennedy seemed like a perfect match to host this project, considering the role that this agency had in developing cultural intermediary strategies when commissioned to localize the identity of global brands like Nike (Kobayashi et al., 2018; Koji Kobayashi, 2012). That might have been one of the reasons why, after submitting a proposal featuring the contents of the project, Wieden+Kennedy granted the use of their gallery space for one week in the month of December 2018.

### **-162°C Trading Power – The Project**

When we began our conversations about this project, it became clear that we wanted it to be primarily visual research exploring all aspects of the unique relationship between Japan and Qatar based on the import-export of LNG, which has been a catalyst for growth in both countries. In this project, LNG can be considered as an *Hyperobject*, as described by philosopher Timothy Morton (2013). *Hyperobjects* are physical or non-physical entities that imply complex temporal and/or geographical systems, obliging researchers to look at them in a holistic way. That means embracing all their scientific, social, political, economic complexity. This very inclusive approach is what we chose to adopt in this exploration and to be rendered for the visitors, so to visualize chains of cause and consequences that normally go unseen. While there is linearity in the events that led to the ties between Qatar and Japan, we understood that, because of the complexity and breadth of the matters, relying on linear story-telling would have not been the best way to convey the meanings with which our project was concerned (Bossier et al., 2010). Our project was not aiming at being purely informative, after all. Certainly, the project aimed at raising awareness of the complexity and impact of geopolitics. In doing so, it was oriented towards the exploration of a hypothetical identity that could encompass both sides of the story, the one from Qatar and the one from Japan.

### **Scrapping the web**

Because of the breadth of the context of our exploration, its complexity and the variety of information that we started engaging with, we decided to start by collecting visuals concerning all aspects of the relationship between the two countries, using LNG and the use of energy at large as our examining lens. In order to gather a great number of visuals, the team compiled a simple algorithm that, given a set of keywords, would collect images from the web. Search queries included “LNG production Qatar”, “LNG use Japan”, “economic wealth Qatar”, “gas cooking Japan”, “liquefaction natural gas Qatar”, “gasification LNG Japan”, “shipping LNG Qatar Japan”, “agreements Japan Qatar”, etc. Furthermore, we used the same keywords to search for textual information that our software would then summarize

in short sentences. This technique of gathering data is known as *Web Scraping* (Glez-Peña et al., 2014; Mitchell, 2018). Because of the nature of web searches, especially when automated and conducted in large numbers, the results would expand from the direct queries themselves, returning unexpected and inspiring results, thus enlarging our view beyond the mere trade between the two countries.

At this point, we identified three groups of visual information: *Japan*, *Qatar* and a third one that we later named *The Space in Between*. Images in the first group were mostly about the local LNG facilities, the life in Japan in relation to energy consumption, and some unexpected results about Japan's tradition and culture. Images in the second group turned to be mostly related to the wealth and luxury of Qatar, local customs, extraction facilities for LNG. Finally, the third group category featured visuals equally related to both countries, with politicians shaking hands, LNG shipping routes, graphs about LNG price changes, and so on.

In this way, we compiled a database of visual and textual data automatically organized in the categories – hence folders – that we had adopted to *scrape the web*.

## **The Installation**

Once we had collected this great wealth of visuals and words, the challenge was to find a way to deliver them to the audience of visitors of the exhibition. There were a few goals that the team had set for itself. First, since the beginning of the project, there was the intention of producing a printed publication about the exhibition, as book design is one of the expertise of some members of the team. Second, we wanted the delivery of the visuals to be somehow compelling for the audience, and performative. Third, we wanted to highlight the idea of energy, energy use, and production. Finally, because of the nature of the images that were systematically downloaded from the web just like a regular user would do when searching online, we started taking into consideration the use of inexpensive consumer inkjet printers as an element for this installation. Furthermore, one of the members of the team had previously used printers in various creative ways for artistic projects, so some knowledge of possible printer hacks was already available at hand.

In previous experiences the one team member who experimented with inkjet printers, noticed that when hung from the ceiling, the printers swing, shake and move visibly while printing. Those movements, combined with the noise that printers normally emit when operating, resulted in a sort of expressive behavior that could be exploited for this project. In particular, relative to this research, the movement and noises seemed to be good qualities to symbolize the production and consumption of energy, the movement of LNG carrier ships on the sea, and even the Fukushima earthquake that started the relationship between Qatar and Japan.

With the decision of implementing the installation as an array of a number of printers, the installation started to take form. It was then decided to reflect the three different categories of collected data – *Japan*, *Qatar*, *The Space in Between* – physically in the installation. Therefore, in the exhibition space, the installation was organized in three sections.

The first section featured 27 hanging printers, organized in a cube-like installation, as shown in Figure 6. The idea was to recall the density of buildings in Japanese hectic cities, as well as the volumes of LNG silos situated on the Japanese coasts. Clearly, this section of the exhibition was dedicated to Japan and it had the task of delivering the visuals and texts related to the Japanese urban lifestyle, the Fukushima disaster, and the facilities dedicated to



receiving, storing and re-gasifying the LNG coming from Qatar. This physical part of the installation was named the *Japan Section*.



Figure 6: The 27 printers of the Japan Section arranged in a 3x3x3 cube-like configuration.

The second section of the exhibition was dedicated to Qatar. The arrangement in this section featured 10 printers arranged in two columns of 5 printers each, as shown in Figure 7. The two columns of printers arranged back-to-back had the role of hinting at the LNG extraction sites with their tall scaffolding towers, as well as the recently built skyscrapers of Doha. To those printers were assigned the images and short sentences resulting from searches concerning the luxurious lifestyle of Doha, its LNG plants and information about the Qatari economy. This part of the installation was named the *Qatar Section*.



Figure 7: A partial view of the 10 printers of the Qatar Section arranged in two stacks of 5 printers each.

The third section of the exhibition was concerned with the intersection between Japan and Qatar, where all the visuals that were ascribable to both countries would converge. A set of 4 hanging printers arranged in a zig-zag horizontal line representing the waves of the ocean would print visuals and data about the agreements between the two countries, the ships transporting LNG and their routes, as shown in Figure 8. This part of the installation was named *The Space In Between Section*.



Figure 8: The 4 printers of the Space In Between Section arranged in an undulated linear configuration.

Once the installation was physically organized to fill the gallery space as shown in Figure 9, it was time for the team to focus on planning how the digital content collected through *Web Scraping* and organized into folders and sub-folders would be delivered through the printers arranged in the three physical sections described above. This was in fact a matter of programming a sort of choreography for the printers to perform their actions.



Figure 9: Gallery view of the complete installation.



## How the installation works

The role of the hanging printers is the one of delivering images to the audience, while creating an engaging atmosphere. Printers are choreographed by a software that repeats the same sequence with a duration of about 10 minutes. In the beginning, the 27 printers of the *Japan Section*, begin printing gradually, starting from one side of the cube that they compose altogether, to the other side, like a wave moving from one side to another. This sequence was designed to hint at the tsunami that hit the coasts of Fukushima, and the consequent disaster. In this phase, printers would print mostly images and text sentences related to the Fukushima disaster, which were drawn from the sub-folders generated by queries including terms like “Fukushima disaster”, “Tsunami”, and other similar ones during the *Web Scraping* operations.

After that, the 10 printers of the *Qatar Section*, start printing, one after the other, starting from the bottom going to the top, throwing prints about the extraction of gas retrieved during the *Web Scraping*.

It is only then that the 4 printers of *The Space In Between Section* activate, thus shaking and printing images about the agreements between the two countries, LNG carrierships and routes. As those printers print, they swing back and forth somehow reminding of a ship rocking on the sea. Then, the printers of the *Japan Section* start printing images about life in Japan, and the ones of the *Qatar Section* deliver images about the wealth and luxury of life in the country. A documentation video of the installation in action is available on YouTube<sup>1</sup> (Ref. removed for anonymity).

It is worth mentioning that designing and completing both the software part that controls the sequence of events performed by the printers, as well as the physical making of the installation including the data-cabling and hardware management was a challenging task (Figure 10 and 11). The team succeeded in tackling all the technical issues because the project itself represented a great motivation and a comfortable context for all team members, thus enabling a dialogue among the variety of expertise that each member contributed with (Innella & Rodgers, 2018).

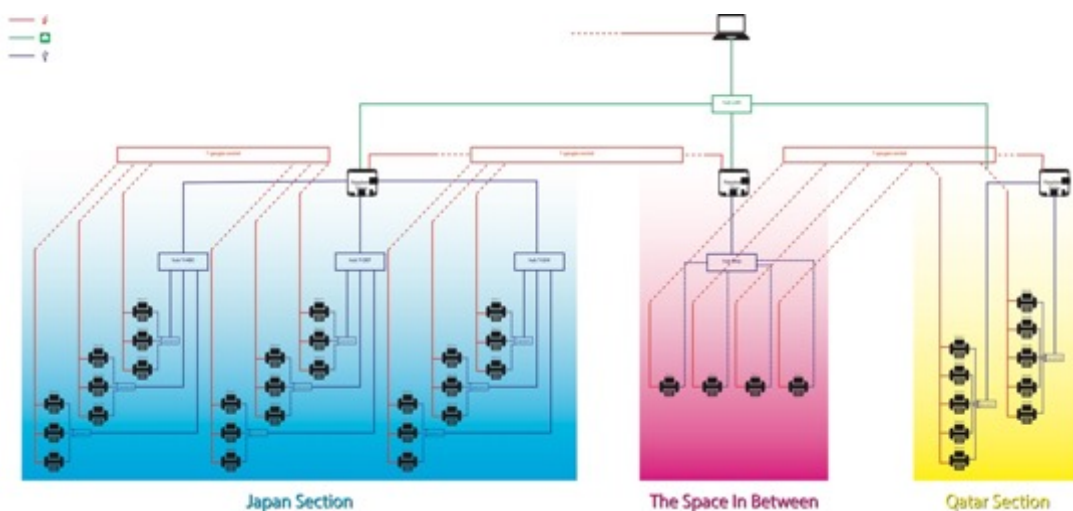


Figure 10: Power and Data cabling scheme of the installation.

<sup>1</sup> <https://youtu.be/kREVYdCQtD8>

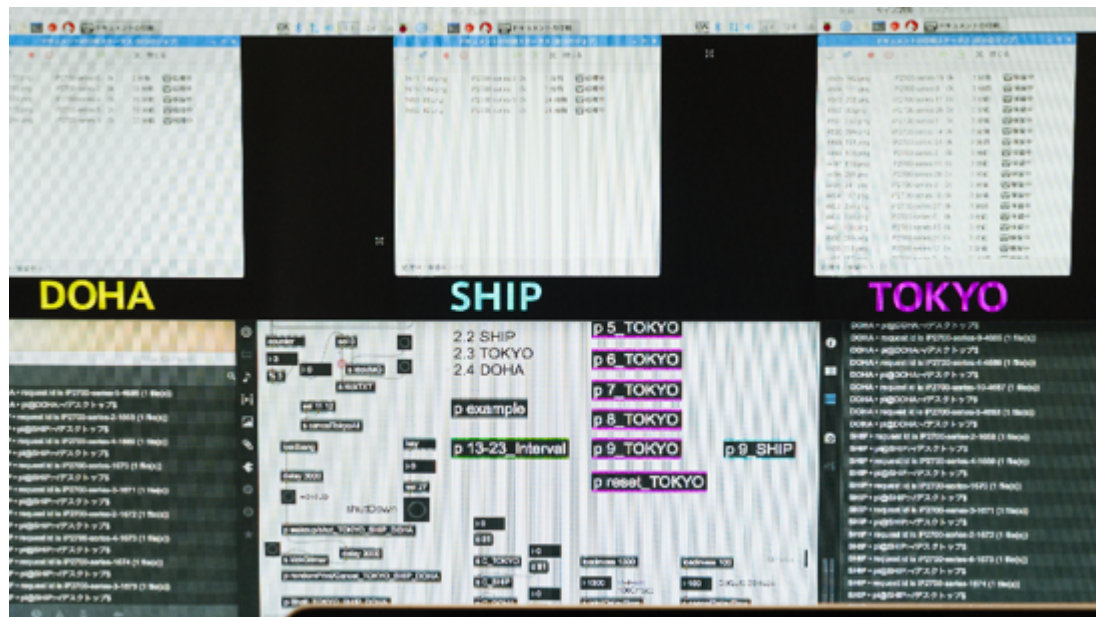


Figure 11. The software managing data and sequence of printing events.

To the average visitor, this timeline of events may not necessarily be evident, but to us it was very useful to organize the movement of the printers and the delivery of contents. The movement and noise produced by the printers was surprising, daunting and yet captivating (Baird et al., 2005). A visitor might have not been able to really identify the earthquake, the production of LNG or the shipping of the LNG carriers, but it certainly helped create an atmosphere that would support the visuals being delivered in an expressive way.

### What the installation produced

Our intention was not only the one of creating a kinetic installation chronicling the events that led to and characterized the Japan-Qatar relationship, but also, to produce visuals that would explore a possible – or maybe notional – identity resulting from this relationship. It was then that we decided to systematically feed the printed sheets from one section to another of the installation. So, prints dropping from the *Japan Section* would be collected and fed into the *Qatar Section*, and finally fed again in *The Space In Between Section*. Each sheet of paper would therefore feature three prints of visuals and words. Because the software we compiled would select images and words according to the previously set search criteria, and then randomly scale and place them on the paper sheets, the prints would overlay with each other creating interesting combinations and juxtapositions. The resulting mash-ups were ambiguous, cryptic, funny, but most of all revelatory of a relationship that is otherwise unnoticed by the average citizens of the two nations. In Figure 12 two examples of the produced mash-ups are shown. In the sheet in the left, you can see a rice cooker, most likely printed by a printer of the *Japan Section*, representing the use of LNG to produce electricity in Japan. Then, you can notice a luxurious car on the roads of Doha; this image printed by a printer of the *Qatar Section* depicts the wealth in Qatar enabled by the LNG export. Finally, there is a diagram about the evaporation of liquid gas; this image explicitly brings LNG as a factor in the equation “energy consumption in Japan = Wealth in Qatar”. Similarly, the image on the right features visuals from each of the three sections of the installation. These include an image of the Fukushima disaster, which led to a tighter relationship between Qatar and Japan, on the top of the sheet. In the middle there is an image of football player Lionel Messi being sponsored by Qatar Airways. At the bottom of the page, a map showing the LNG

The collage consists of four distinct images. The top-left image is a technical diagram of surface evaporation, showing a cross-section of a liquid layer with arrows indicating flow and evaporation. The top-right image is a photograph of a soccer player in a blue and red Qatar jersey. The bottom-left image is a 3D rendering of a yellow sports car in a water tunnel, with a red and blue water flow visualization. The bottom-right image is a map of Asia with flight paths connecting various cities, including a red path from India to Japan and a green path from India to Australia.

Daily, after the closing of the exhibition time, the team would collect the prints and select the most interesting ones. The selection of prints was scanned and skillfully laid out in an artbook titled eponymously, *-162°C Trading Power* and made available in a limited number of copies (Figure 13)(Water With Water, 2020).



Figure 13. Some copies of the book/catalogue of the project, collecting a selection of printed mash-ups.

## Insights

Throughout the duration of this one-week exhibition at the Wieden+Kennedy Gallery in Tokyo, over 300 visitors turned up. Visitors were mostly Japanese. While they were mostly entertained by the behavior of the printers and by the association of images resulting from the multiple print overlaps, they also admitted to be largely unaware that the gas they use daily to cook, or the gas powering the new iconic Tokyo taxis was coming from Qatar. Visitors did not know that Japan is the biggest contributor to Qatar's wealthy economy, and they were not informed about the fact that this unlikely relationship started as a consequence of the Fukushima disaster. *-162°C, Trading Power* proved itself as an opportunity to inform and converse, learn and reflect, with hundreds of citizens who have the right to know where the commodities they use come from and why. This project unveiled to its authors the potential of using the design language as a way to create a context and a medium to engage with an audience that otherwise would not be reached.

## Conclusions

Each artefact around us tells us something about the world we live in. Beyond the society's needs and desires, beyond the aesthetic and functional decisions of a designer, products are the manifestation of our economies and politics. As the economies and politics of the various countries of this world are intertwined with each other, products often relate about the global relationships we are all embedded in. Learning to observe, dissect and deliver the complexity of information that is contained in a product represents a great challenge, but also an opportunity for design critics, historians, and most importantly for design practitioners and researchers.

Design is a broad and complex discipline and industry. Each artefact surrounding us hides a convolution of relationships, events, economies and politics. This paper chronicled and reflected on a project exploring design as both a starting point to analyse geopolitical relationships, and a medium to deliver information in an experimental and experiential way to a broad audience. Starting from the emergence of a new LNG-powered taxi in Tokyo, one can discover the geopolitical relationships between two faraway countries like Japan and Qatar. Studying that geopolitical relationship, one uncovers the recent history and agenda of each country. Delivering such an intricacy of information to a broad, unaware and possibly uninterested audience is difficult, unless, we make use of our skills as creative professionals. Those skills include the visualization of information, spectacularizing its delivery and going beyond the limitations of a linear and purely informative narration. *-162°C, Trading Power* takes advantage of all these qualities designers possess in order to generate an installation that raises awareness on the geopolitics between Qatar and Japan while providing entertainment for the audience and exploring new aesthetic languages, even hinting to more or less fictional visual identities that better reflect the political and economic status quo of the countries we live in.

The approach highlighted in this paper can be summarized fairly easily. First, identify a designed artefact that is the result of a politico-economical relationship between two or more countries. Second, analyse the history and dynamics of the relationship. Third, deconstruct each component of that relationship and find a creative and engaging way to deliver the information, even if that means scarifying the linearity of the narration. Fourth, expose a broad and diverse audience to the resulting work, and engage in conversations with the audience in order to inform the visitors about the content of the work. While this way of



summarizing the work process might seem simplistic and prescriptive, it actually allows a great amount of creative freedom to be adaptable to a wide variety of creative practices and contexts.

### **Similarities with GEO—DESIGN**

*GEO—DESIGN* is a term that is being used to indicate a number of different things. In one of its most recent uses, it has been adopted to name a novel master course and a research platform of the famed Design Academy of Eindhoven. Directed by the renowned Amsterdam-based design duo FormaFantasma, *GEO—DESIGN* is described as following:

*[...] This platform explores the social, economic, territorial, and geopolitical forces shaping design today. The department GEO—DESIGN acknowledges the legacy of industrial production as the fundamental source for the designer's expertise and agency in contemporary society while problematizing and addressing its historic contribution to environmental and social instability and its incompatibility with models of sustainable or even survivable futures. (FormaFantasma, 2020)*

*GEO—DESIGN* can therefore be seen as an approach that uses design to observe and relate about the complex dynamics of our local and global realities. We see the project *-162°C, Trading Power* in harmony with the approach described by FormaFantasma. So far, the *GEO—DESIGN* platform has curated and organized three exhibitions at the VanAbbemuseum in Eindhoven – namely, *GEO—DESIGN: Alibaba. From here to your home* (Design Academy Eindhoven, 2018; Van Abbemuseum, 2018); *GEO—DESIGN: Junk. All That Is Solid Melts into Trash* (Design Academy Eindhoven, 2019; Van Abbemuseum, 2019); *GEO—DESIGN: Sand. The Building Block of Modernity* (Design Academy Eindhoven, 2020; Muzi & Petrik, 2020). Similarly to the above mentioned exhibitions, *-162°C, Trading Power* represents a research project about relevant geopolitical dynamics manifested in a creatively designed exhibition that delivers information and offers a context for debate. The fact that there are examples of similar approaches merging design practice, research and curatorship is encouraging and a sign of the fact that this might constitute a relevant area to keep exploring.



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