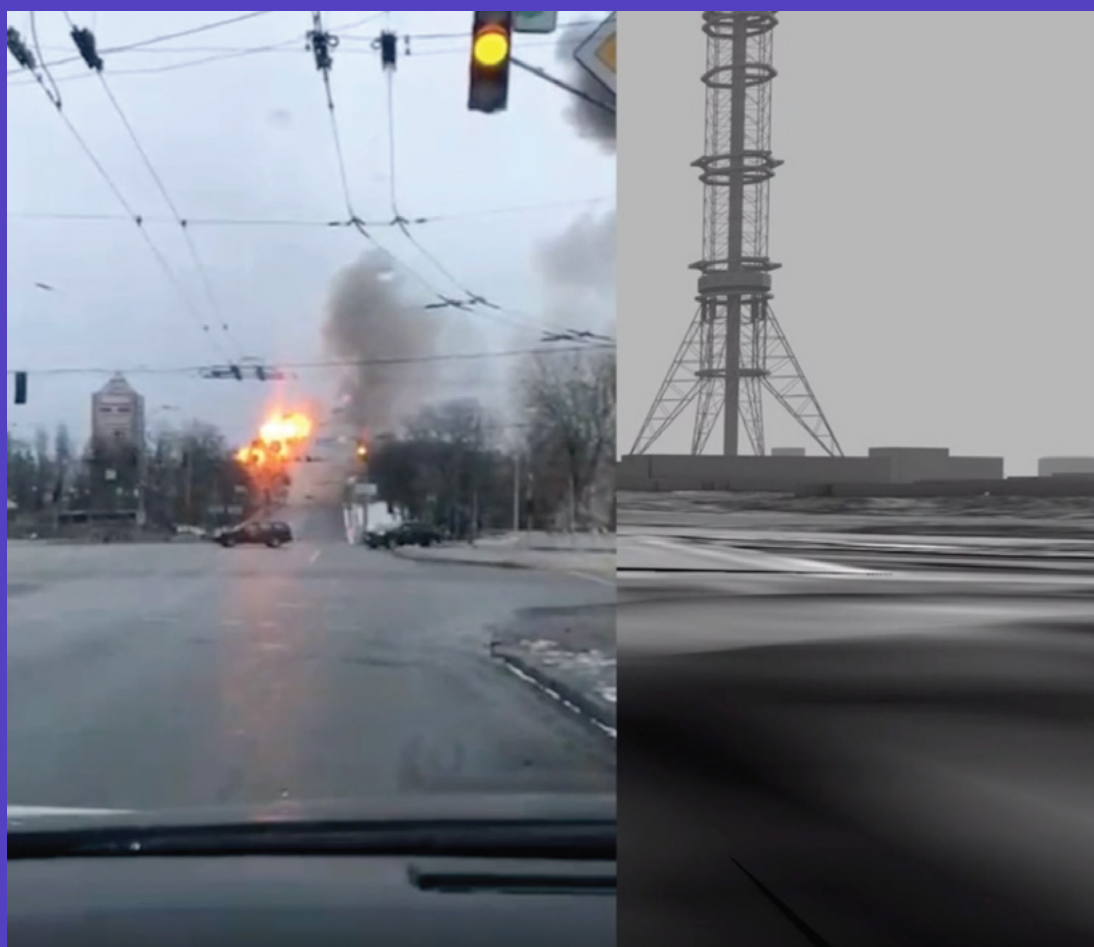


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# MAPPING UNCERTAIN LANDSCAPE



2023

# **MAPPING UNCERTAIN LANDSCAPE:**

## **Mapping in Times of Uncertainty**

MASTER THESIS

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# INTRODUCTION

On February 24<sup>th</sup> 2022 the day of the full-scale Russian invasion, I was not in Ukraine. I did not wake up at 4am from the sound of explosions. I did not run into the bomb shelter. I was safe. Nevertheless, this relative sense of safety was overshadowed by a constant state of fear. Fear not for myself but for my family, who are in Kyiv, fear for my friends who joined Ukrainian armed forces, fear for my home where I grew up. While writing this text in November 2022, most of Ukraine is suffering from power shortages meaning that entire towns are without electricity and heating. We don't know what will happen. The future is inherently uncertain. This thesis was a way for me to keep bearing witness. This strenuous labour of witnessing is performed by people in Ukraine every day. The idea that something traumatic needs to be witnessed, seen and heard is a cornerstone of journalism. This work is now additionally carried out by artists, designers, and cultural workers. Maps and mapping are one way we as artists and designers can keep performing this labour and bear witness to the brutality of war. We can try to make sense of it, even if unsuccessfully.

This thesis explores the question of accuracy when mapping the uncertainties of war. Utilising concepts including critical cartography as well as postcolonial studies, it seeks to address the broader social and political aspects of cartography as a discipline.

Since the beginning of the full-scale Russian invasion numerous news agencies, intelligence agencies, independent cartographers, and investigative journalists have pored over the map. They seek to create the simplest, most understandable, visually appealing map that will explain the complex realities of this brutal, unprovoked war. Yet the maps that are generated are full of reductionist practices that tend to simplify and erase their subjects. Throughout my thesis I divide my concept of accuracy in cartography into two parts: *dispossession* and *multitudes*. I interpret dispossession as akin to the colonial practices of erasure, while I see the concept of multitudes as an anticolonial sentiment that enriches, rather than erases, the subject. Studying an array of different maps, I seek to discern which cartographies aid in dispossession and which speak in multitudes.

The purpose of this thesis is to challenge the general need for homogeneity and simplicity in cartography when it comes to the spatial representation of the war. In order to do this I will: first, analyse how Ukrainian territories were represented in maps throughout parts of its history, trying to identify how maps were used by the empire as a tool of dispossession. Second, through comparative analysis of the maps created by The New York Times in the article "*Maps: Tracking the Russian Invasion of Ukraine*" versus a crowd-sourced "*Eyes on Russia Map*", track the modern processes of dispossession amid current escalation of Russian war in Ukraine. Lastly, attempt to break away from the flat surfaces of cartography into a three-dimensional volume of mapping knowledge by analysing the work of research institute Forensic Architecture.



The conversation about maps would not be complete without touching upon the sciences of geography and geology. Due to the fact that these particular disciplines were the primary users and creators of maps and had the greatest need for spatial visualisation of knowledge. As a result, these disciplines are synonymous with maps and mapmaking. My wider argument stems from the work of professor of Inhuman Geography, Kathryn Yusoff and her view of geography as a primary science of imperialism. According to the thesis formulated in her book *"A Billion Black Anthropocenes or None"*, she talks about geology as a "science of material dispossession" and accumulation, depending on what side of the empire are you on, the centre or the periphery. Through its representation in selected cartography, I track these narratives of division in my historical analysis of the Wild Fields region in the Southeastern Ukraine. In Chapter 1, I see how geological discoveries through the process of categorization of land and matter led to waves of dispossession in the past and in some instances are happening right now.

My research follows the work of various Ukrainian scholars including Asia Bazdyrieva and Darya Tsymbalyuk to see the current war as yet another actualisation of imperialism. This study draws upon Bazdyrieva's article *"No Milk, no Love"*, where she outlines the concept of resourcification: addressing narratives constantly repeated through history, where Ukraine was seen not as a subject but as an object – a "breadbasket", a rich territory ready for colonial expansion. Bringing mapping and geology together, Bazdyrieva highlights how this image developed as *"a product of the hybrid of European and Soviet modernities—each of which in its own way mapped and imaged the territories that are present-day Ukraine."* Tsymbalyuk is also very important for her ideas around decolonial knowledge production. She talks about embodied knowledge and its absence in Western Epistemologies, addressing the unrealistic and problematic separation between mind and body in the knowledge creating processes.

Maps are epistemological as well as deeply ontological, at the same time offering a framework of thinking about the world and a set of judgments about the world itself<sup>1</sup>. At this moment the world is looking at Ukraine through numerous cartographies. In order to not repeat the colonial practices of erasure, we need to understand how to map spatial knowledge of the uncertainties of the war as well as what we are saying with our representations. This thesis explores how developments of crowd-source mapping and a discipline of Forensic Architecture offer alternatives to established map epistemologies, by leveraging information as an embodiment of local knowledge, moving away from dispossession towards accuracy.

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1 Rob Kitchin, Chris Perkins, and Martin Dodge, "Thinking about Maps," in *Rethinking Maps*, 2009, 1–25

My historical analysis is also based on the book of Timothy Snyder "Bloodlands", applying the concept of deep geographies when analysing parts of Ukraine. Snyder is one the few American historians to see Ukraine not as a periphery to the Empire but as a crossroad of European cultural and historical processes.





Chapter 1:  
Power of Maps



## Inherently flawed

There once was a ruler of a mythical empire, who ordered a map of his kingdom to be created. He was adamant for it to be perfectly precise and would only accept a map that was an exact replica of his lands. In order to follow his wishes, the servants had to create a map as big as the kingdom itself. The only way to have an “*accurate*” representation of reality is to map it using 1:1 scale, otherwise maps will always be flawed. This tale is a famous short-story written by Jorge Luis Borges, exemplifying how we tend to confuse reality with its representation. In other words, “The map is not the territory”.

Until recent developments in critical cartography, as outlined by J.B. Harvey, science and cartography have always been portrayed as interconnected<sup>1</sup>. Cartographers lead us to believe that maps are scientific pursuits with the main goal of mapping empirical knowledge. The process of mapping has now been used in virtually every field of science, from geography and geology to sociology and politics. As Chris Perkins suggests, “The development of the “*scientific map*” was taken to be identical with a progressive, cumulative, objective and accurate representation of objective reality and hence, was always assumed to be synonymous with the growth of science itself.”<sup>2</sup> Therefore, the notion of accuracy in modern cartography derives directly from modernist ideas of science and progress. It denies the fact that cartography as a practice itself is positioned between art and science and has historically included both.

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1 David Turnbull, “Cartography and Science in Early Modern Europe: Mapping the Construction of Knowledge Spaces,” *Imago Mundi* 48 (1996): 5–24

2 Chris Perkins, “Cartography - Cultures of Mapping: Power in Practice,” *Progress in Human Geography* 28, no. 3 (June 2004): 381–91

J.B. Harvey takes this argument a step further and claims that, not only are maps not communicating scientific “truths”, but that they are social and political fabrications. Rules of cartography are often influenced by policies, social context of the time, and might carry inherent biases. In turn, these biases, govern the cultural production of the map with the goal to create knowledge, rather than map it. “Maps were not just passive observers in the geographic history of the state: instead, they are what enabled governance to become geographic in the first place.”<sup>3</sup> Although maps as finished products are problematic, the process of mapping is an increasingly vital activity. It is the process of mapping which can help us make sense of the complexities of the world. Transcending the physical / digital divide, mapping knowledge connects the physical world of buildings and cities to more intangible social relations and political networks.



President  
Roosevelt, in  
the Oval Room  
Source:  
Library of  
Congress

3 William Rankin, *After the Map: Cartography, Navigation, and the Transformation of Territory in the Twentieth Century* (Chicago, IL: University of Chicago Press, 2018)



## Waves of Dispossession



Fig. 1. Juan de la Cosa Map, 1500

Source: JSTOR / article The Geographical Activities of the Casa de la Contratacion

As much as maps are inherently flawed, they are also tools used by empires to aid in the systematisation and categorization of matter and resources. The necessity for standardisation of spatial knowledge production comes directly from the need to regulate the land and be the first to define property relations.

Postcolonial studies suggest that empires primarily view their territories in the dualism of metropolitan 'centre' versus a less developed '*periphery*'.<sup>4</sup> The Portuguese and Spanish Empires in the 16<sup>th</sup> century were the first empires to have the need for systematisation of spatial knowledge. Their various cartographies regulated imports, taxes, maintained trade monopolies, extraction of natural resources, slave trade, all in order to supervise rapidly growing empires in newly invaded territories in the East Indies and the Americas. As a result, maps became tools of material dispossession in the aforementioned "*peripheries*." In this chapter, I will survey maps which were enablers of dispossession processes in a Ukrainian context.

4 B. R. Tomlinson, "Economics and Empire: The Periphery and the Imperial Economy," in *The Oxford History of the British Empire: Volume III: The Nineteenth Century*, ed. Andrew Porter and Wm Roger Louis (Oxford University Press, 1999)

## Wild Fields/Empty Planes



By studying how Ukraine was mapped through out parts of its history, we can see the beginnings and repeated reinforcements of the colonial narrative of Ukraine-as-territory and Ukraine-as-resource for imperial expansion. As a result, this narrative aids in the social process of called resourcification—of turning something into a resource.<sup>5</sup>

To better understand which maps were used as tools of material dispossession, I wish to focus on one region of Ukraine and track its representation in various cases. The region I refer to is Wild Fields, located in the Southeast part of modern-day Ukraine. These territories have long and complex colonial histories and can serve to support my claim.

Wild Fields<sup>6</sup> is the historical name of the steppe territory of the Ukrainian region between the Dniester and the Don rivers, where there was a constant movement of nomads (Obrs, Pechenegs, Polovtsians) and Tatars hordes. The aforementioned steppe is fertile land, well suited for agriculture. It was also a desirable territory for the flocks of nomads who, after escaping serfdom, settled in these “empty” territories. Due to Ukraine’s rich agricultural sector, peasants owned and cultivated their lands in the Wild Fields for centuries, there was often no clear demarcation between the farmer’s and the nomad’s land.

Borders between these territories were highly flexible, making them more similar to frontier zones than rigid outlines. The frontier men of the Wild Fields were the Cossacks<sup>7</sup>— free, semi-military organisation of people fleeing from serfdom in the 15th century. The history of Cossack’s play a substantial part in the Ukrainian

<sup>5</sup> “A Resourcification Manifesto: Understanding the Social Process of Resources Becoming Resources | Elsevier Enhanced Reader”

<sup>6</sup> Ivan L. Rudnytsky, “Essays in Modern Ukrainian History,” accessed October 8, 2022

<sup>7</sup> “Ukraine - The Cossacks | Britannica”



Fig.2. Guillaume de Beauplan, 1648, Delineatio generalis Camporum Desertorum vulgo Ukraina: cum adjacentibus provinciis Source: Library of Congress

nation building narrative, similar to the frontier men of the Wild West, outlined by Turner in his *“Frontier Thesis”* for the United States. Wild Fields were weakened by feudal disputes and intense struggle with Mongol-Tatar conquerors from the 14<sup>th</sup> century. They then became the object of expansionist aspirations of the rulers of Lithuania and Poland.

During the 16<sup>th</sup> and 17<sup>th</sup> centuries, Ukraine was under the formation of the Polish-Lithuanian Commonwealth. This period coincided with significant developments of cartography as a discipline. The Poles were actively mapping their colonised territories. As a result, the first maps dedicated exclusively to Ukrainian lands were published in 1650–1660 by the French author, military engineer and cartographer Guillaume de Beauplan.

Beauplan served under the Polish king and spent seventeen years in Ukraine as a result. He created several maps of Ukraine and its regions (Kyiv Oblast, Podillia, Volhynia, etc.), as well as a map of the Dniro. These maps illustrate the geographical environment, the flora and fauna, climatic conditions, and provide data on the history of settlement of the Middle Dniro region. It paints a vivid picture of the life of the Ukrainian people in the first half of the 17<sup>th</sup> century. It is also significant because the toponym "Ukraina" was first used to denote the entire Ukrainian territory *"from Muscovy to Transylvania"*. The full name of the map is *"General Depiction of the Empty Plains (in Common Parlance, the Ukraine) Together with its Neighboring Provinces"*. It is of note that the crest of the map depicts several Cossacks and an Ukrainian peasant together with the coat of arms of the Kingdom of Poland. Beauplan associated the territories of Ukraine with Cossacks, and focused on their social organisation and customs in his text "Descriptions of Ukraine". It is also noteworthy that the map is positioned in reverse with the South located on the top, a characteristic feature of military maps for regions that were vulnerable to southeast attacks.



Fig. 3. Palatinate of Bratslav

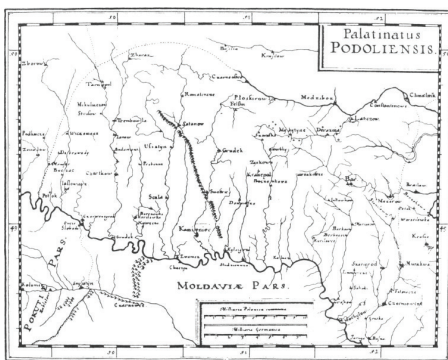


Fig. 4. Palatinate of Podolia





Fig. 5.  
Fragment  
of of the  
Beuplans' map

“Empty Planes” is a term we can see on this map as another colloquial name of the Wild Fields.<sup>8</sup> In that period there was no clear demarcation between settled country and the so-called “wilderness”. Later, the area was occupied by the Muscovy’s following the expansion of the Russian empire to the South. In order to escape continuous invasions of the Tatars, Muscovy’s built cities and settlements in the Wild Fields. According to Mark Monmonier, toponyms can be a powerful weapon of cartographic propaganda. As well as defining anonymous locations, place-names can also give insight into a region's ethnic identity and character. The fact that lands of Ukraine were denoted as empty and wild tells us something about the nature of how they were perceived by the empires ruling over them. Therefore, a toponym, a name on a map, that at first appears superficial, can speak of a deeper, powerful narrative. The terms Empty or Wild were applied to Ukrainian territories for centuries, up until the geological discoveries by the Russian Empire.

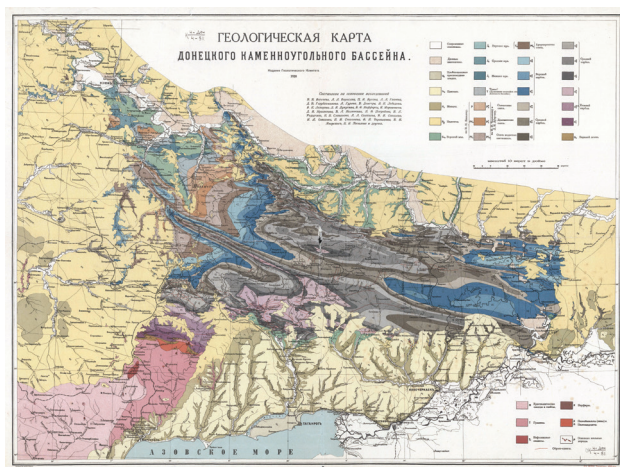


Fig.6 Geological map of the Donets Coal Basin, Publication of the Geological Committee Petrograd, 1920

Afterwards, the emptiness would be filled by colonial practices of extraction and subjugation by the Muscovy and later Russian Empire and Soviet Union.

Significant shifts towards the resourcification of Ukraine came later in the 19<sup>th</sup> century, coinciding with the Industrial Revolution in Europe and the discovery of significant deposits of coal and iron in the eastern parts of Wild Fields. At that time the name Donbas was coined—short for Donets Coal Basin.

Donbas as a toponym itself carries a colonial trace, since it refers to the geology of the region—coal. It is not a coincidence that after geological discoveries, the Russian empire and Soviet Union started to create extensive maps of coal deposits of the region. Hundreds of maps would detail the numerous dune accumulations and suites of cuprous sandstones, further dividing and categorising the region's material resources. In such maps, I see here what Kathryn Yusoff describes as *“languages of materiality”*, which divide between *“life and nonlife”*, leading to categorising people who occupy the land into *“subjects as humans and subjects priced as flesh (or inhuman matter)”*.



Fig.7 Donbas the heart of Russia  
Source: New York public Library

The Donbas region was essential to the Soviet Union Project as it embodied the industrial ideas of socialism, such as the dichotomy between the county to the city, development of industry and social region under construction. Poster/map “*Donbas is a heart of Russia*”, Fig.7 which depicts the area as a pulsating red heart. This map represents the vision for the region; a deep well from which riches could be extracted. By pumping industrial goods through blood vessels across Soviet land, even the name itself signifies the plans an hopes for Donbas to be the primary resource for building the new republic.

One particular aspect of the poster is the network of veins, spanning from Donbas to Crimea out to the port city of Sevastopol, in the East to Novocherkassk and on to Astrakhan. In the Northeast all the way to St. Petersburg, Riga and Tallinn. The plan for Donbas was ambitious, and the resources extracted from the region were seen as essential building blocks for the Soviet Republic and had to propel the industry forwards.

During the time of the Russian civil war throughout 1919, there were fierce battles over natural resources in the Donbas. Hunger ravaged, the economy was destroyed, and the coal in the Donbas was absolutely central as revolutionaries and counter-revolutionaries fought on the battlefield. The Krakow newspaper *Vozrozhdenije* wrote: *"The Donetsk Basin is the heart of Russia, and if this heart stops knocking, life in Russia will come to a standstill"*.

Enthusiasm and optimism were visible in the maps and propaganda posters of the time. Fig. 8 depicts what is expected from the region: *"Total coal to be extracted – 290 million pounds."* The Politburo was trying to increase the mining capabilities of Donbas, after the devastation of the civil war. The poster sets up the goals for the region, each mine is expected to deliver a certain thousand pounds of coal to the Russian Soviet Republic: Hryshyne region 14.317 pounds, Hughesovka mine 41.572 pounds, Lysychansk mine 11.188 etc. Each cart on the map signifies 10,000 pounds of coal and anthracite. The Bolsheviks were expecting people to rise to the challenge with a smile on their face and get to work. Anyone who could not deliver the quota was met by forceful actions of extraction and displacement. They were branded as saboteurs of the socialist project. Alongside large numbers of individuals deemed to be *"enemies of the people"*, they were deported to Gulags or executed.





Fig. 8. "What Russia expects from Donbas in 1921" Statistical map of the coal production on the Donets Basin  
 Source: New York public Library



Fig.9. Look! Wealth awaits the acts of labour. 1921 Comrade! To fight destruction!  
With powerful pressure we will achieve a well-fed, abundant life. Source: New York public library

This propaganda map Fig.9, successfully represents the eager call for workers to come and take the riches from the land: the territory is there for you to take advantage of, to enrich yourself. The main message of the poster is a prosperous life awaits you, it is within your reach. The cities of Moscow and Petrograd are at the centre of the map, they are shown to be the biggest in size and detail. We can see the numerous factories and fields of wheat, pastures and meadows, sheaves of hay scattered around the whole territory of the USSR, as if they were there for the taking. The way the map is designed is to make an impression of the land and the people living on that land as an endless resource, omitting the histories of violence that go hand in hand with such a colonial gaze.

The First Five year plan was an essential stage in the development of the revolutionary project of the Soviet Union. The main task was to transform the USSR from an agrarian society into a developed industrial power. Looking at the maps and propaganda posters created during that time, we can see the push of

the Soviet propaganda machine towards the extraction of as much coal and steel as possible. The maximum forces and resources were transferred to the needs of industrialisation. Forced collectivisation<sup>8</sup> was introduced in the village, turning the peasants into slaves on collective farms.

The First Five year plan resulted in years of terror and denationalisation in Soviet Ukraine. Massive collectivisation resulted in Holodomor—a man-made famine that killed millions of ethnic Ukrainians between 1931-1932. In this case, colonial processes of categorisation of matter and resources led to deaths of millions of people. As tools of empires, maps contributed to those processes of dispossession.

By seeing how various empires were mapping Ukraine as a periphery, dividing the Wild Fields into lands, people, natural resources, and geologic discoveries, we can see how the conditions of colonial extraction were organised. As well as supported in the imagery and in narrative, cartography, a discipline situated between art and sciences has the capacity to categorise and measure the world as well as shape certain realities of it. Ukraine was represented as peripheral by cartographies of the Greeks, Polish-Lithuanian Commonwealth and Russian Empire, and subsequently Soviet Union. On paper, it was not acknowledged as a subject of historical processes but represented as a resource for colonial expansion<sup>9</sup>: a breadbasket, an endless chamber filled with materials there for the taking. As a result of such narratives, Ukrainian territories suffered waves of dispossession throughout its history. I argue that these same processes, although executed differently, can be found in modern cartographic practices that I will be analysing in the second chapter.

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<sup>8</sup> Collectivisation - Soviet policy of transforming traditional agriculture and reducing the economic power of kulaks (prosperous peasants).

<sup>9</sup> Asia Bazdyrieva, "No Milk, No Love - Journal #127 May 2022 - e-Flux," accessed October 6, 2022, <https://www.e-flux.com/journal/127/465214/no-milk-no-love/>.





A grayscale map of a region, likely a river valley. A prominent, winding river flows from the top right towards the bottom left. A road or path runs parallel to the river, following its course. In the upper right quadrant, there is a small, dark, rectangular feature, possibly a building or a specific land use. The map is rendered in a halftone or dithered style, with varying shades of gray representing different terrain features and land cover.

## CHAPTER 2: Analysis of the Map

Analysis of the New York Times article  
*"Maps: Tracking the Russian Invasion of Ukraine"*  
Versus Crowd-source map *"Eyes on Russia"* Monitor Map

After studying how parts of Ukraine were represented in cartographies of Empires, in this chapter I aim to examine the modern practices of dispossession through the examination of the maps created during the Russia-Ukraine war. My analysis will be focused on the maps that were created during a seven-month period from the 24<sup>th</sup> February to 10<sup>th</sup> October 2022. I will examine how different parties attempt to map the uncertainties of war, finding certain patterns in representation, common practices and gaps in spatial knowledge production. The following analysis outlines whether these practices succeed or fail in representing or considering the subject of the map, Ukraine and Ukrainian people. Discussions of accuracy in cartography, or any kind of media message, necessitate careful examination of the source in order to understand who is speaking and where the information is coming from.

In the times of war information is power. With that idea in mind, I will be analysing the 45 maps created by the New York Times [NYT] vs the interactive crowd-source map created by the Centre for Information Resilience called “*Eyes on Russia map*” [Monitor map]. During the research phase of my thesis, I conducted an interview with the New York Times graphics editor Marco Hernandez. The goal of the interview was to clarify certain design and colour choices of the map, as well as the process of developing a map that will be used in the NYT article.

While conducting my examination of the maps I will be asking the following questions: What is the main information source of the map? How is the map created? What is the visual language that the map employs? Finally, the silences of the map: who is the subject of the map, who is mentioned and who is missing.

## Cartographic Silences

As argued in the previous chapter, maps are inevitably flawed. The nature of the standard map implies reduction and erasure of information. In the next sub-chapter, I will outline some of the typical sources of distortions in traditional cartography.

Unless the creator of the map wants their reader to get lost in a sea of icons, symbols and topologies, they need to “*reduce the clutter*”. In the book “*How to Lie with Maps*”, Mark Monmonier writes about different techniques cartographers use to simplify the map. In Fig.1 we can see some examples of map generalisations. Such as **simplification** that reduces the detail by eliminating points on the map, and is useful when working with a particularly big amount of data. **Displacement** avoids clutter or interference of various points over each other. For example, a reduction in scale leads to significantly more data points located on a smaller map surface, in this case simplification or displacement will be used. **Smothing** is also a technique that diminishes detail significantly, when there is a need to avoid unnecessary elements when drawing a curved line, like a river or a road.

I find it particularly interesting that the terminology used in these map generalisations are also applicable to the social processes of erasure and displacement taking place daily in Ukraine. As artist and researcher Darya Tsymbalyuk claims, empirical processes operate through erasure. These processes are happening daily on the ground in Ukraine, now we can see them in cartography as well.



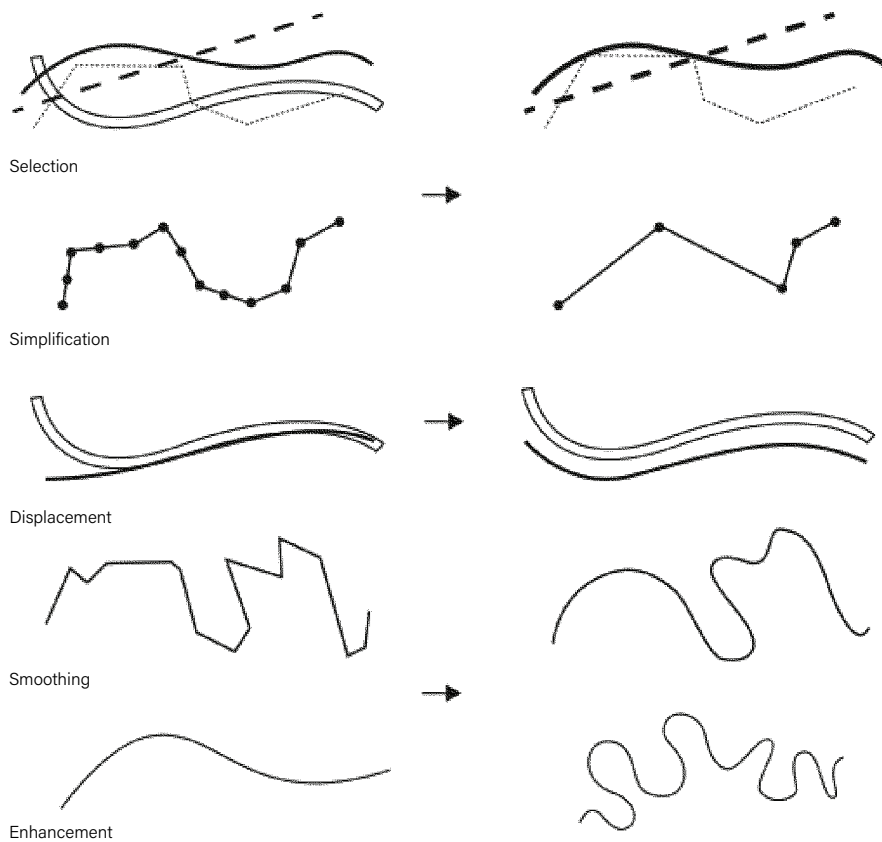
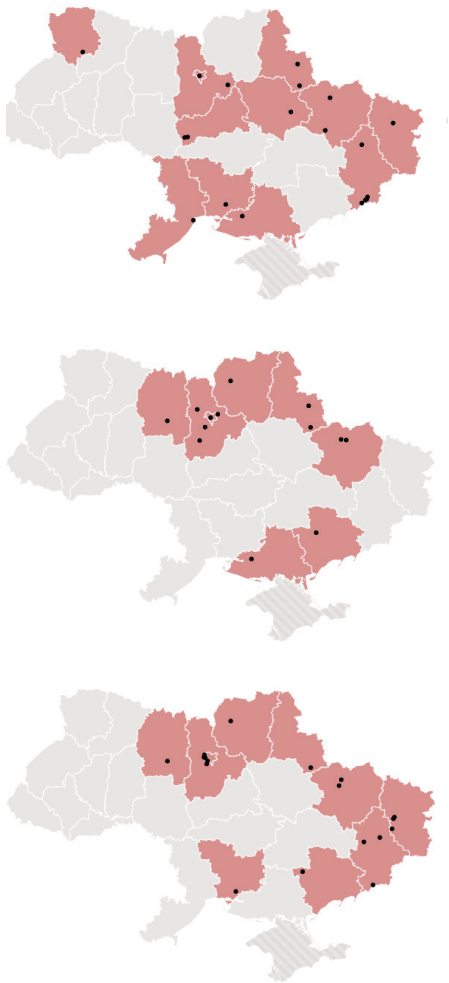


Fig.1 Elementary geometric operations in the generalisation of line features.  
Source: "How to Lie with Maps" M. Monmonier

# The New York Times Map

The New York Times



# Introduction to the case study:

One of the aspects of the war is the unprecedented amount of intelligence the United States is giving the Ukrainian military. Intelligence includes, but is not limited to, Russian command posts, naval information and positioning of the troops. The New York Times, as one of the biggest daily newspapers in the United States, has a worldwide readership base and has been a prominent voice in the reporting on the developments of the war. Its reporting of the Russia-Ukraine war started well before the 24 of February. Due to the numerous reports and predictions coming in, signifying the inevitability of the full-scale attack, most of the graphic guidelines for the war maps were designed a few days before the invasion. The article that I am focusing on is part of the breaking news coverage, which means that the maps are created the same day (or the day of) the events occurred. The primary source of the NYT maps is the Institute of the Study of War [ISW]. 26 maps out of 45 analysed stated them as a primary source. Other sources were–Ukrainian officials (13 maps), NYT reporting (11), satellite imagery, witness accounts (5) and Russian officials (4).

## **Institute of the Study of War<sup>1</sup>**

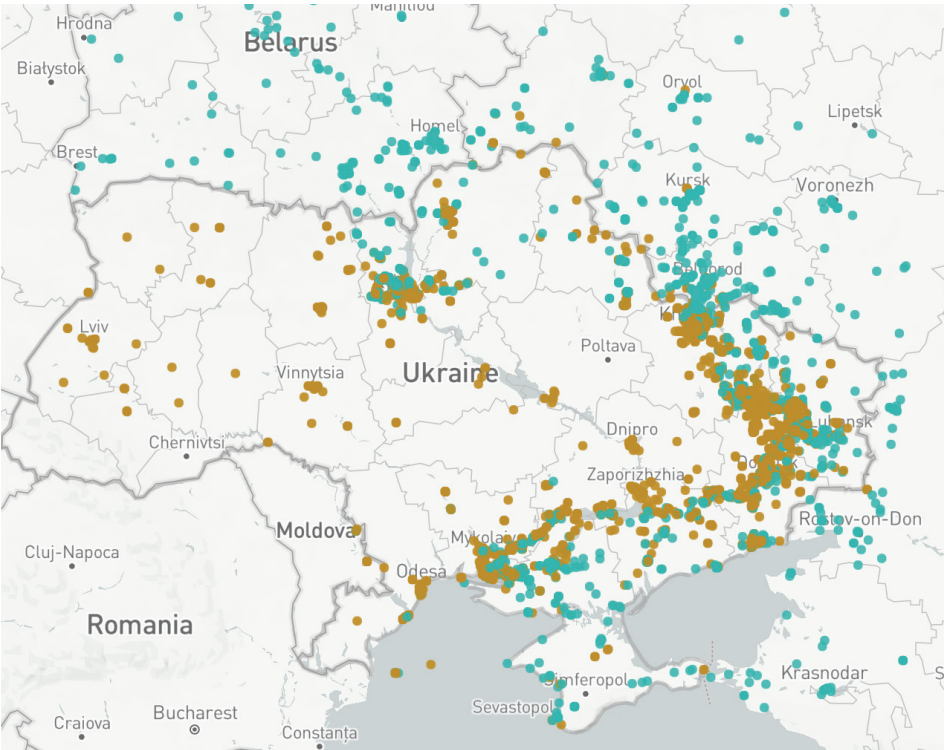
We cannot talk about the maps of the NYT without mentioning the Institute of the Study of War, the primary source of most of the maps I have analysed. The NYT receives daily reports from ISW with their maps and analysis. The designers use the ISW maps as base maps for their reports and are trusted as a “*reliable source*” of spatial information about territorial gains and losses. According to Hernandez, the NYT then goes on to modify some aspects of the map and combine the information with various reporting so as to not use only one source of the information.

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<sup>1</sup> ISW is one of the biggest think-tanks located in Washington DC, working on analysing the current situation on the ground. It delivers extensive daily reports on the Russian “Offensive campaign”. Every assessment features a long-read article and a map of the current situation on the ground. They claim to be a non-partisan, public policy research organisation that helps the US and its allies to get a better picture of the conflict and ability to execute military operations.

# "Eyes on Russia" Monitor Map

Monitor map is a crowd-sourced map that is created by the group called “*Centre for Information resilience*”. Centre for Information resilience is an independent, non-profit social enterprise that aims at providing reliable and timely information regarding the Russia-Ukraine war.



Crowd-source mapping is one of the most significant developments in digital cartography. It plays an integral part in humanitarian response in war zones and crisis areas and is a part of the effort called digital humanitarianism. Burns conceptualises such activities as *"the enacting of social and institutional networks, technologies, and practices that enable large, unrestricted numbers of remote and on-the-ground individuals to collaborate on humanitarian management through digital technologies"*.

One of the driving aspects of a strong resistance that the Ukrainian community has shown in the face of this war is the rise of the volunteer sector. Thousands of small, grass-roots volunteer organisations were formed during the Maidan<sup>2</sup> revolution and the early days of the war in 2014. Especially prevalent during this period of escalation was the IT volunteer sector. Calling themselves the "IT army", these specialists in digital technologies were working on neutralising the effects of Russian propaganda.

The project started as more and more reports were coming about the build-up of Russian troops on the border with Ukraine. The goal of the map is not only to gather information but also to serve as an archive that can be used by justice, accountability, and advocacy groups. Mnemonic group is an example of the organisation that collaborated with the CIR to help human right defenders to use digital methods to gather evidence of potential war crimes and create an independent data-base like the Syrian archive.<sup>3</sup>

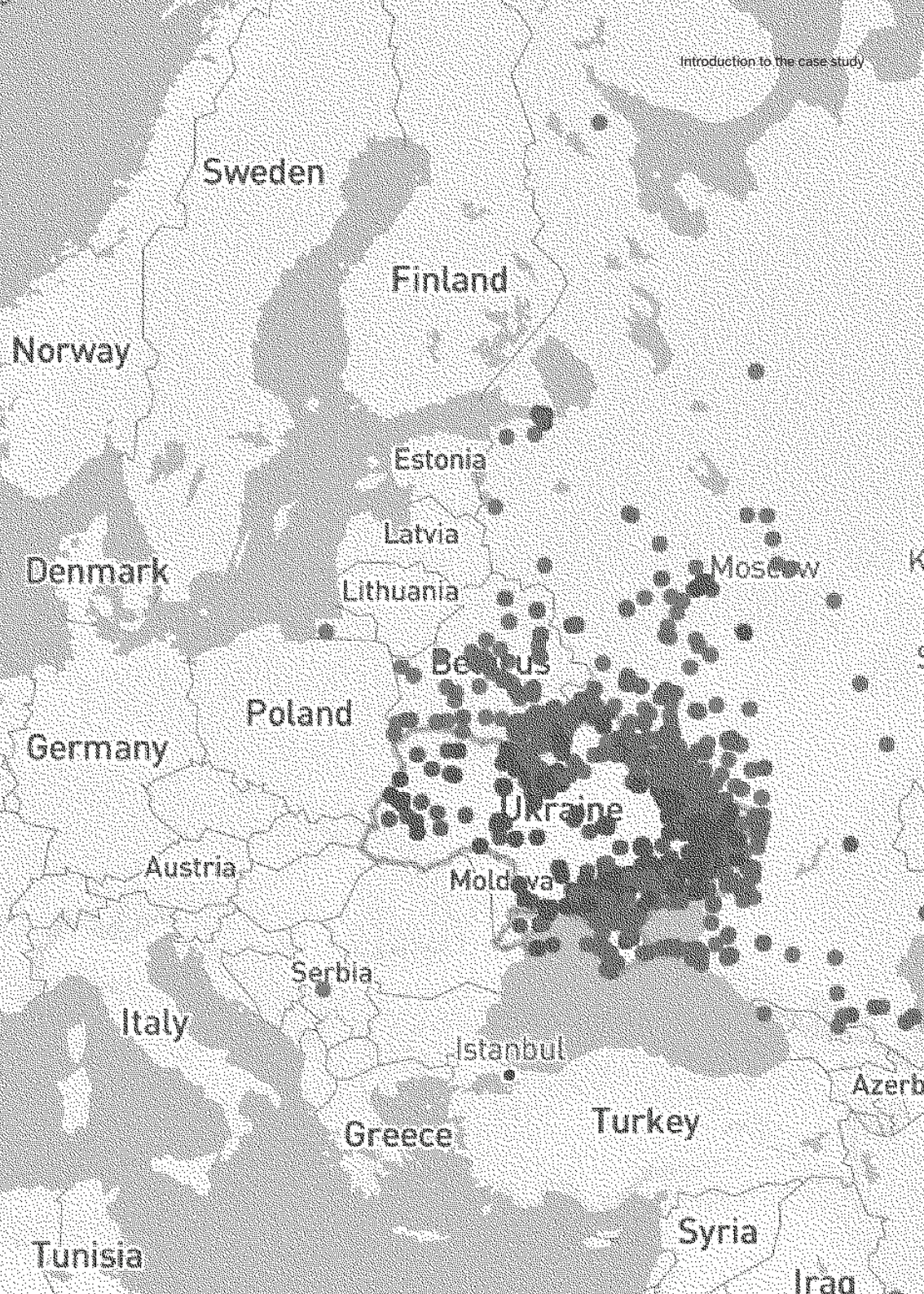
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<sup>2</sup> Maidan - the Revolution of Dignity also known as the Maidan Revolution or the Ukrainian Revolution, took place in Ukraine in February 2014.

<sup>3</sup> Syrian archive - is a Syrian led project that aims to preserve, enhance and memorialise documentation of human rights violations in Syria for use in advocacy, justice and accountability.



While the NYT gathers their information from one source located in Washington DC, the Monitor map is possible due to the large crowd-sourcing community. It supplies the project with footage from social media accounts, open-source satellite imagery and reports on the ground. Each data entry before appearing on the map follows a unique verification stage. First the information logged gets an entry number which contains the name of the investigator, the type of media and the platform it came from. Since data points are taken from social media channels, the volunteers ensure the time and the place of the creation of this media. By using the process of geolocation, looking for visual clues in the footage and comparing it to the satellite imagery the team is able to cross-reference the geolocation to other imagery taken nearby.

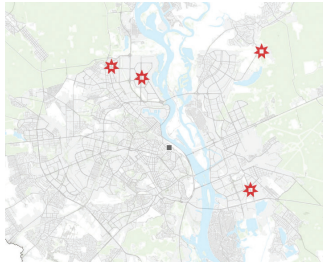
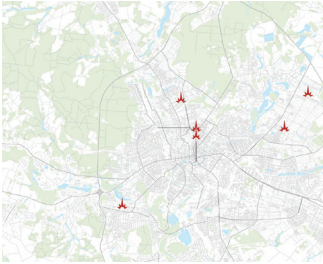


## Colour & Iconography: The New York Times

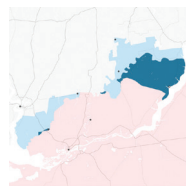
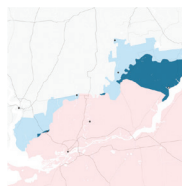
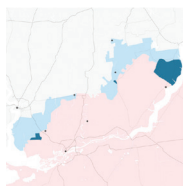
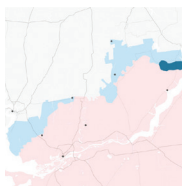
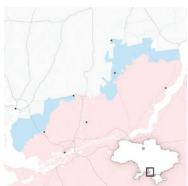
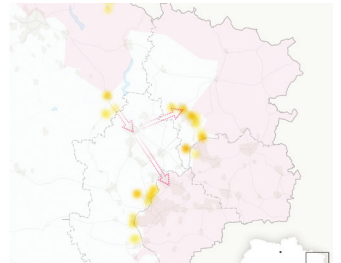
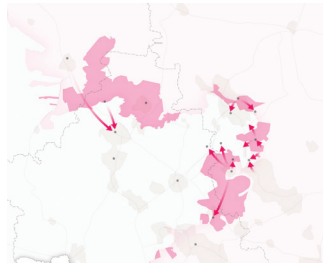
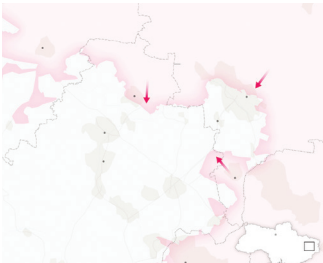
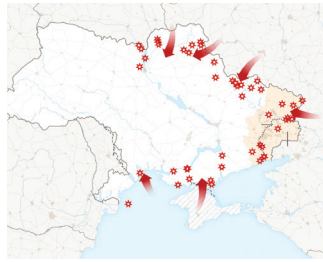
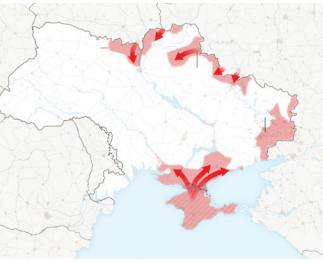


If we follow the NYT article, we notice that most colours used for the terrain (background) are lighter shades, so as not to distract you from the main data which is signified in brighter colours. While occupied areas, military positions and fighting zones are signified with bright red, pink colours, bodies of water in light blue, cities and main road connections in light grey. When you look at all the 45 maps that were chosen for this case study, the dominant colours are very clear. Red and its shades are the primary colour hues used by the NYT. The high contrast between the terrain and the main information also points to the editor of the map directing our attention to these specific areas, signifying their importance.

Terrain colours



Target area colours





## Visualisation of the “Occupied/Liberated territories”: The New York Times



In the first images created by the NYT, from 24.02.2022 until 03.03.2022, the occupied territories were signified by vibrant red colour. This is a common practice used in the media, to signify them as “*taken*” or “*occupied*” territories. According to a geographer Doug Specht<sup>4</sup> such a generalisation or homogenisation of space is misleading. These practices aid in the perception of Ukraine as a territory that can be divided into good or bad, under Russian control, not-yet under Russian control, gone or forgotten. In reality the actual status of these areas is contested.<sup>5</sup> Reading reports from the occupied cities, we know that Russians do not control most of these areas. Protests erupt constantly and underground partisan fighting is prevalent. Failing to mention the forces of resistance and counter-offenses paints a flawed picture of the situation. I argue that marking the whole territory in red is more than misleading, it is aiding the Russian information warfare by actively weakening the ties between the land and the people, by visually dividing the territory and signifying its *otherness*.

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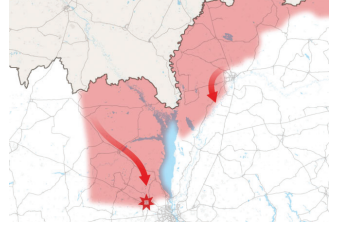
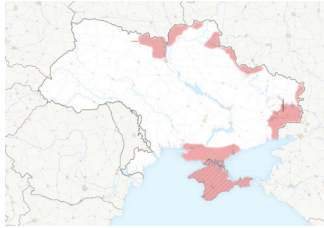
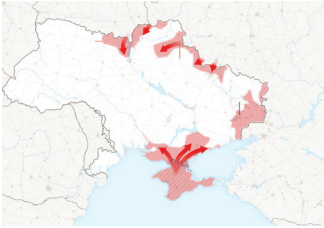
<sup>4</sup> “How Maps Tell the Story of War in Ukraine - Geographical,” accessed September 16, 2022,

<https://geographical.co.uk/geopolitics/how-maps-tell-the-story-of-war-in-ukraine>.

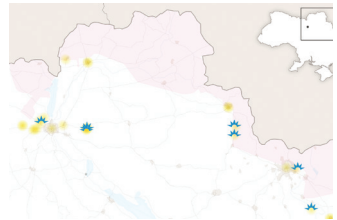
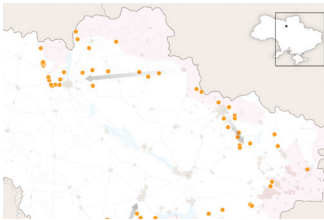
<sup>5</sup> Mateusz Fafinski, “In Putin’s War, the Map Is Not the Territory,” Foreign Policy (blog), accessed October 5, 2022, <https://foreignpolicy.com/2022/03/07/russia-war-ukraine-maps/>.



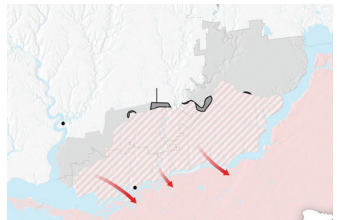
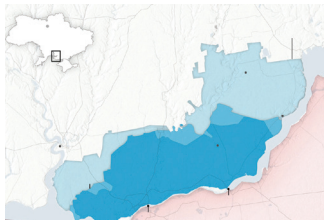
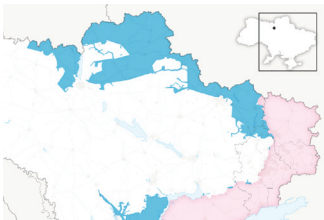
Colours before 1.03



Colours after 1.03



Colours after 12.09



## Colour & Iconography: The New York Times

We can see the shift in colour use on the 8<sup>th</sup> of March when the NYT started using lighter colours, moving to lighter value on the colour scale and creating a less dramatic picture of the situation on the ground. Hernandez stated that the shift in colours occurred because at the beginning of the invasion the audience of the articles, mostly located in the USA, were not familiar with the map of Ukraine and the information needed to be marked clearly. The focus of the map was the invasion itself and the readers needed to see distinctly in which exact areas Russian troops were located, which is why the bright red colour was used.

In the recent maps from the 1<sup>st</sup> of September, the NYT started to mark "*liberated*" areas in blue or light blue colour. Indicating liberated areas in this way establishes a false narrative. It is not factually accurate to state that only four months after the full scale invasion the forces of resistance started to appear. The Russian military already was pushed back into its own territory from the North, during the liberation of Bucha and Irpin. By omitting the actions of resistance, it paints an incomplete picture of the conflict. As well as creating a sort of contrast, dichotomy between the "*good*" and the "*bad*" territories which again aids in the false division of the country. Since the maps are already drawn, you accept them as reality. The map creates a sense of despair, by not considering the people living in these red/blue coloured cities and villages. Here we see the processes of reduction and homogenisation taking place.

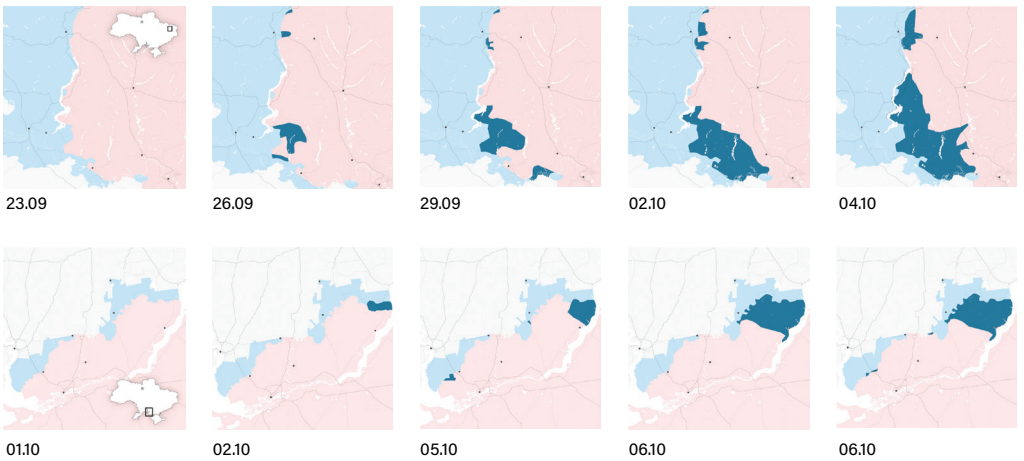


Fig.6

# Iconography: The New York Times

After reviewing/comparing side by side all the iconography used by NYT maps we can notice a pattern. In the NYT map large, usually red or pink arrows signifying the advance. Bold, solid, aggressive looking lines might communicate attack and imminence of danger. We can also see the domination of the red, “*enemy*” iconography in the maps, compared to the other colours, like blue or yellow. The colour proportions are still skewed towards red. When asked why NYT designers continue to use these dramatic colour combinations, as well as why they choose to apply colour to signify “*liberated/occupied*” territory, Marco Hernandez responded that they don’t want to modify the statement of the original source. Additionally their primary concern is to stay consistent throughout the article with the colour/iconography choices so as to not to confuse their readers.

All of these choices influence the way we perceive information. The symbols, while being effective in conveying the message, can have a negative effect on the viewer. By using abstractions and simplification these icons tend to have a dehumanising effect that removes people from the horrors of war. Each event is connected to an actual human story. By reducing the most traumatising human experiences to lines and colours we see others as less human and their stories as less important. I argue that homogenisation in case of colour usage and simplification or abstraction in iconography can be seen as a visual practice of dispossession.



Ground fighting  
air-strikes or  
attacks



Airstrikes or fires  
reported



Major front



Most recent  
advance



Major Front



Taken by  
Russians



Ukrainian  
defense



Ukrainian  
counterattack



Ukrainian  
counterattack



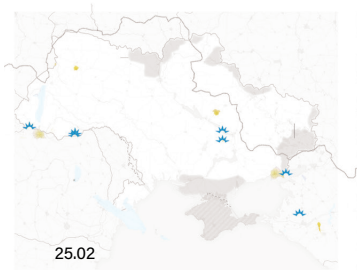
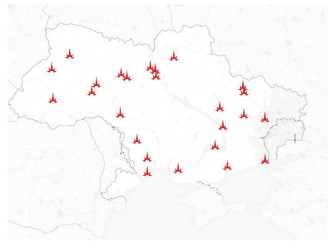
Current  
fighting



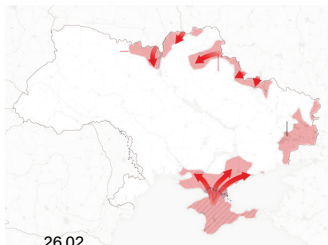
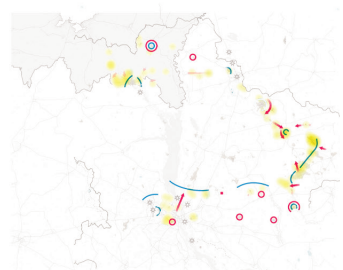
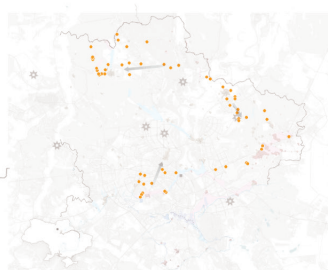
22.02



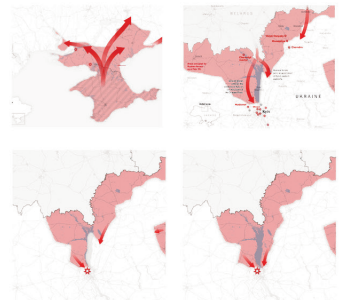
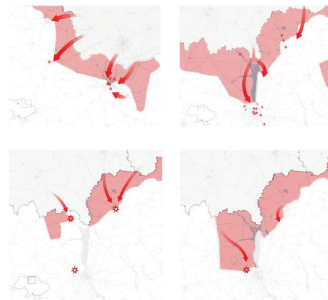
24.02



25.02



26.02





## Colour & Iconography: Monitor Map



Terrain colours



Civilian destruction



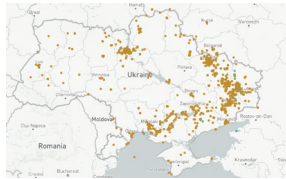
Russian Military

When you open the Monitor map you might feel overwhelmed by the amount of information. We see hundreds of overlapping dots. By clicking on the individual dot you are presented with a huge volume of information: dates, source links, geolocations, cities, coordinates, violence level as well as a photo or video of the event. This is in contrast with the NYT map, where information is presented as clean as possible, removing all the “unnecessary” details.

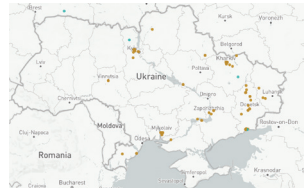
The only two colours that are visible on the map are turquoise and gold. All information connected to the Russian military forces is signified with turquoise colour, everything connected to deaths and infrastructure damage is in gold. It is particular that the colours chosen differ from the typical red vs blue contrast, we can see in the NYT map. Colours almost appear neutral so as to not distract you from the main information, the event, the photo, the location, the timeline.



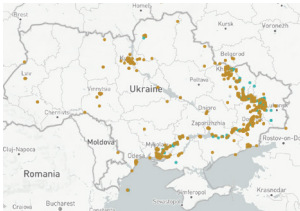
Russian military losses



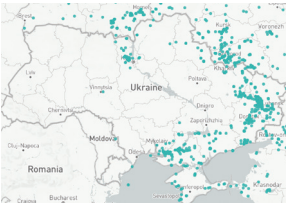
Civilian infrastructure damage



Civilian Casualty



Bombing or explosions



Russian military presence



Ground battles

## Colour & Iconography: Monitor Map

One of the important aspects of the process of creating the Monitor map is categorisation of the footage according to violence level. This works as a so-called trigger warning for investigators, reviewers, and the viewers of the footage to prepare themselves for graphic imagery. This is the first time that I have seen the creator of the map take into consideration the viewer in this way.

The map does not only tell you about the current date but it also includes all the past documented events. Tracking the developments over time can be done using the timeline function(Fig. 7.). It allows you to move freely within the map, choosing a specific date or a period you wish to focus on.

The map/site can therefore present you not only with the focused look on one day or week but a totality of the war. From the beginning of the escalation in February to right now, or a couple of days ago. This totality seems overwhelming but at the same time it does not exclude, censure or erase the subject. All events have an equally important place in this archive of war.

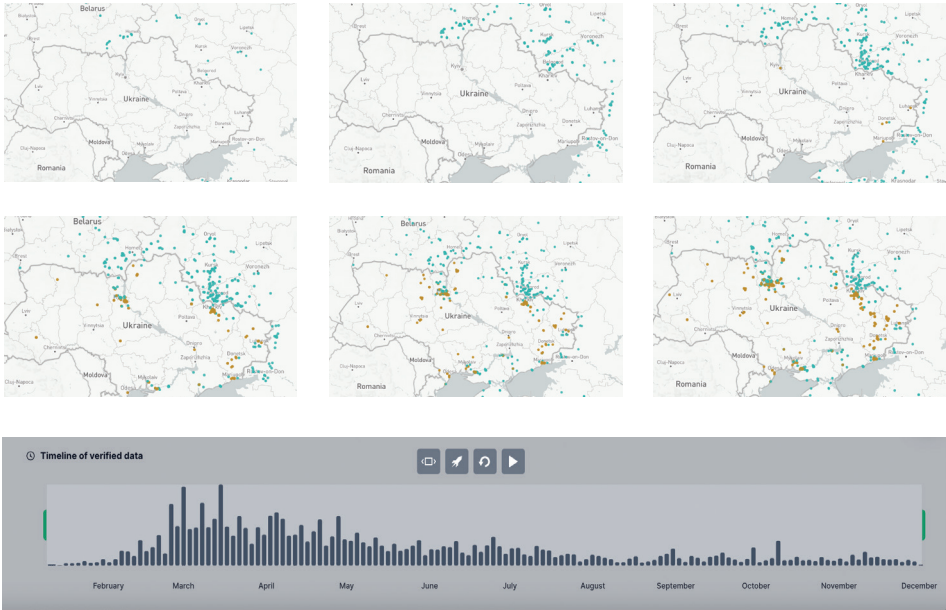


Fig. 7. Timeline

Graphic Content Level: Highly Severe

Graphic Content Level: Severe

Graphic Content Level: Moderate

Graphic Content Level: Mild

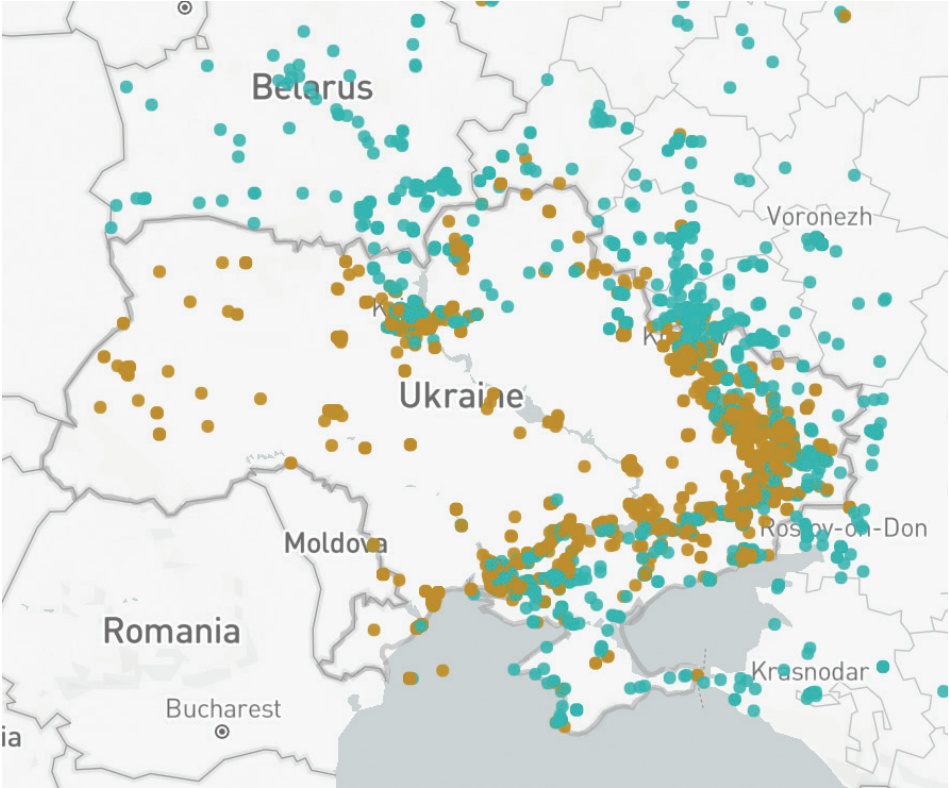
Fig.8

## Visualisation of the “Occupied/Liberated territories”: Monitor Map

This map does not signify “occupied/liberated territories”. It refrains from any use of colour on the territory itself. This speaks to the relevance of colouring the territories all together.

When the reader is presented with raw, although structured, information, they do not need to know whether this territory is “blue” or “red”. As well as use of iconography is substituted with actual footage of the event. We can conclude that the information is far less reduced, censored, or blurred; and presented as close to reality as possible. Since the Monitor map acts as an active archive of war, with the intent to battle misinformation, we can understand why the creators of the map chose to use actual footage rather than icons or symbols. For them every image is vital, it carries weight and needs to be seen, witnessed and archived.









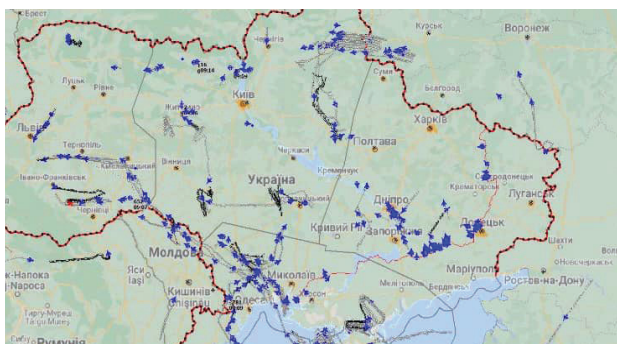


## Focus of the map: 10.10.2022

My main goal in the next sub-chapter is to single out one event of the war and track how it was represented. What techniques of simplification the authors used? Who is the focus of the map?

The date I have chosen is the **10<sup>th</sup> of October 2022**.

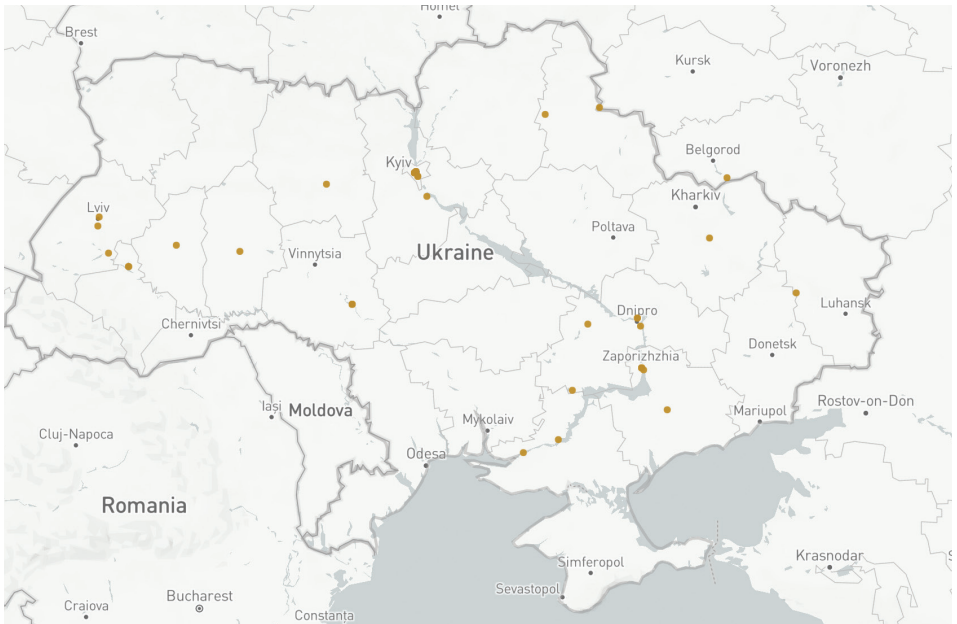
On this day 83 missiles and 17 Iranian drones were launched towards Ukraine. The main goal was to target civilian areas and critical infrastructures like power plants, water towers and bridges. At least 14 people were reported dead and many more injured.



Map of the number of rockets flying towards Ukraine. Source: The Commander-in-Chief of the Armed Forces of Ukraine Valerii Zaluzhnyi



The New York Times Map / events of 10.10.2022



Monitor Map / events of 10.10.2022



## Focus of the map: The New York Times



The New York Times Map / events of 10.10.2022

After the analysis of how this event was represented in the maps by the NYT, we can observe how the NYT reporting concentrates the event to big cities, ignoring the experience of the periphery. We see 20 red dots with explosion symbols scattered around the whole territory of Ukraine. By looking at the map, we can see one strike in each region that was hit. The dots are approximations and obviously are not the exact location of the strikes.

However, after analysing the actual situation on the ground, following the news articles that day, we can see much more extensive damage than one strike in one region.

In Kyiv<sup>6</sup> alone, Ukrainian officials reported damage to: 45 residential buildings, 5 objects of critical infrastructure, 6 educational institutions, 1 kindergarten, 2 cultural institutions like Bohdan and Varvara Khanenko National Museum of Arts, 5 hospitals, and two administrative buildings. Lviv (located in the West of Ukraine, and a place where millions of people relocated, fleeing the immediate fighting) suffered strikes to the critical infrastructures and as a result 90% of the region was left without power overnight. Kharkiv (a city located only 30 km from the Russian border) suffers almost daily shelling and on this date no fewer than three strikes were recorded.

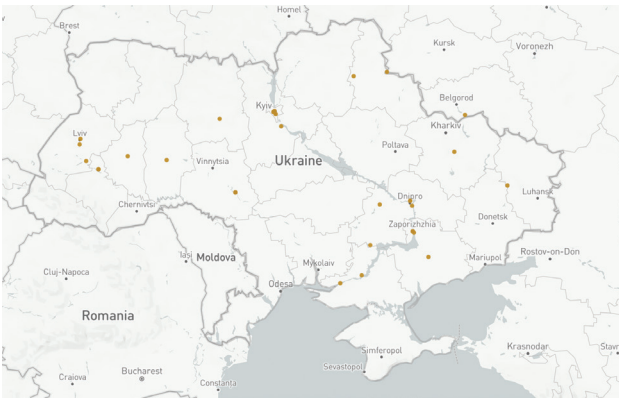
The main problem of the NYT map is the scale chosen to represent information. The purpose of scale is to avoid unnecessary data points and show a “clearer” (meaning uncluttered) picture. By choosing to use the small-scale map, the NYT article creates an illusion that the main action is happening in the big cities, or regional centres like Kyiv and Lviv. The choice of scale depends on the data received by the staff. *“The more granular the data, the larger the scale”*. The goal of the NYT map was to show the overview of the attack, and not to get into the details of each particular strike. However, smaller towns and villages are places where people sometimes suffer the most due to lack of resources, information, and infrastructure. A reduction in scale of the map where 1 cm equals to 300 km, like in the NYT map, usually results in elimination of some features or displacement of others. These processes of elimination tend to erase the information that does not fit.

In the opinion of Ukrainian scholars, like Tsymbalyuk, this war is yet another manifestation of imperialism, which operates through erasure. Something is taken from us when we can’t find ourselves on the map. We are erased together with our experiences. We can track these levels of dispossession through simplification, generalisation, and displacement of spatial information on the NYT map.

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<sup>6</sup>“Ракетна атака на Україну,” accessed October 24, 2022, [https://www.ukrinform.ua/rubric-other\\_news/3589698-raketna-ataka-na-ukrainu.html](https://www.ukrinform.ua/rubric-other_news/3589698-raketna-ataka-na-ukrainu.html).

# Focus of the map: Monitor Map



Monitor Map / events of 10.10.2022

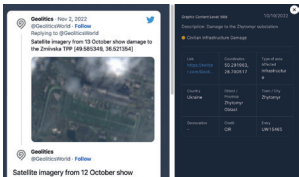
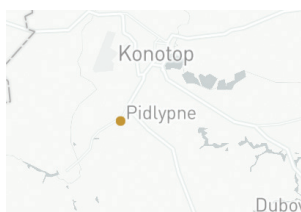


Fig. 8 Damage to the Zhytomyr substation

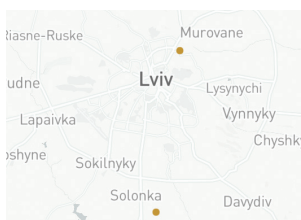
After selecting a specific date and filtering the rest of the events out, the Monitor map appears to be much more legible compared to its previous state. In the sidebar we can see all the events that occurred on that day. Civilian casualties, bombing or explosions and infrastructure damage. By zooming in to a particular region the dots multiply, revealing very detailed data about each specific event. The events are not represented by pictograms like the NYT map but by clicking on each dot, we can see a detailed description of the event, as well as a verified footage collected from social media or open-source satellite imagery. The information we see is much more detailed and elaborate.

34 points in the Kyiv region alone, as well as four in Dnipro, two in Zaporizhia, two in Lviv region and one in the small town of Nova Kakhovka etc. The map does not localise the event to the big cities but shows a much more complete picture of that day. We can see the dots in Solonka, Demydiv, Khmelnytskyi and other small towns. These are the exact location where the missiles hit, not just approximations like on the NYT map. This map is not just an overview of the event, it is a detailed, carefully archived, thoroughly researched picture of one day of this war.

During my research of the event, I have noticed that the information appeared later on the Monitor map. While the NYT map posted their article the next day, Monitor Map took a month after the attack to add the last 10 dots. We can assume that the footage keeps being verified and added long after the event took place. We can assume that the map can change and the information can be adjusted with time. This process suggests an open-endedness to the Monitor map, since more and more reports and details are coming every day. As a result, we are moving away from the concept of a final, correct map of the NYT to a continuous action of mapping of the Monitor map.



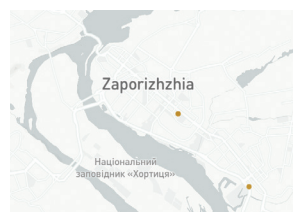
Pidlypne: 1



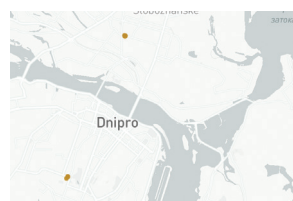
Lviv: 2



Kyiv: 34



Zaporizhia: 2



Dnipro: 4

## Conclusion of the Analysis

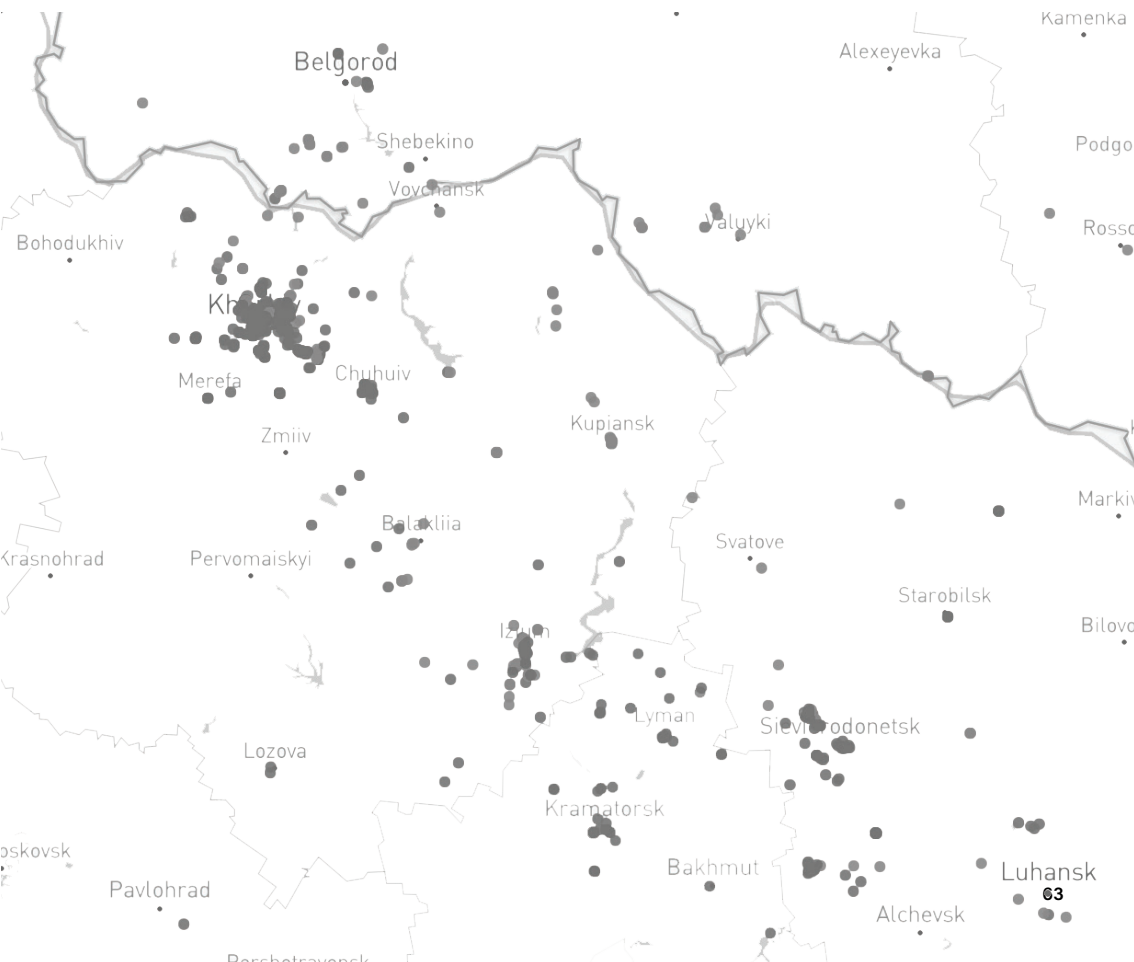
After the analysis of the NYT map and the Monitor Map we can see that they are vastly different in the way they present spatial information about the war. NYT maps gathers most of its spatial data from a singular intelligence agency located in the US and, although modifying the data, their primary concern is whether the map is clear and understandable for the readers of the article outside Ukraine. After almost a year of reporting, working at speed trying to publish on time, the NYT maps are an example of cartographies that serve first and foremost the readers of a newspaper. Their primary concern is how to get the information out there to a poorly informed international audience, reducing the complexities and nuance of the war.

As a result, the simplifications described earlier, when accumulated, result in the “*white lies*” Monmonier was writing about. As well as unintentional, or in some cases intentional silences of cartography. Sometimes white lies in maps are unavoidable but cumulatively they result in the distorted and one-sided picture. Whether intentional or not, by taking away the nuance from the discourse, in reducing the information to its simplest form we tend to fail the subjects of the map, repeating practices of erasure in dispossession perpetuated by the empires in the past.

Although the NYT map appears to be accurate in reporting the facts, it tends to overlook and minimise parts of the stories of resistance, defiance, and tragedy. All the “*uncomfortable*” parts of knowledge.



In the case of Monitor Map, the accuracy of information derives from the source itself. By following community guidelines, creating a safe environment for the investigators and empowering people on the ground, they create totally different relationships between the user of the map, landscape, and authority. Through the example of the Monitor Map we can see the epistemological shift in what cartography can be, not the search for universal ideas of “*truth*”, but a powerful vehicle of local knowledge. In the next chapter I will explore the concept of local knowledge further, to understand its significance in modern mapping practices.





SOURCE: CENTER FOR SPACIAL TECHNOLOGIES



An aerial, grayscale photograph of an industrial or urban landscape. In the upper left, a tall, lattice-structured tower stands prominently. To its right, a large, billowing plume of dark smoke or steam rises into the sky. The foreground and middle ground show a complex of buildings, roads, and open areas, possibly a power plant or a large industrial park. The overall tone is somber and industrial.

## CHAPTER 3: Transcending the Map

## Mapping as Investigation

One of the institutions that is actively engaged in the process of mapping knowledge or gathering evidence of state violence, violation of human rights and Russian war crimes in Ukraine is Forensic Architecture [FA]. FA is a research agency as well as an emerging academic field of investigation that was developed at Goldsmiths, University of London.

Examining architecture not as just buildings and bridges, Forensic Architecture sees it “*as an optics to understanding the world*”.<sup>1</sup> Every encounter carries a trace: a blood splatter; a bullet hole and as a result any architectural surface can become a possible crime scene. FA explores the relationships between the static, the dynamic and ephemeral events. Using architecture as forensic investigators, they gather the knowledge that surfaces can reveal about crimes that were committed. They call their practices counter forensics, since they don’t just investigate the crime but the investigators as well. I see mapping as a form of investigation in the case of FA, gathering and spatialising knowledge through practices of forensic science—collecting data points on the map is akin to evidence gathering at the crime scene.

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1 “Eyal Weizman on Forensic Architecture: “Mapping Is Power,”” ArchDaily, June 3, 2022, <https://www.archdaily.com/982954/eyal-weizman-on-forensic-architecture-mapping-is-power>.

Thinking in terms of dualism is a common practice for Western Epistemologies: mind/body, science/art, centre/periphery.<sup>2</sup> Eyal Weizman, architect and FA director, addresses another form of dualism when he talks about the science of forensics. He challenges the dichotomy between evidence and testimony—positing that testimony belongs to the living whereas evidence belongs to inanimate objects. Modern forensic practices often try to bypass human testimony, especially that of victims of violence,<sup>3</sup> since they are considered to be too traumatised and emotional. They survived something horrific; their memory must be flawed. The New York Times example illustrates how modern mapmaking practices reduce when something traumatic needs explaining. Where do you place emotions in this case? They don't seem to fit, they become “*uncomfortable*” knowledge.

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<sup>2</sup> René Descartes, the French philosopher and mathematician who gave dualism its classical formulation in the 17th century, created the modern problem of mind-body relations.

<sup>3</sup> Eyal Weizman, *Forensis* (Sternberg Press and Forensic Architecture, 2014), <https://www.sternberg-press.com/product/the-architecture-of-public-truth/>.



## Concept of local knowledge

The concept of local knowledge is rooted in the story of the West's relationship with the other, stemming from historically rooted hierarchies of culture, power and politics that have subjugated it. Ethnographer Christoph Antweiler states that, in academia, local knowledge is often synonymous with ideas of "indigenous knowledge":

*"...applied knowledge, has today come to be used in the context in which "non-Western" or "anti-Western" knowledge, or knowledge of minorities, is compared and contrasted with the knowledge at the level of nation-state."*<sup>4</sup>

Local knowledge is a critical decolonial concept that challenges the notion of hierarchy in knowledge production and suggests an alternative to established Western epistemologies. It contests the mind-body dichotomy in academic circles, where the pursuit of the mind is the realm of a (typically) white male scientist, any bodily experience is left to marginalised communities or genders (such as indigenous people and/or women) and claimed to be not empirical and therefore not important. Ukrainian artist and researcher Daria Tsymbalyuk writes about the embodied knowledge that Ukrainians are carrying every day: *"Safety and security are bodily experiences; they are experienced differently when you are from Ukraine... Representation matters because knowledge is embodied, and different bodies carry different memories and perceptions."* Tsymbalyuk calls for more representation and more presence of local, embodied knowledge in academia. Following her example, I argue that local knowledge should be the primary source when attempting to map and represent the complexities of war.

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<sup>4</sup> Christoph Antweiler, "Local Knowledge and Local Knowing. An Anthropological Analysis of Contested 'Cultural Products' in the Context of Development," *Anthropos* 93, no. 4/6 (1998): 469–94.

## Mariupol Drama Theatre: Situated testimony



Source:  
Centre for Spatial Technologie

To understand what embodied knowledge in forensic science is, Weizman looks deeper into the relation between testimony and evidence. A case that encompasses this theme is an investigation into the attack on the Mariupol Drama Theatre. Initiated by Center for Spatial Technologies [CST], a cross-disciplinary research studio formerly based in Kyiv, together with Forensic Architecture, this investigation aims to create a spatial archive of the event. Like the Monitor map, they seek to carefully map the incidents using the voices of people who experienced them first-hand.

On the 16<sup>th</sup> of March Russia launched a strike on besieged Mariupol hitting the famous Drama Theatre. Prior to the attack it had been utilised as a shelter by residents across the city. This location was considered by locals to be a safe space where they could wait out the shelling, access basic provisions and stay overnight. It is difficult to estimate how many people lost their lives, the number of deceased varies between 100 to 600.

In order to create an accurate understanding of the destroyed theatre, CST works closely with witnesses, appreciating how architecture allowed people to coexist, behave, and feel safe for the first 3 weeks of the invasion. At the time of publication, CST identified 56 witnesses and are collaborating with 26 of them, conducting interviews and informal talks. The team is learning how people were arranging their daily lives in the theatre and ultimately how they survived the blast. They have invested hours creating detailed 3D models of each room. Sound engineers model the typical sounds of the neighborhood, to add the audio dimension to the re-created spaces. All to more accurately re-enact with the witnesses the circumstances before the explosion.

This type of evidence gathering differs greatly from video evidence or online conversation. Being in a room with the person, taking your time, exploring the 3D models and situating human stories inside the spaces, creates a calm, meditative atmosphere. People tend to relax and dive into their memories, recalling quirky details about their surroundings. During one of the interviews a man remembered that his wife was holding a ring in her hand. She was ready to return the ring to him as if to end their relationships. During this emotional scene the explosion happened. By locating this testimony in the physical space, CST is creating what Weizman calls situated evidence. At this moment, there is no separation between animate living testimony and inanimate material evidence. The testimony appears to be inside the evidence, and so it becomes situated. People who experience the event carry this situated testimony with them. They bear this knowledge. Their voices are testimonies and their bodies are evidence. Something as intangible as human emotion becomes evidence of the crime and often mirrors the horrific acts that have occurred.

Mariupol Drama Theatre was chosen as a case study by CST because this case carries significance and can provide a deeper understanding of wartime events. According to Weizman, multitudes of voices and bodies have the ability for “*collective sensing and sense-making*”. He states that employing embodied knowledge of life and tragedy in the theatre, can lead to “*politically powerful conception of truth practices*”.<sup>5</sup>



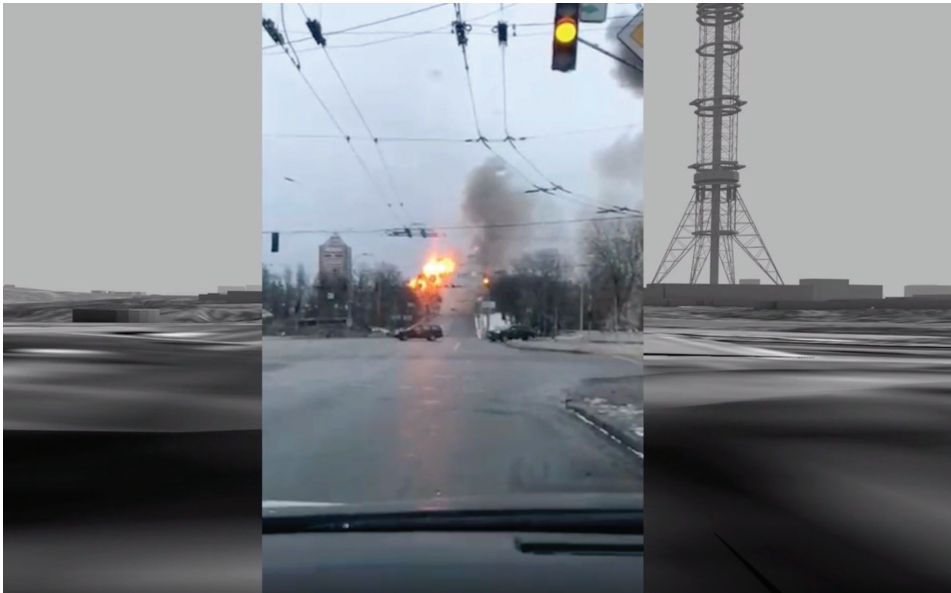
Model Mariupol Drama Theatre by Investigations support. Source: Center for Spatial Technologies

<sup>5</sup> “Eyal Weizman on Forensic Architecture: “Mapping Is Power,”” ArchDaily, June 3, 2022, <https://www.archdaily.com/982954/eyal-weizman-on-forensic-architecture-mapping-is-power>.

# Kyiv TV Tower Strike Investigation: Between Ephemeral and Tangible



Locations of the Russian missile strikes of 1 March 2022. (Forensic Architecture and Center for Spatial Technologies)



Source: Center for Spacial Technologies



Another successful case of investigation/mapping spatial knowledge of the events of Russia-Ukraine war is the investigation of the Kyiv TV Tower attack.

The first strike occurred on the 1<sup>st</sup> of March at 5.08 pm, hitting just below the control room of the Kyiv TV Tower. The control room was used for mostly civilian purposes and luckily was unoccupied. The second strike followed at 5.19 pm, hitting the nearby gym, killing four civilians. One additional death was reported later. The proximity of the strikes to the site of one of the largest massacres of the Holocaust, Babyi Yar<sup>6</sup>, evoked a number of historical echoes. Maksym Rokmaniko, has worked for more than six years at the site of Babyi Yar. By using the tools of forensic research they were able to make the memory of the horror's of the Second World War inseparable from the land itself.

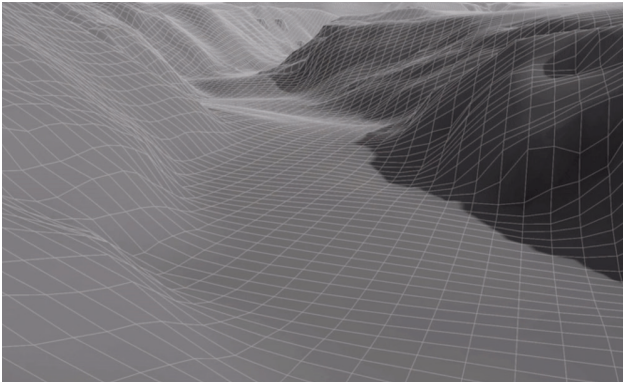
Maksym Rokmaniko saw a video on social media of 4 dead bodies lying next to the gym building. The footage was shared by the Babyi Yar memorial with the caption: *"Once again, in the year 2022, there lay bodies in Babyi Yar"*. This gruesome and horrifying footage confirmed everyone's suspicions that something terrible had occurred. After the full-scale attack, Eyal Weizman contacted Maksym Rokmaniko and proposed a possible collaborative project, connecting the current attack to the deep, tragic history of the area. Their teams analysed dozens of videos and historical material, establishing a timeline of the event and analysing the link between the Russian strike and the Holocaust memorial site.



A series of TV towers were attacked by Russian forces across Ukraine over a one month period. (Forensic Architecture and Center for Spatial Technologies)

<sup>6</sup> "Babyi Yar - Located not far from the city centre, place where more than 33,000 Jews were executed during World War II, as well as Roma people, Soviet prisoners of war and mental health patients in 1941.

A photograph captures Soviet prisoners of war covering victim bodies with earth from the ravine banks, resulting in changes to the topography. By Johannes Hähle, October 1, 1941. Center for Spatial Technologies for the Babyn Yar Holocaust Memorial Center.



Waste pulp from a nearby brick factory was pumped into the ravines of Babyn Yar. (Center for Spatial Technologies, original image courtesy of the Pshenichny Central State Film and Photo Archive of Ukraine)

The construction process of Kyiv TV tower. By S. Kryachko, May 1, 1973. (Original source unknown)



For FA there is always a connection between the material and the ephemeral. In the case of the TV tower they were able to link the materiality of the event, the strike, the footage, and something not tangible—the history and the repressed memory. During the Soviet Union times, the government tried to literally bury the history of the Jewish massacre by flattening the landscape itself, actively attempting to erase the past. CST tracked the processes of erasure through image analysis, techniques of photogrammetry, comparison of old topological maps and footage from the post-war period. By performing this kind of deep analysis, we can connect the events that took place decades ago to the realities of today. For example, this particular investigation raises questions, such as: How can a country that calls for “denazification”<sup>7</sup> of Ukraine simultaneously bomb a famous Holocaust site? By carefully untangling the knot of historical reference and political processes FA have a more profound understanding of the event and as consequence are able to map them accurately.

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<sup>7</sup> Denazification—a false narrative perpetuated by Putin as a reason for invading Ukraine.

## Aesthetic practice of forensics

As much as we are talking about science of forensics, all the techniques described earlier are also inherently a part of an aesthetic practice: image analysis, combining and editing footage, sound manipulation, 3D modeling. Not unlike cartography, a discipline situated between art and science, Forensic Architecture also positions themselves between these two worlds. They work as forensic scientists on the crime scene at the same time exhibiting their work in museums and galleries. Therefore, the anti-hegemonic investigations of Kyiv TV Tower strike and Mariupol Drama Theatre are inherently aesthetic in nature.<sup>8</sup>

The final presentation of this mapping/investigation, crafted by FA and their collaborators will be argued in the courtroom. However, it is not always possible, especially when the perpetrator in question is the state itself akin to the case with the current Russia–Ukraine war. As an alternative, museums, art institutions and media platforms provide spaces for the court of public opinion to take place. The final analysis of TV Tower Attack was exhibited in Künstlerhaus, Vienna and in numerous photography exhibitions and news articles. According to the Centre for Spatial Technologies, the 3D models of the destroyed Mariupol Drama Theatre together with situated testimony of witnesses will be presented through video or theatre re-enactments in the future. Like the Monitor Map, the FA investigations act as archives of war. The end goal of such presentations is to bear witness as well as to contribute to the body of evidence that can be presented in the war crimes tribunal.

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8 Matthew Fuller and Eyal Weizman, *Investigative Aesthetics: Conflicts and Commons in the Politics of Truth* (Verso Books, 2021).

## Vertical dimensions

In his essay on *"Politics of Verticality"* Weizman argues that geopolitics is a flat discourse that views the territory as one-dimensional. By viewing the TV Tower and Mariupol Theatre as just physical attacks on architecture, we miss the deeper narratives behind these brutal acts. While the traditional war cartographies of the New York Times try to simply visualise the events of the war, they tend to generalise and erase its subjects. The approach of Forensic Architecture is to apply various dimensions to the map. By carefully untangling the knots of political acts of manipulation and historical references, such as the history of the Babyl Yar, and the spatial relations between people and architecture of the Mariupol Drama Theatre, their work, applies a vertical dimension of embodied knowledge as well as the dimension of time.

FA investigations are examples of alternative cartographies that apply local, embodied knowledge at the centre of their work. Through their investigations we can see the shift in existing cartographic techniques. As well as the transformation of two-dimensional map into a multidimensional "Escher-like"<sup>9</sup> structures of various angles and dimensions, that not unlike architecture, need to be planned, constructed, and executed. By applying the concept of verticality, Forensic Architecture is able to pierce the two-dimensional surface of modern cartography and go deep into the soil, high into the stratosphere, to see events as multidimensional volumes. All in order to attempt a more accurate spatial representation of the uncertainties of war.

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<sup>9</sup> "M.C. Escher, Dutch graphic artist







# CONCLUSION

The analysis of historical and modern cartography confirmed my initial statements about shortcomings of maps in general. After tracing the narratives of dispossession through cartographies of the Wild Fields, I established maps as tools of empire that often act as enablers of colonial processes including extraction and categorization of matter, resources, people. In response, I argue that accuracy in mapping lies in the concept of multitudes, where the presence of multiple bodies and voices are the main source of mapping epistemologies and embodied knowledge.

After my examination of the selected modern war cartographies, I tracked certain flawed practices of representation such as choices of colour and iconography, as well as the problematic application of scale when describing various events of the war. These flaws result in maps focusing the main information on metropolitan centers, like Kyiv and Lviv, rather than the small towns and villages. While traditional maps serve a purpose of informing wider, international publics and policy makers, they also create a one-sided picture of the situation on the ground. Traditional cartographies of the The New York Times tend to homogenise and desensitise data by painting with a wide brush over the territories that are struggling on the existential levels at this very moment. They work against subjects of the map by not employing local knowledge as a primary source of mapping the events of the war.

In view of the rise of the volunteer sector and digital humanitarianism, the Monitor map is an example of the shift in map making towards a more inclusive, accommodating way to map and archive acts of war. The end goal of such presentations is to bear witness as well as to contribute to body of evidence that can be presented in war crime tri-

bunals, for example. Monitor map is developed by using knowledge that is not just local, it is located, in a specific time and place. This shift towards including multitudes of voices and bodies, as essential parts of mapping epistemologies, is the way cartographers can attempt to move towards accuracy and away from dispossession.

The case of Forensic Architecture and the Center for Spatial Technologies are prominent examples of alternatives to established epistemologies of mapmaking. My interview with Maksym Rokmaniko helped me realise that embodied knowledge is at the core of Forensic Architecture as a discipline and what makes them unique and prominent voices in the discourse surrounding mapping the Russian war in Ukraine. Eyal Weizman specifically urges us to see spatial relations as volumes rather than as flat surfaces, moving away from the noun map towards continuous dynamic, never-complete actions of mapping knowledge. Together with the multitudes of voices of the crowd-sourced Monitor Map<sup>2</sup>, I believe these investigations lead to deeper understandings of the events on the ground and, by doing so, can help us to attempt to undo the acts of erasure that are currently occurring. Reconstructing the memory of these events and places, describing and mapping them in all their richness, can be the building blocks of possible reconstructions of Ukraine in the future.

We often fail to realise that traumatic experiences and subsequent emotions are also bodily events. Decolonial and feminist scholars, like Haraway and hooks, have been championing the need to accommodate the uncomfortable body of the *other* for decades. Positioning embodied knowledge in the centre of the mapping processes is a way we can construct a narrative that does not erase but enriches the subjects and works towards powerful truth practices in the times of uncertainty.

This war puts Ukrainians and Ukraine in the unique position to fight colonial practices and assert our place as not just a resource, but a subject of history. This position is why I found it necessary to explore new relations with the landscape, starting with traditional cartographies of the empire and moving towards a renewed understanding of mapping knowledge. As a result, borrowing from Tsymbalyuk's arguments, this thesis works towards embracing *"uncomfortable knowledge, knowledge as a burden, knowledge as emancipation."*

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