Developing Online Images. From Visual Traces *to* Public Voices

🔁 Traducción al español aquí

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ABSTRACT

Online images could be considered as traces of the dynamics of social issues. Concurrently, the same images are enrolled in vast algorithmic infrastructures. Specific research registers have been devised to account for, and experience, one or the other of such specificities. The scope of the present contribution is to introduce a possible crossing of the existing registers and to further the role of large image corpora visualizations beyond pure analytical or critical purposes. To this extent, the 'DEPT.' project is described. A series of visual artifacts —data- and media- visualizations, catalogs, *tableaux*, and scores— were conceived during the project in order to progressively bring online images to public and participatory settings so as to inquire into situated issues. The paper details the needs, intellectual frameworks, and methodological choices, along with the visual artifacts conceived in the project to develop online images as shared and collective expressions of the issues under inquiry.

Keywords
Transformation of online images
Data visualization for public issues
Inventive methods
Participatory design
Non-representational approaches

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Calibro—Calibro is a design studio based in Milan focused on tailored data driven research and projects. It was founded by Matteo Azzi (M.Sc. in Communication Design, Politecnico di Milano) and Giorgio Uboldi (B.Sc and M.Sc in Communication Design, Politecnico di Milano). Calibro aims at exploring new pathways at the intersection between design, data visualization, and humanities by designing tools and interfaces to access and visualize complex data and digital archives. Some of the latest publications of the studio include 'Cozy/Flat' (with D. Ricci and Óbelo; In *City Killers. Per una critica del turismo*; Libria, 2020); 'Digital Trips—A data driven anthropological research on drugs' (in *Visualized Conference Milan*, 2018); and 'RAWGraphs: A Visualisation Platform to Create Open Outputs' (with M. Mauri, T. Elli, G. Caviglia, G. Uboldi, and M. Azzi; in *Proceedings of the 12th Biannual Conference on Italian SIGCHI Chapter*, ACM, 2017).

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D igital media contribute to the construction of ways of *seeing* and *perceiving*, *producing*, and *practicing* the material worlds we inhabit. This delicate folding of *vision* and *action* —at the play every time there is a media(ting) technology— has become far more intricate if we consider the shift of social media towards image-centric platforms (Faulkner et al., 2018). On the one hand, the dynamics of producing and accessing; distributing and viewing *networked* visual contents (Niederer, 2018; Rubinstein & Sluis, 2008) embedded pictorial components in almost every social activity. On the other, the *bulk* of pictures produced daily undermine the very notions of *the* picture.[1] Ceasing to be triggers for human semiosis, they become training data-sets (Joler & Pasquinelli, 2020) for computational and algorithmic systems embedded in our societies (Anderson, 2017).

This contribution proposes a collective and participatory research register called *developing*, to investigate and, at the same time, repurpose the *networked-* and *bulk-* qualities of online images to inquire into public issues. In the first part of the text, the motivations for starting an in-vivo experimentation crossing and extending the prevalent registers for dealing with online images are outlined, in order to illustrate and expose its aims. Then, the details of a project called 'DEPT.', where the register *developing* was conceived and tested, are given. Brought into being by a set of different contingencies and events, the project unfolded in different contexts: the cities of Rijeka, Porto, and Paris. All of them shared both the opportunity and the need of using digital visual materials coming from social and digital networks along with their associated computational infra-

[1]   In this contribution, the concept of 'picture' draws on the anthropological understanding provided by Horst Bredekamp: "In its fundamental, first definition, the concept of the picture encompasses any and all forms of visual fashioning" (2018, p. 10). It refers to any manipulation that generates a pictorial form. This wide definition guarantees to pause the intricate discussions concerning the nature of images and pictures revamped by the inception of digital technologies. For an extensive overview, see Paulsen, 2013.

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structures —Google Street View, Airbnb, Twitter— to describe and intervene urban public issues.

In the second section, the register is progressively unfolded, detailing the technical and the theoretical leverage points through which it has been created. It starts with preliminary processing of image corpora producing the first set of analytical visualizations. Subsequently, in order to disclose a participatory and collective process of inquiry, these visualizations are developed into a series of other visual artifacts: catalogs, *tableaux*, scores. Each of these objects is presented and discussed while taking care of not withdrawing from their description the moments of pause, doubt, uncertainty, and risk that characterized their design. The text highlights how the final scope of the sequence of artifacts has been to promote and foster —through visual, textual, and performative means— a principle of collective feedback and possible transformation of the issue faced in each city.

The final section proposes an account of the sensitive effects of the register on its very designers and researchers by cycling back to the initial motivation of the experimentation and research: to extend and protract, beyond analytical or critical purposes, the role of visual artifacts in inquiring and intervening into social and public issues.

TWO VISUAL REGISTERS, ROUGHLY SKETCHED, + 1

Taking the risk of oversimplifying, thus producing a spurious polarization, the *networked-* and the *bulk-* qualities of digital visual objects, enmeshed and simultaneous, seem to us that correspond to two specific registers, each of them articulated with visual modalities of artistic production and design research, in order to account for their agencies and role in our societies. We will call the first one *fixing* and the second, *revealing*.

Fixing **what *networked*-images *do* in socio-technical assemblages**

On the one hand, methods related to digital methods for social research (Highfield & Leaver, 2016) focus on what *networked*-images *do* in the assemblages of people, devices, and platforms.[2] Following images and para-pictorial items (i.e. tags, comments, links)[3] they seek to trace dynamics of production and consumption; of expression and signification of emerging visual cultures in public issues.[4] To this extent, while trying to inflect research methodologies towards more participative ones (Niederer & Colombo, 2019), design disciplines contribute first and foremost by constantly adapting and inventing new *data*–and *media*–[5] visual models (Reyes & Manovich, 2020) to recompose and *fix*[6] the traces of social processes and events[7] that images bear.

[2] To this list, the methods themselves, to account for their agency in the study of social issues, should be added (Marres, 2012).

[3] For a nuanced overview of the different research affordances offered by image related digital objects, see Hand, 2016; Rose, 2016.

[4] This register is seen here as an extension of the longstanding collaboration between social sciences, media studies, and design research. See Ricci, 2019, 2010; Venturini et al., 2015.

[5] The main difference between classical data-visualization and media-visualization, following Lev Manovich's definition (2011), is that in the latter, large corpora of media contents are not abstracted and translated into geometric primitives.

[6] Here we repurpose a definition of the 'Sciences' as provided by Simon Schaffer (2004).

[7] Once again, we are aware that this definition might correlate to the dispute concerning the status of images as trace or evidentiary elements. For further discussions, see Paulsen, 2018.

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Revealing **what** *bulk*-**images** *serve* **in computational infrastructures**

On the other hand, approaches intersecting critical studies and art practices with creative engineering or journalistic activism are largely exposing what *bulk*-images *serve* in the —often non-mimetic— computational domains of algorithmic classification, prediction, and control. To the fore of rendering visible and affective, often to the greater public, the issues sparked by computational technologies (Stark & Crawford, 2019), an ever-growing repertoire of visual tactics (i.e. speculative diagrams, critical interfaces, adversarial and glitching experiments) are trying to *reveal* their ethical, social, environmental, or political implications.[8]

Developing **what online images** *afford* **in public inquiries**

The epistemic importance and the sensitive enactments of the aforementioned registers are of indisputable value. Out of the scope of our contribution is to provide their critique or to show their flaws. Instead, this article addresses a possible intersection and extension of these registers into a possible new one. By continuing to draw on the operative vocabulary of image-making procedures,[9] this new register is named *developing*. It is meant to address the peculiarities that online images afford for studying and intervening social issues.

The *developing* register is aimed at mobilizing images *fixed* in visualizations and to further them experientially and speculatively. As a register of both viewing and acting, it strives at not halting its process with a *revelatory* epiphanic[10] gesture (Allen, 2020). By producing an active interplay between imaging[11] and imagining, online images are progressively transformed into participatory formats for collective, both speculative and performative, expressions. To this extent, such a register was conceived to produce elements of reflection for a latent but diffused discomfort felt in our community crossing design, humanities, and social sciences. In a moment in which everything is (to be) mapped (Mattern, 2020) and visualization has become 'mass medium' (Viégas & Wattenberg, 2015), too often we were completely blind to the role and actual transformative capabilities of visually embedded forms of knowledge, despite being their very initiators.[12] Too often, at the end of our mapping and visualization campaigns, it was unclear who owned the narratives stemming from them. We had the impression that our maps and visualizations, our methods and protocols were not *existing* enough, to state it otherwise. Existing as the extension of their presence and action in the world: what could be said *with* and done *through* them rather than just read and seen *in* them.

To sketch such a register, we outline and reflect upon a series of experimentations grouped under the name 'DEPT.—Describing the Present Tense'. The 'DEPT.' experimentations, enmeshed with collaborative procedures and nourished by participatory approaches, had to be suspended due to the 2020 global pandemic. They are resumed and reconstructed here, foregrounding the contex-

8 The heterogeneity of these activities eludes clear categorizations. A good overview of the different actors, standpoints, approaches, and issues is compiled in James Bridle's (2019) Podcast 'New Ways of Seeing'.

9 For an historical and socio-technical reconstruction of photographic related metaphors and their evolution to the extent of digital technologies, see Monjour, 2018.

10 The theme of revelation is particularly recurrent in Roland Barthes (1981). In his theory of the photographic image, he stressed that just as photography reveals itself through the action of chemistry, it must in turn give rise to an experience of revelation. An epiphany, indeed.

11 The word 'imagery' points toward an understanding of visualization as an active technology of interpretative intervention (Bredekamp et al., 2015).

12 The projects connect the different approaches of scholars and practitioners coming from digital social sciences, to grasp the richness of social configurations by exploiting the empirical capacities of social networks and digital platforms (Rogers, 2013); from communication design for social participation, to foster the role of visual accounts in addressing a public issue and its complexities (Ricci, 2019); and from arts of the theatre, to use the plateau as a place to work with heterogeneous and temporary collectives capable of producing processes of performative expressions (Aït-Touati, 2020).

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tual histories that brought them into being, the methodological expectations, and the partial results obtained.

DEVELOPING ONLINE IMAGES

In its shortest definition, the *developing* register could be streamlined as follows:

a) It collects online images as objects of articulation and meaningful expressions of social issues.

b) It transforms them into a progressive cascade of visual artifacts, as tests of the computational and algorithmic technologies online images are enmeshed in.

c) It constructs a public inquiry around them as discursive feedback operations on the social issue that triggered the entire process.

To account for its details, it requires to linearize the overlapping temporalities and test-and-trial processes as emerged in the collective fieldworks we conducted in three different cities, all of them concerned with the dynamics of online image circulation and production.

Linking issues to online image sources

The 'DEPT.' experimentations have been brought into being by a series of contingencies and events.

Presenting, within a network of media-activists in the city of Rijeka, some reflections about the role of visual practices for addressing socio-cultural issues, we have been invited at inquiring how the complex identity of the city (Jesné, 2013) could have mutated or been muted by the European Capital of Culture program.[13] We negotiated reducing narratives of cultural capitalism to the phenomenological appearances of messages, signs, and objects composing daily experiences in the urban space (Coccia, 2018). We directed our attention to the very skin of the city: its visual richness as captured by the 'poor images' (Steyerl, 2009) of Google Street View.

Extending, in the frame of our teaching activities, our academic interests (Ricci et al., 2020) about the intersections of platform economies (Srnicek, 2017) and urban fabric (Graham et al., 2019), we set up an event[14] during the Porto Design Biennale. This event addressed the issue of digitally triggered urban gentrification (Wachsmuth & Weisler, 2018). We strived to describe the aesthetic mutations of domestic spaces through the city's Airbnb listings' images and the objects in them contained. We became interested in the *provenance* of these objects in terms of cultural, social, and emotional narrations.

Sharing, in a cycle of seminars about digital methods and urban studies, a dataset of tweets related to urban-nature in Paris (Ricci et al., 2017), we have been called to justify and explain how and why a substantial portion of the set

13 The event was held at Drugo More. It was called 'Out There: Exploring the invitations to act in the public space by material signs'. It took place between November 15 and 17, 2019. Carried out in the framework of the Refleks program, involving 15 participants.

14 The event was held at UPTEC Baixa and at the Stop shopping mall, and funded by the Porto Design Biennale program. It was called 'In Here: Engaging in the rituals of domestic spaces through the stories of their objects'. It took place between December 2 and 8, 2019, with the support of Rui Costa, Heitor Alvelos, and Radio Manobras, along with the involvement of the 'Representação e Conhecimento' M.Sc. students at the Universidade de Aveiro, and those of the Unexpected Media Lab Ph.D. Program at Universidade do Porto. Carried out in the framework of the Refleks program, involving 55 participants.

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—meant to account for the entanglement of nature's potential eco-systemic services (de Biase & Ricci, 2018) with wider social issues (Gandy, 2006)— contained photos of rats and racial insults. While retracing social- and policy-related elements to account for such an *intrusion* in our data, we seized the opportunity[15] to repurpose this ambiguous collection of images to render the necessity to negotiate our dwelling spaces with a wider cosmos of 'neglected things' (Puig de la Bellacasa, 2017) and living beings.

Collecting *networked*-corpora, processing them as *bulk*

For the different cities, we participatively identified the sources and the entry points for extracting data and pictures from digital platforms or social media. Faithful to the digital methods' tenets asking for 'thinking along' (Rogers, 2013) the infrastructure and the processes that let digital items signify and being computed, we approached the study of the images by using, tweaking, or retro-engineering the techniques belonging to the digital infrastructures in which the pictures circulate.

For the iteration in Rijeka, before the collective activities began, we asked the workshop participants to signal urban paths which were meaningful to them and/or related to the shifting identity of the city. We extracted the pictures using Google's proprietary API to build a corpus of 6,000 Google Street View images. Knowing that it would have been short-sighted *to just show* if and how the skin of the city is changing through Google's 9-eyed-cameras for 'capturing the world' (Anguelov et al., 2010), we had to address how the same technology blooms into controversial issues —so extensively *revealed* by many artistic projects (Ertaud, 2016)— of surveillance, control, privacy, or labor exploitation (Strachan, 2011; Zuboff, 2015). Hence, we sought the critical opportunity to experience such technologies by processing the corpora with the Object Detection Algorithms usually applied to Street View images for socio-economic profiling (Gebru et al., 2017).

For the iteration in Porto, our co-inquirers supported us by defining the urban boundaries of the city and highlighted the most vulnerable zones to gentrification processes. We exploited image-sets circulating among Airbnb-watchers (*Inside Airbnb*, 2019) providing us with a corpus of around 10,000 images and metadata about the listings of the city. Acknowledging that it would have been neglectful to just visually recompose the private imaginaries pushed by digital home rental marketplaces, we had to have a technical grip on how Airbnb's computational technique —so neatly exposed by a multiplicity of digital and critical projects[16]— foster an apparent growing sameness (Pavoni & Mubi Brighenti, 2017) of the private spaces we share. So, we simulated the vector embedding model (Grbovic & Cheng, 2018; Yao, 2018) the company uses for classification and sorting purposes of its listings.

15 The event was planned at Les Plateaux Sauvages in collaboration with the ESAD theatre school. It was named 'Hereunder: Digging into the emotional responses to the city's most unwanted living beings'. It involved 13 participants. Meant to scale up at the city level, it was interrupted by the lockdown due to the COVID-19 pandemic.

16 See 'inter alia', the artistic production of åyr (2014); see Berkes, 2016; Freier, 2017; Schmidt, 2019.

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17 The French worldly label for such species is *organisme nuisible*, traditionally associated to any organism whose activities are considered detrimental to public health and/or human activities. The concept is highly controversial and has been replaced by the label *espèce susceptible d'occasionner des dégâts* (species likely to cause damage) in 2016. A list containing such species has been issued. Among them, rats and other classical pests are not mentioned since it contains only species towards which the State might consider mass control and extermination: the public imagination about these living species and the juridical are completely orthogonal. For an overview of the issue, see Manceron & Roué, 2009.
18 The tool is available at https://medialab.sciencespo.fr/en/tools/gazouilloire
19 The tool is available at https://medialab.sciencespo.fr/outils/catwalk
20 For a description of this participatory format in the field of digital methods, see Munk et al., 2019.

For the iteration in Paris, during some preparatory workshops held with a variegated set of experts, we defined a bag of keywords to identify the urban living beings considered as pests[17] and used them to extend our initial urban-nature tweets corpus. Eventually, we worked with a dataset composed of roughly 10,000 tweets and 8,500 images. Recognizing that it would have been rash *just to trace* how the Parisian urban-nature is stretching and bending imaginaries, we had to rebuild the *experience* of the multi-layered structure of social media (Cardon et al., 2019), produced by algorithmic processes, that make conversations cross (Pariser, 2011) and pictures being manipulated (@bascule, 2020; Theis & Wang, 2018). Thus, a backend tool tapping into the API,[18] an Image Cropping algorithm and a custom trained Natural Language Processing model along an interface emulator[19] have been used to mimic how Twitter makes sense of both text and images.

More than a description of these techniques, it is more relevant, for the scope of this contribution, to detail the series of methodological choices and bets we built 'DEPT.' upon, together with their relationship to participatory and collective practices sequentially arranged into our *developing* register.

⤴ fixing corpora into *data-/media*-visualization

Given the intellectual premises of the project and the material limitations of our iterations, we had no intention of setting up data-sprint-like workshops.[20] Past experiences warned us about the possibility of compressing the lengthy and mazy image analysis work in situated and short participatory workshops as those we were to set up. It would have been impossible to disclose the technological affordances of such a vast infrastructure. Hence, we decided to take the responsibility of analyzing and rendering the corpora as a closed research group in the 3-9 months preceding each collective iteration of the 'DEPT.' project, therefore seeking for an appropriate way to deliver the results for scrutiny, discussion, and manipulation in our participatory workshops.

Going back and forth between classical data-visualization (Figure 1) and media-visualization, we started to observe the prevalence of objects along the streets of Rijeka (Figure 2); to detail territorial correlations among objects composing domestic moods and atmospheres in Porto (Figure 3); to discern discursive intersections of topics and visual imaginaries related to the un-wanted nature in Paris. At once, we were exploring the networked effects of these images, but we also did so by looking at the errors produced (Figure 4), the bias, and the inconsistencies embedded in the bulk- related technologies we were re-enacting.[21]

All the graphical artifacts we produced, whether obtained by visual reduction or not, are part of visual information compression technologies. They require expert training in order to unfold the content shaped by their format. Instead, the people we were collaborating with, were unevenly versed in literacy,

21 For each iteration, we kept track of these errors as a kind of appendix to our main investigations through a simple folder titled 'Extravaganza', collecting the material traces of our commitment of making sense of how machines perceive the world.

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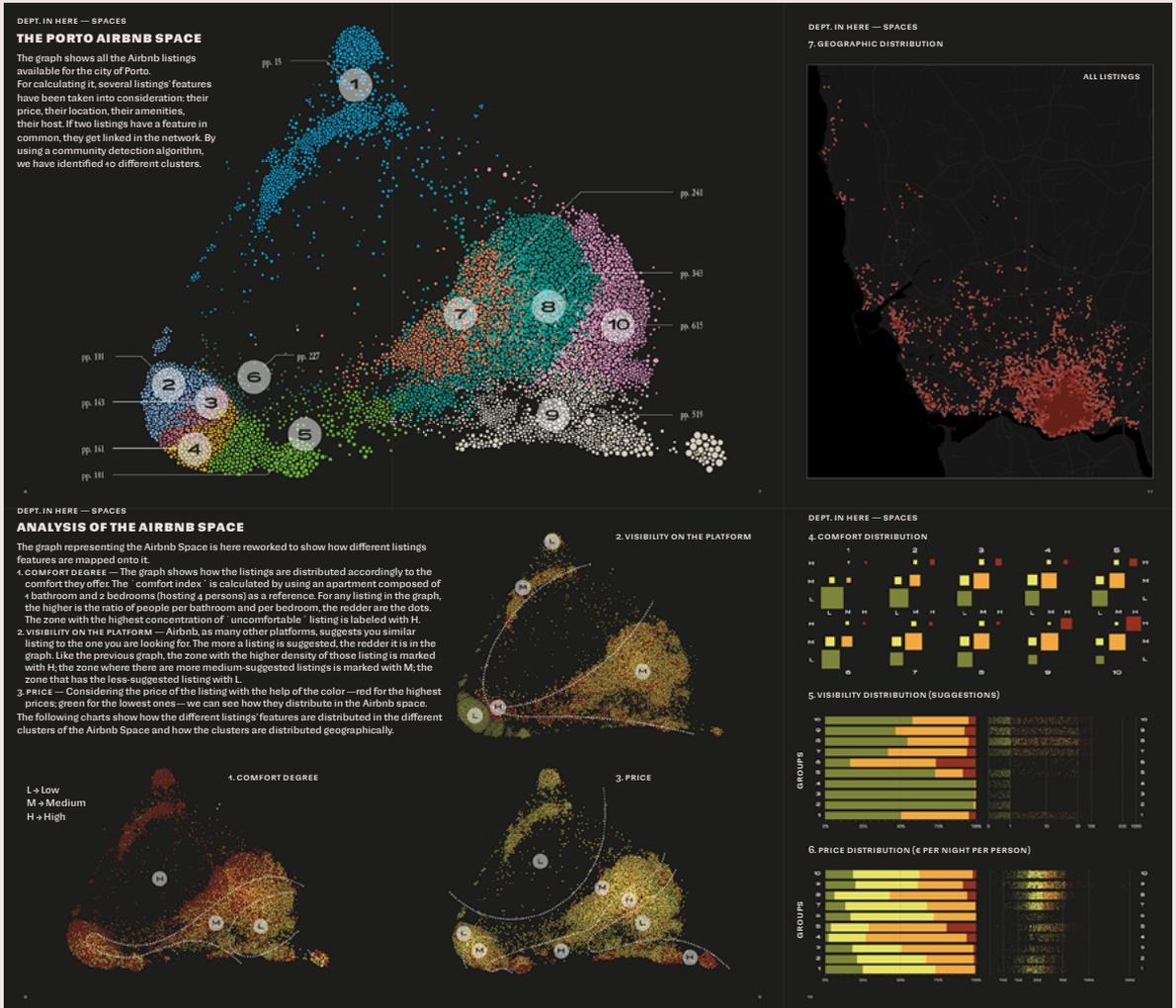DEVELOPING ONLINE IMAGES. FROM VISUAL TRACES TO PUBLIC VOICES

Figure 4: Visual analysis of the Airbnb listings in Porto. Source: The authors (CC BY-NC).

articulacy, numeracy, graphicacy: the competencies required to be able to deal with data-intensive visual artifacts (Monmonier, 1993). This undermined the possibility to use intricate visualizations in our further participatory activities. Whether interactive or not, all the visualizations produced were meant to be 'immutable' abstractions (Latour, 1990) able to keep and fix the data, to *see* and *read* them (for example, to highlight general patterns). Rather, we were looking for malleable graphical expressions to activate a process of collective manipulation aimed at *saying* something *with* them —to express how online images reground into personal understandings of the issue under inquiry— and *doing* something *through* them —to trigger a process of self-description of the communities we were working with.
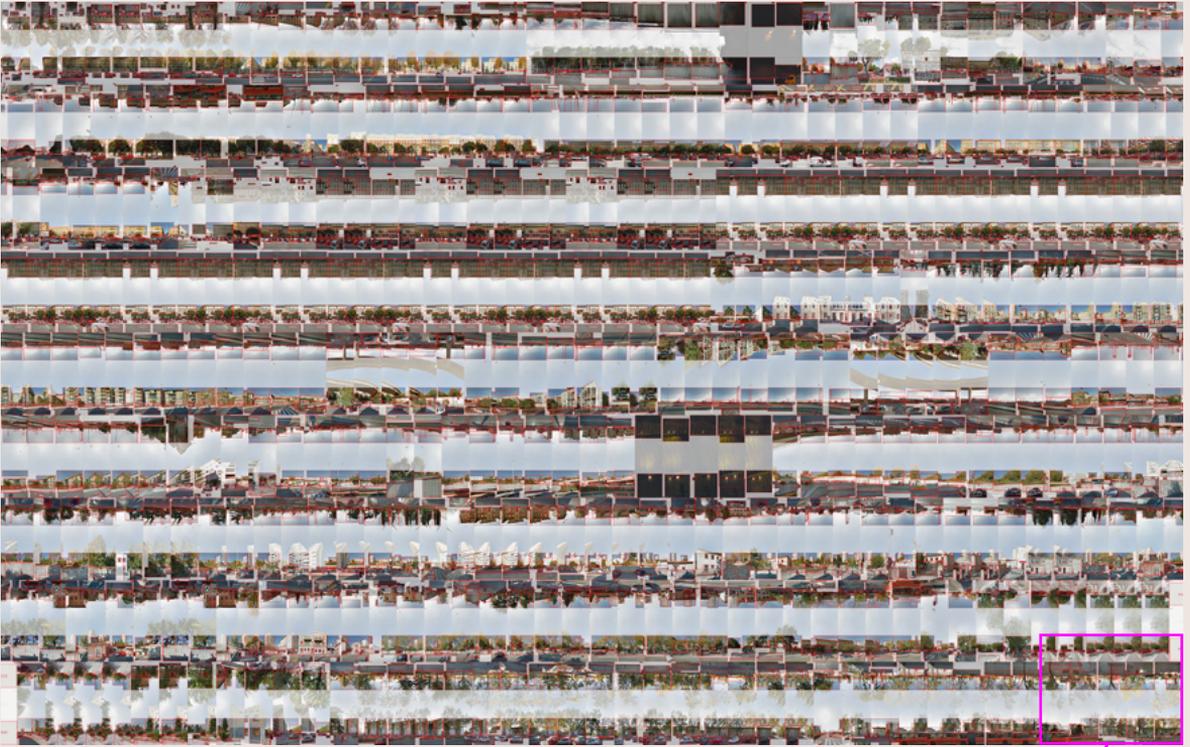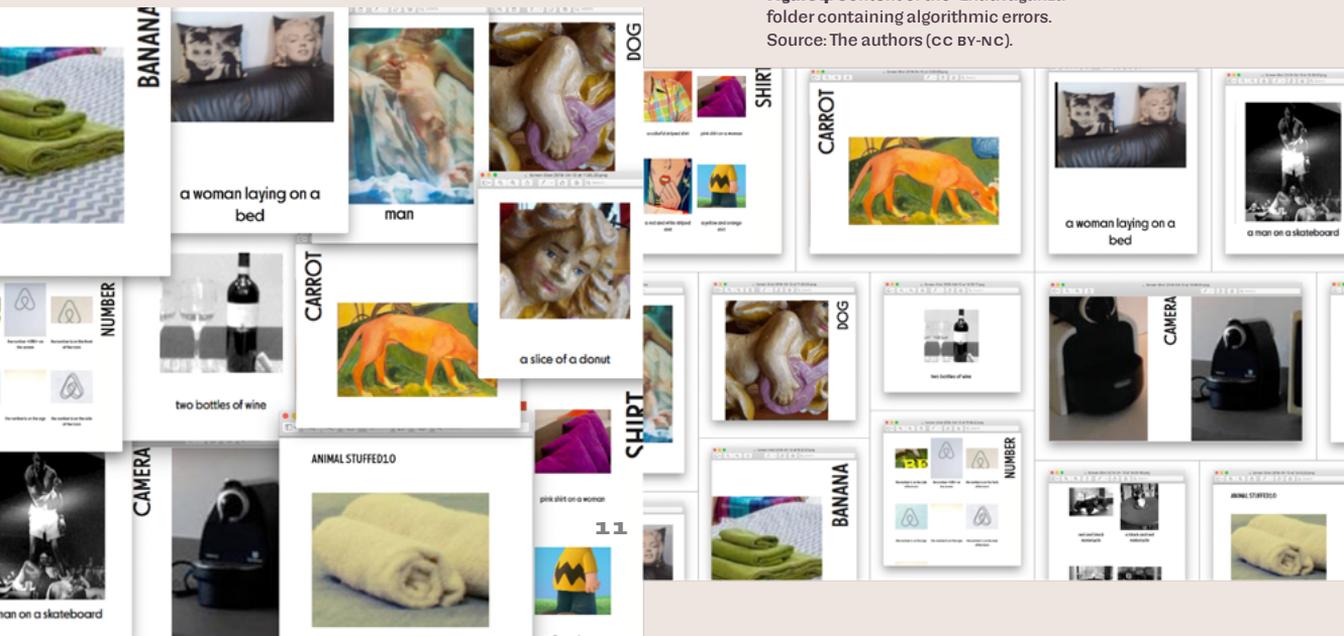
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Figure 2: Object Detection on Google Street View images in Rijeka. Source: The authors (CC BY-NC).

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Figure 3: Vector embeddings of the Airbnb listing images clusters. Source: The authors (CC BY-NC).

Figure 4: Content of the "Extravaganza" folder containing algorithmic errors. Source: The authors (CC BY-NC).

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We were to invent a publication format informed by both, our analysis of the *networked-* quality and the *bulk-* experience of the corpora; in accordance to the online content it had to contain and to enroll in the production of new potential meanings. Designing this new format was everything but forthright: How to bring the image corpora, their analysis and visualizations, from the inside of our *laboratory* to the outside of our collective inquiries' participatory *settings*?

→ expanding visualization into catalogs

After long wanderings, by re-exploring histories of media-related practices and driven by the reading of Hanke te Heesen's (2014) works, we identified a possible solution to the format of the catalogs. The modern lineage of this format could be identified in the 19ᵗʰ century's newspaper-clipping industry, producing image and text corpora delivered as catalogs, albums, or dossiers: intermediary visual formats enrolled in a vast spectrum of material and intellectual practices.[22] The proper pertinence of such a visual device was further provided when realizing that some of these information-processing practices had been reinstituted by artificial-intelligence-geared-services. Image-banks sell computationally indexed dossiers of images[23] to companies; consumer's desktop and mobile applications identify, index, crop, move, and rearrange the contents we take, share, and download in our daily activities, to produce 'automagically' (Biersdorfer, 2019) catalogs and albums.[24]

Therefore, we sought the possibility of, literally, downloading, expanding, and developing the analytical compression of the first part of our study in catalogs. Classification and frequencies of the objects encountered in the city of Rijeka; probabilities of association for the object of the domestic landscape of Porto; patterns of sharing and topic of discussion about the rats in Paris, could have been appreciated by leafing through the pages of materially printed objects. Thus, both the *networked-* and the *bulk-* qualities may be disclosed. The former materialized in the structure of the catalogs; the latter, in the unavoidable errors contained in them. We hoped that through the catalogs, *through* and *with* the image contained, people would start to narrate their personal experience with the specific issue they were facing in their cities, unfolding their understandings, points of interest, and future possibilities. Nevertheless, it was a series of tests that pointed back to us the non-usability of these conspicuous objects. While endowed with apparent affordances, it was difficult to select a starting point for exploring them and to find the point of support from which to jump into discussions.

There has been a time when people inclined their ears to listen to images (Snyder, 2004), but our images, our compiled crops and scraps, were not speaking for themselves. To use Barthes' terminology, no 'punctum' "ris[ed] from the scene" (1981, p. 29) set by our collections. Within the catalogs nothing was 'pricking, bruising' but the oddity of the catalogs themselves and the pages thereof.[25]

22 Companies such as the 'Argus de la Presse' in Paris flourished by producing corpora of image and texts through centralizing the acquisition of worldwide newspapers and setting up a long chain of work, spanning from keywords identification inside articles and advertisement to their indexation till the actual paper cutting. These scrap(ed) collections satisfied corporate needs for notoriety, influence, and reputation control as private vanities. At the same time, they were enrolled in scientific controversies, as for Ernst Gehrke fervent opponent of Einstein relativity theory; in cultural history studies to understand chronologically and geographically the 'mood of the[ir] time', as for Eberhard Buchner chasing the utopia of an automatized archive of cultural history; in artistic practices as *reservoir* of evidence, as for George Grosz they provided empirical pictures of social and political conditions of his time.

23 Take as an example the partnership that Getty Images built with AI companies such as Veritone and Cortex for collecting images and suggesting new ones to be used for advertisement purposes.

24 From Google Photos to MacOS and iOS Photo, these manipulations run hidden. They become evident, with their potentially harmful bias, once they 'glitch' (Meunier et al., 2019) —as the infamous case of Google Photos labelling black people as 'gorillas' (Noble, 2018)— manifesting the traces that have become invisible in the process of rendering something visible.

25 Davor Mišković, president of Drugo, bluntly captured that in his opening speech of the exhibition by saying, "They are the most beautiful (…) and the most useless books I've ever seen."

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⤷ revealing catalogs into *tableaux*

After deep despair, we just focused on what the catalogs compelled us to do: flip, flick, and leaf; to feel and to appreciate atmospheres, moods, and styles. The Barthesian 'studium' constituted the very *thing*[26] of our catalogs. We had to invent a mode of engagement able to foreground, as significant expressions, the singular repetitions of the multiplicity of objects and details contained in our corpora. Our need for inverting the relevance of 'punctum' and 'studium' found an intellectual leverage on Tina Campt's (2017) way of reading images in series as albums and catalogs. Paying careful respect to an approach meant to dig into and reconstruct the delicate and muffled histories of black diasporic communities' struggles, we resumed reading the catalogs blind to the stories and biographies of single pictures. We returned to imagine ways of questioning catalogs through the impressions they could have left upon the readers as differences or continuity with their actual living conditions. Campt invited to use catalog-like objects by listening to them and getting tuned into their frequencies by describing the material settings and the configurations in which she interrogated images as series, operating and being operated by them.

Inspired by the descriptions of long, silent, almost suspended ways of engaging with seemingly irrelevant visual materials, when it came to starting our participatory encounters, we tried to redesign these conditions[27] of feeling and listening to images, more than gazing at them.

In each iteration, the participants were invited to join a table one at a time. Two members of our team were sitting there (Figure 5). One holding the

26   Artists like Jason Salavon (Salavon et al., 2004) literally flattened —by repurposing Francis Galton's composite average images (1879)— the 'average affect' of the 'studium' as a computational operated critique towards western's trivial and obvious living conditions.

27   This part of our work is also greatly indebted to the works of Richard Chalfen (1987) and his study of the 'Kodak culture': the setting constructed around the sharing of pictures and the constructed reality stemming from them.

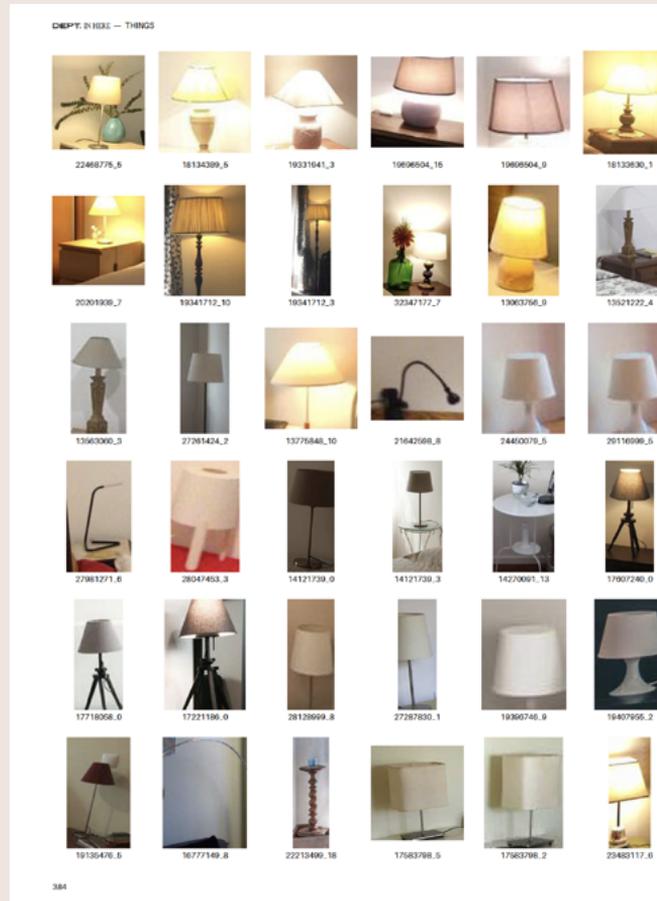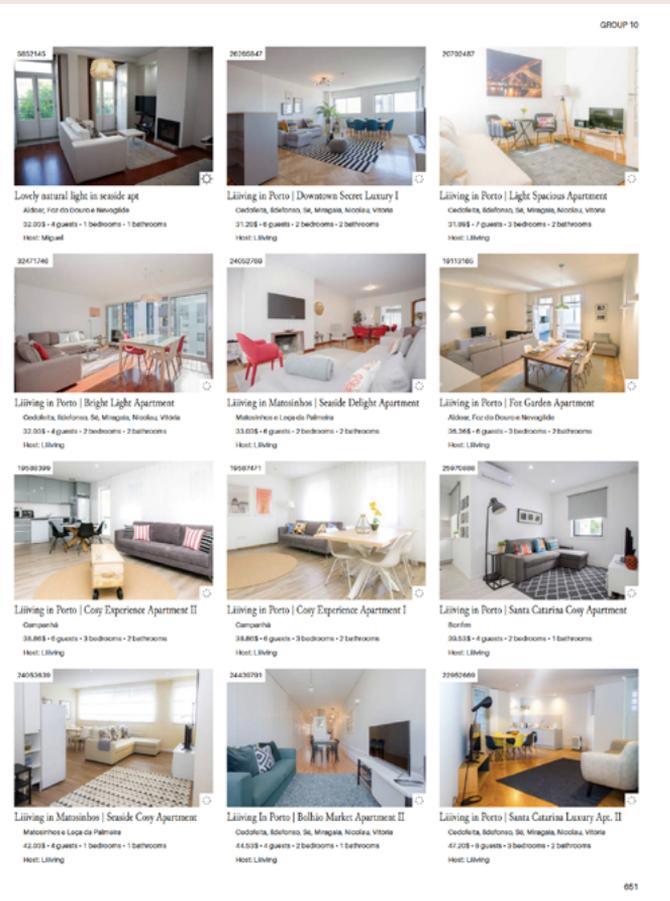**Figure 5:** 'DEPT.' Rijeka table with participant discussing and annotating the catalog. Source: The authors (CC BY-NC).

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28 The reproduction of the algorithmic processes used in each specific digital domain of our corpora granted us the possibility to identify it. For example, for the iteration in Porto we build an interface, mimicking the Airbnb one, where to enter the information and get the chapter containing the listing most similar to the apartment of the participant.

29 There are great similarities with photo-elicitation methods rooted in anthropology (Collier & Collier, 1986), sociology (Harper, 2002) and artistic practices (Ketelle, 2010). Nevertheless, the classical way of deploying these methods is to select and work only with one or few pictures carefully selected before the encounter with the participants in the inquiries.

Figure 6: Spread from the catalog used in Porto containing the Airbnb listing, and the objects identified in them. Source: The authors (CC BY-NC).

catalog; the other introduced as a witness and notetaker of the dialogue to come. Few questions were asked to the participants: in Rijeka, the path they traveled the most; in Porto, the location, the square meters, and the number of people living in their apartments; in Paris, a few keywords describing their relationship to nature. These few bits of information were useful to open the catalog at a specific chapter: the one that had the most probabilities[28] to *correspond* to the participant (Figure 6). The catalog, then, was handed. The participant was left alone with some further guidelines, cheaply printed on an A4. The exploration lasted, usually, for more than 30 minutes. Grimaces were appearing, silence spread into the room, notes appeared on the pages.[29] The participant situated and grounded themselves in our corpora. Long conversations started by the descriptions of the atmospheres encountered, extended through an appreciation of the visual materials' (mis) alignment with personal experiences, and concluded with a recognition of the specific role that pictures played, as actual objects, in the participants' everydayness. Even-

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tually, the notes were re-read to the participant asking if there was anything else to add. The notes, along with the pictures and the annotations layered on the catalogs, were rearranged as *tableaux*.

Tableaux, this new object we designed, have been conceived as a visual array of images scraped and cropped, indexed by algorithm, annotated by hand, layered with the participants' personal narrative (Figure 7). We came to call them *tableaux* since the term latches itself on a specific genre produced by formally arranging visual content to provide argumentative structures (Bender & Marrinan, 2010). Defined by composition —strata, overlap, and juxtaposition— of individual items, *tableaux* gather separate and disparate —chronologically, spatially, cognitively, or technologically— phenomena. They provided overviews not by simplification and abstraction, but by detailing fragments, articulating different scales, and perspectives held together by the same compositional principle.

Tableaux provisionally inscribed the personal experiences developed with the corpora through the catalogs. They related specific personal connections to the *networked-* and/or the *bulk-* qualities of our image collections. In Rijeka, the Google Street View's aesthetic appreciation developed into grounded reflections about the capabilities of these "poor" photos to be faithful testimony of the

Figure 7: Annotated *tableaux* in Porto. Source: The authors (CC BY-NC).

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city's demised industrialized identity, much more than the stylized ones of Insta-gram. The same appreciation resulted in arguments addressing the impossibility of Google's machinery to explore some parts of the city, thus impacting the possible futures of these places. In Porto, it was the pictures of the clocks pointing always at the same hour. And the ashtrays systematically missing in the pictures have been revelatory of the injunctions the platform produces towards its user, both in terms of the aesthetic —the pictures were always taken with the same light condi-tions— and behaviors —no party allowed, no smoking allowed, thus, no ashtray. In Paris, the close reading of both pictures and texts revealed how the platform and algorithms produce violent entanglements of realities, to the point that for some participants it was almost unbearable to comment on.

As a material trace of the process, at the end of the dialogues we handed the participants the printed version of the *tableaux*. We hung them together upon the walls. Originally, we thought of this as the conclusive gesture of the collective experience that was able to start the final collective debriefing. Never-theless, something else that was independent and parallel, was systematically taking place when testing the procedure. The participants had little interest in the methodological or epistemological aspects and even less in a condensed or distilled meta-narrative of the experience. Instead, they were turning their atten-tion, from their murmuring voices and brouhaha, towards a finer understanding of that which was contained in the others' *tableaux* (Figure 8).

At a first glance we had the impression that the wall, in front of which people were whispering, looked like the ones in investigative movies.[30] Paying closer attention, the parallelism was everything but illuminating. People were not making deductions at all. Our setting was not the solitary detective's silent

30 For a thorough discussion of this visual genre, see Ganzert, 2020.

Figure 8: Participants reading each other's *tableaux* in Rijeka. Source: The authors (CC BY-NC).

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and somber room. The wall was composed of everything but fragmented clues waiting to fit onto a plot. On the wall, we had fully-formed stories; on the scene, their noisy authors were busy fabricating links and connections. By conversing, they were including their point of view to the other ones'. It sounded clear that we needed to continue developing these manifestations before jumping to conclusions of any sort.

↻ performing *tableaux* into scores

After mazy ruminations, we tested some active interventions with the help of speculative praxes (Debaise & Stengers, 2015). Far from being practices of pure invention —abstract projections of a world disconnected from any grip on reality— speculative gestures propose *reprises* and (re) constructions of events unfolding in present and localized situations. Unbound from the burden of representation,[31] intensifying the sense of the possible, speculative gestures promise to act as embedded tests for the 'redeployment of the real' (Pihet et al., 2017). More than simple reorganizations of a reality already at hand, they invite to manipulate it in order to reach a greater amplitude and consistency. For us, speculations meant to modify the apprehension of the collective experience through narrative and performative magnification.

Therefore, we took the *tableaux* off the wall. We redistributed them to the participants. We started a new process of interrogation of these materials. The participants and us were invited to read each other's stories aloud, to highlight the passages in or out of phase with their personal experiences, to re-write the images on which those stories were built. We remapped the *tableaux* in the spaces where we were working to image their contents unfold: the theatre of 'Filodrammatica' in Rijeka with its rococo stuccoes and ceiling paintings; the abandoned 'Stop' shopping mall in Porto with its corridors echoing the repetitions of Batucada groups and post-noise ensembles (Figures 9A, 9B, 9C); and the rehearsal room of a theatre school, down in the basement of Les Halles, in Paris.

These non-analytical and non-representational[32] ways of questioning our visual materials, borrowed from the techniques of the theatre, have been *improvised* to accept and cultivate a partial but mutual sensitivity among the participants. Each of the *tableaux* disclosed its provisional and biased, individual, and subjective nature. Through the reading exercises, the content of the *tableaux* was inspected to find tensions and partial connections to the others. Once these points were identified, we started another set of exercises to write down a *score*: a document accounting for, as the murmurs of informal conversations, the alignment of various individual experiences altogether with the moments and the reasons for their possible divergences. Sort of non-mechanical montages, the *scores* mixed different levels of our whole experiences: single images of the

31 It is useful to note that the specific speculative praxis to which we are referring to, stems from a re-actualization of pragmatist philosophers and thinkers. Addressing the methods of knowledge production and inquiry, John Dewey noted: "Selective emphasis, choice, is inevitable whenever reflection occurs. This is not an evil. Deception comes only when the presence and operation of choice is concealed, disguised, denied" (1929, pp. 34-35).

32 Under the umbrella term of 'non-representational' theories a variegated set of methods and approaches are assembled to sense the politics of everyday life by the means of active and embodied experience (Thrift, 2008). Part of them is re-evaluating the role of improvisation inside methods as it corresponds to the way life unfolds (Hallam & Ingold, 2007). To the extent of the relationship between theatre and social research it is worth to note that the most recent experiments are going well beyond the simple performance and staging of research (Turner, 1982) or the use of the stage as a productive metaphor (Goffman, 1990). A new prolific strand of hybrid approaches is boosting the stage and the theatre, broadly conceived, as a space for the research and the setting for producing empirical and affective relationships with the research materials. See Giordano & Pierotti, 2020.

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Figure 9A: Exercises of performance and writing in Rijeka. Source: The authors (CC BY-NC).

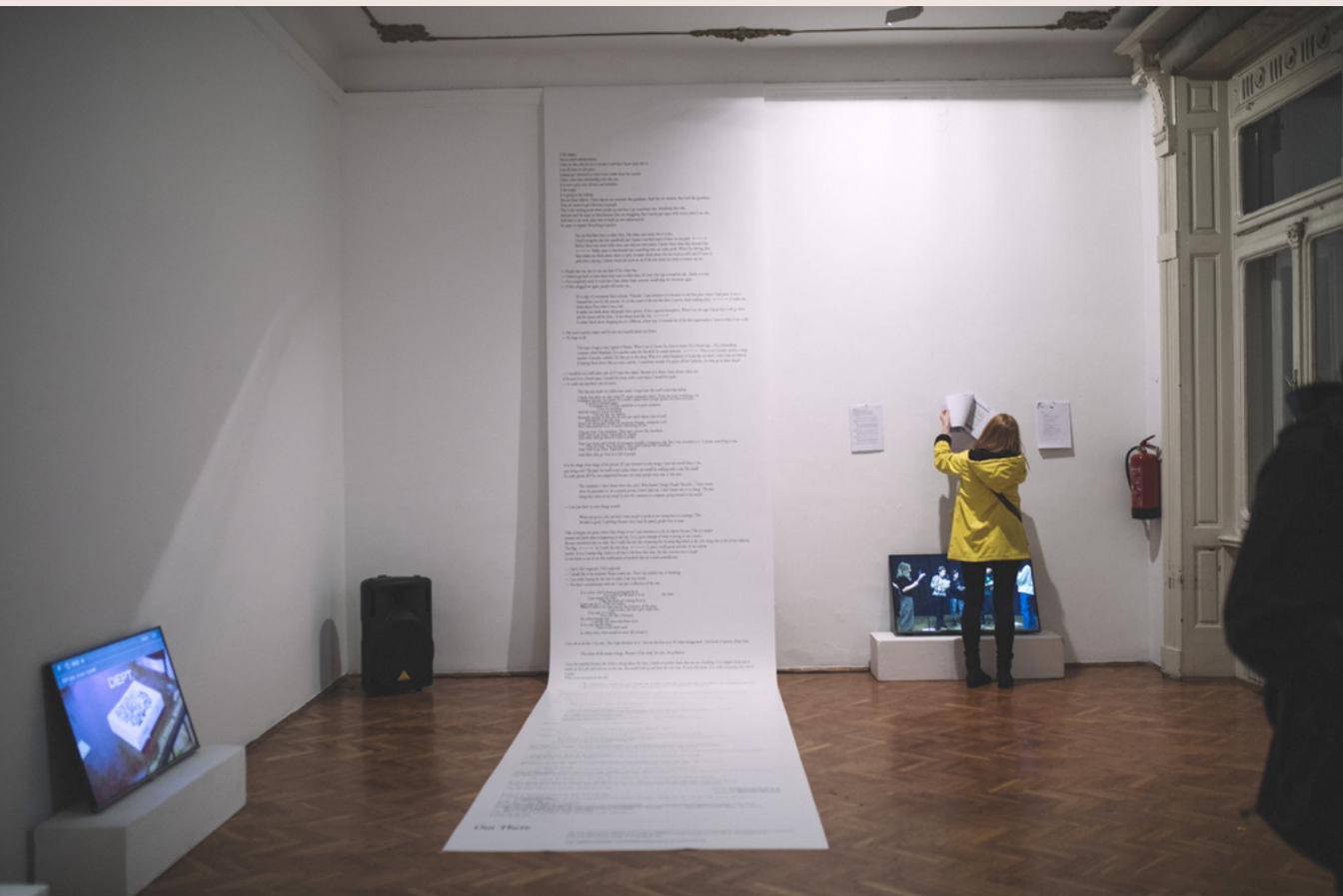**Figure 9B**: Remapping of the *tableaux* in the Stop shopping mall. Source: The authors (CC BY-NC).

Figure 9C: Exercises of performance and writing in Paris. Source: The authors (CC BY-NC).

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corpora; reflections about the role of digital platforms in the urban realm; effects of algorithms in personal and collective lives. Eventually, the scores (Figure 10) were rendered as a voice standing for a localized and shared understanding of the issue under inquiry, performed by its very actors; video exhibited in Rijeka; radio broadcasted in Porto; shared over text messages in Paris.

This last visual object we designed held the traces of the *networked-* and effect of the *bulk-* qualities of online images, woven together with the biographical realities of the participants and their own speculative reflections, both evidence of experience and modifications thereof. In it, single manifestations of interest toward the issue faced in the different cities have been articulated through and with the images, diffused without fading into an averaged community's voice. Made from the empirical materials collected and produced all along the developing register, the voice emerged as the product of collaborative and affective processes. It is through this object that we, finally, engaged with the discussions and debrief of the experience and its significance.

Figure 10: The score and its final performance exhibit in Rijeka. Source: The authors (CC BY-NC).

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DEVELOPING IS GETTING TRAPPED IN *VISIBILIZATIONS*

Out of the contexts of experimentation, it is difficult for us to gain in generalization so as to offer the *developing* register as a possible general methodology for working with online images. The interruption of our experimentations, due to like COVID-19 pandemic externalities, hindered a general evaluation of what we have collectively produced. This, in turn, pauses the discussions about the relevance of mixing disciplines, methods, and practices; any grounded reflection about the epistemic value of our process; any aesthetic or ergonomic appreciation of the outcomes. What can be offered, here, as the final discussion, provides feedback to the motivations that brought into existence the 'DEPT.' project: our desire to make our usual visualizations, maps, and diagrams to *exist more*.

As Tim Ingold (2013) beautifully described after his reading of Vilém Flusser's (1995) argument on what to design as a practice entails, an 'object' requires a full 'choreography' around it to exist and for its 'performance' in the world. Objects are more of a 'trap' than solutions. To make our objects —our usual visualizations— perform, we trapped ourselves in the constructions of their condition of use and existence. Each 'performance' required us to design a new 'object' and its associated 'choreography'. To extend and care for our data- and media- visualizations we had to develop the catalogs, which required the *tableaux* to be conceived. They itched us to produce the scores. They had to be provided with a voice to exist and have an effect.

Each of these sequential objects, composing our register, is the result of an explicit and radical transformative act. Every object is the legitimation of the following and the denaturalization of the previous one. Each of them is a memorandum and a promise. The chain they compose wishes to overcome hard boundaries between the domains of vision and action; the representational and the performative; the research laboratory and the public setting. As online images call "for pluralism in the way [they are] read, experienced and explored"(Rubinstein & Sluis, 2013, p. 37), we felt compelled and justified to undertake such transformative performances by multiplying the modes for comprehending digital visual materials. Our individual and collective transformations could be seen as a mode of intervention in, and manipulation of digital images *networked-* circulation and *bulk-* production.

We took the opportunity to experiment otherwise with the cultural and technical practices needed to produce the context of use, the meaning, and the interpretation of digital and visual instances of social processes. To this extent, the 'DEPT.' project has been, first and foremost, an experiment on designing *visibilization* affordances of data intensive procedures —the capability for a sensitive rendering of awareness and affections— rather than on the *visualizations* ones — the pure optical manifestation. By multiplying the 'ways of seeing', to paraphrase

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Donna Haraway (2006) we hoped to multiply the 'ways of living' *with* and *through* online images.

We accepted the risk of coping with a register that the more it advanced, the more it became situated and contingent. The more it developed, the less its results were distinguishable from the techniques, methods, situations, and the people providing for their existence and caring for their performance. The more the register advanced, the less we could withdraw from it. We have been trapped in dependencies of languages, of relationship networks, of frictions between macro data-treatment and micro histories. Most of the time these dependencies exceed our understanding. In Rijeka, when we proposed to write the final score in Croatian, we got a harsh refusal. The people we were collaborating with wanted to use the language that they thought was responsible for the fading traits of their rooted identity (English). In Porto, we were asked to perform the score in Portuguese since we, as a team of travelers, were part of those meshed in the gentrification problems of the city. In Paris, we had to provide space for long and sensitive discussions about the relevance of disseminating and sharing corpora containing offensive or hateful contents.

Making our objects to *exist more* has meant experiencing the intensities, the pressures, and the reactions they have triggered. By rewiring infrastructures of circulation, putting in motion fixed images, and tweaking the experience of revelation we developed a fabric that trapped us in. Nevertheless, this fabric of *visibilization*, our own enmeshment, both as research and as a wider localized collective delving into the inquired issues, had the great advantage of installing other relationships with the actors, the events, the images, and the processes that we are supposed to describe and account for. Rather than just report a reality, in these collective situations we have the feeling of having the freedom to be less concerned with what data-visualizations tell about social issues and more concerned with how data-artifacts provoke[33] (Marres et al., 2018) actors to speak and describe themselves otherwise. While being trapped we might be able, and we are forced, to reground what we perform inside our close laboratories into the open situations we are meant to study. While being caught in the developing register, by being visibilized, online images, corpora, and visualizations could, eventually, *exist more* than what we usually allow them to do. ▣

33 We are borrowing the term 'provoking' from the beautiful argument by Marres, Guggenheim, and Wilkie. In their book *Inventing the Social,* while exploring the renewed linkages between social theory and interventionist modes of accounting for the social life by extending the input of Garfinkel to conduct experiments to understand society, the authors state: "to render visible what is going on in social situations it is not enough to carefully describe what happens, we must also provoke accounts. If we want to really grasp social processes we must somehow *invite*, *persuade*, or (to put it more strongly) *provoke* actors and situations to generate accounts, and to produce expressions and articulations of social reality" (Marres et al., 2018, p. 28).

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