

# Networked images

*visual methodologies for the digital age*

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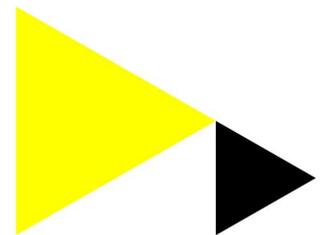
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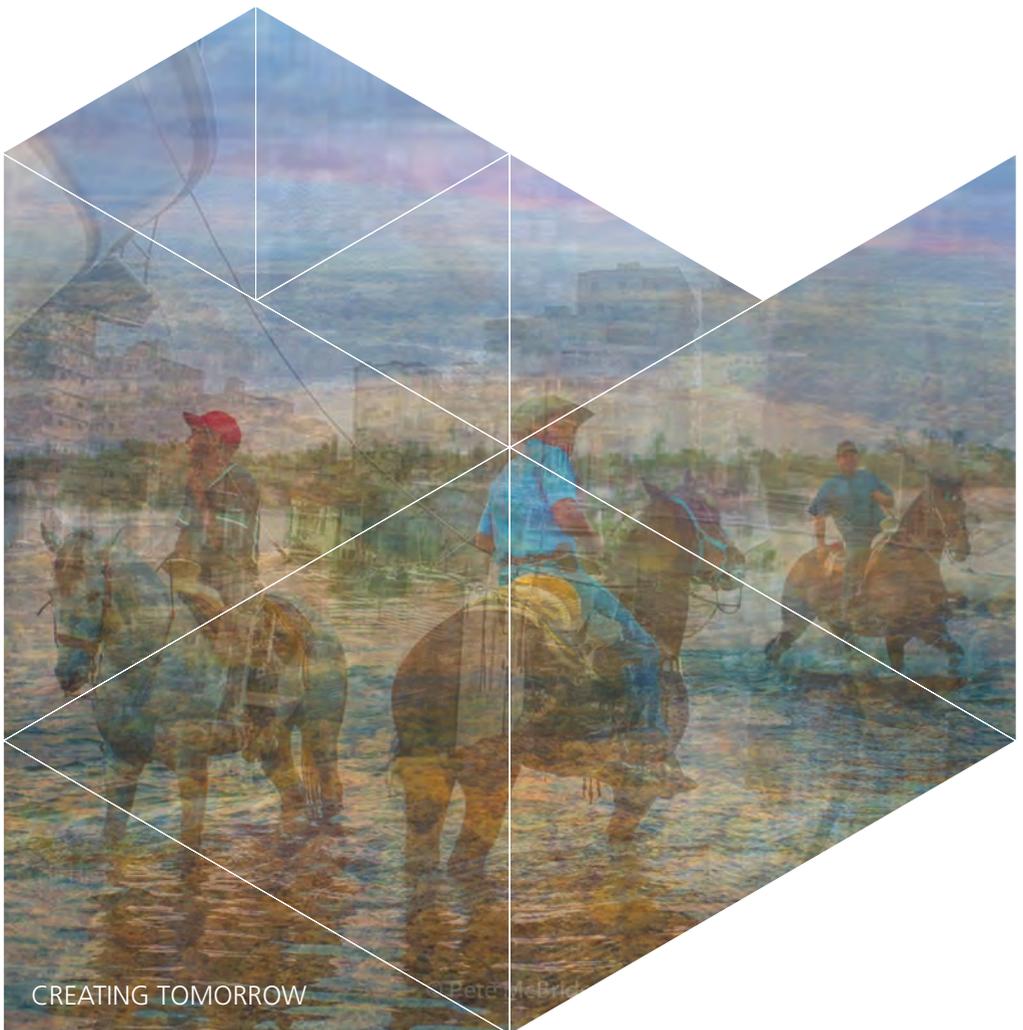


Amsterdam University  
of Applied Sciences

# NETWORKED IMAGES

VISUAL METHODOLOGIES FOR THE DIGITAL AGE

dr. Sabine Niederer



CREATING TOMORROW

Peter J. Bridg

# Networked Images



# Networked Images

Visual methodologies for the digital age

*Inaugural Lecture*

Tuesday September 18th, 2018

Dr. Sabine Niederer

Professor of Visual Methodologies  
Amsterdam University of Applied Sciences



**Amsterdam University  
of Applied Sciences**

Cover image: This visualization merges the top 10 most-engaged with images on climate change on Instagram in June of 2017. Design: Beatrice Gobbo, Andrea Benedetti and Federica Bardelli. See also: <https://wiki.digitalmethods.net/Dmi/MakingClimateVisible>.

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Networked Images: Visual methodologies for the digital age

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# Introduction

This publication introduces the *Visual Methodologies Collective*, a research group (in Dutch: *lectoraat*) that was launched at the Amsterdam University of Applied Sciences in the Summer of 2017, and its programme which is dedicated to the study and production of visual materials for applied and collaborative research. We are starting this research collective in an age of visual abundance. Images and visual platforms have taken over the web, and our current students at the faculty of Digital Media and Creative Industries will enter professions that increasingly have a strong visual component and engage in some form of interface design, visual storytelling, the production of infographics and data visualizations, portfolio presentations, or prototyping.



Figure 1: The famous 'Chihuahua or Muffin?'-meme. This popular meme highlights the visual similarities between Chihuahua dogs and blueberry muffins. It is part of a larger genre of collages that combine pictures of animals and the food (or objects) that the animals resemble (Gri, 2018).

In 2007, while working for the Institute of Network Cultures, Geert Lovink and I and a group of international researchers and artists launched *Video Vortex*, a network of artists, filmmakers, and theorists interested in the surge of online visual culture, given the rise of YouTube, a new platform at that time (launched in 2005) used for video sharing.<sup>1</sup> Collaboratively, in annual conferences and edited volumes (the 'INC Readers' series), we imagined a future visual online culture having a strong position for artistic and cinematographic experimentation. These online visual culture imaginaries still resonate today, and there many more visual platforms other than YouTube have been launched, including Tumblr, Instagram, Snapchat, and Pinterest. Indeed, this online image realm has become much larger than any of us (or at least I) could have ever imagined at the time.

Researchers who study visual culture have noticed that much of the current concepts that surround online images and digital visual culture acknowledge a *visual turn* (also referred to as a *pictorial turn*). However, many still focus on a theorization of the single image and how the image actually becomes *unstable* through its digitization (Colombo, 2018). The Visual Methodologies programme proposes a different entry point. It straightforwardly entails that these online images become 'networked' when users like, share, comment or tag them, and also when platforms and engines format, filter, feed and recommend them to others. Images may also be networked *across platforms* through their circulation, when the same image is fed to or otherwise resonating on different platforms and websites (as is the case with memetic content such as Figure 1). For any research, it means the researcher has to consider the different ways of demarcating content that go beyond the single image and take into account the entire network of related content, actors, platforms and websites that surrounds that content and its images.

Figure 2 shows screenshots of Twitter and Instagram, annotated to highlight the opportunities the interface presents to users to network their content. Each platform and engine handles images in distinct ways, thereby revealing platform-specific technicalities. Both the networkedness and technicality of online images call for an approach attuned to the medium.

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1 Video Vortex is a network of artists and theorists who were working with online video and at the time wanted to reflect on the enormous rise of YouTube and the implications thereof for the art, aesthetics and politics of the medium of online video. The Video Vortex network has organised 11 annual conferences and two readers to date (INC, 2018).

TWITTER



INSTAGRAM



User, Hashtags, @Mentions, Images, Reactions, Comments, Locations

Figure 2: Social media posts and their user features offered for network content. Top: Instagram, bottom: Twitter. Annotated screenshots: Carlo de Gaetano.

Taking networkedness and technicity of content as a methodological entry point, it becomes clear that images should not be studied as separate from their network, but rather *en groupe*. As the information designer Gabriele Colombo has pointed out, much of the image analysis work done today starts with a *folder of images* (2018) along with information and metadata about its location, user engagement, and other variables. This point of departure means that ongoing research questions cannot be answered through the study of only a single image stripped from its context. For example, we may need to study how images circulate, are engaged with, appropriated, made into memes and changed over time.

The kind of research this process enables can perhaps be best illustrated with an example. In a research project on the representation of art on Wikipedia (Ben David, Stevenson et al., 2013), the researchers compared the images present in the article on 'art' across all language versions of the encyclopaedia project. This kind of research opens up important questions about both over- and under-representation of certain works of art in the writing and circulating of art history. Which art works are shown across language versions and thus become the hard core of the Wikipedia art historical canon (and perhaps, even beyond)? Does Wikipedia privilege Western art, and are non-Western artists confined to a separate section in the entry? Which language versions succeed in striking a gender-balanced depiction of art? Which images have been on the art page for a long time, and which have been (recently) deleted or recently added to the articles? In this particular study, the researchers found that on Wikipedia, the Mona Lisa has become "the iconic representation of art itself" (Ben David, Stevenson et al., 2013), as can be seen in the network graph of Figure 3. In some language versions (for example the Icelandic, Corsican and Hebrew pages), the Mona Lisa was even the only art work presented in the entire article.

Images have not only made it to the foreground of digital culture; they have also made a mark on a wide range of research practices. Captured by the term *visual methodologies*, such "research with visual materials" (Rose, 2016) encompasses research practices that include both the study of images and their interpretation and "meaning-making" (2016:373) and the use of images for research. The first strand of research looks at four sites wherein the meanings of images are made: the site of production (how was the object made?), the site of the image or object itself (what does the image look like?), the site of its circulation (where and how does the image travel?) and the site of its audiencing (how is or how was the image seen and by which audiences?) (Rose, 2016:373).

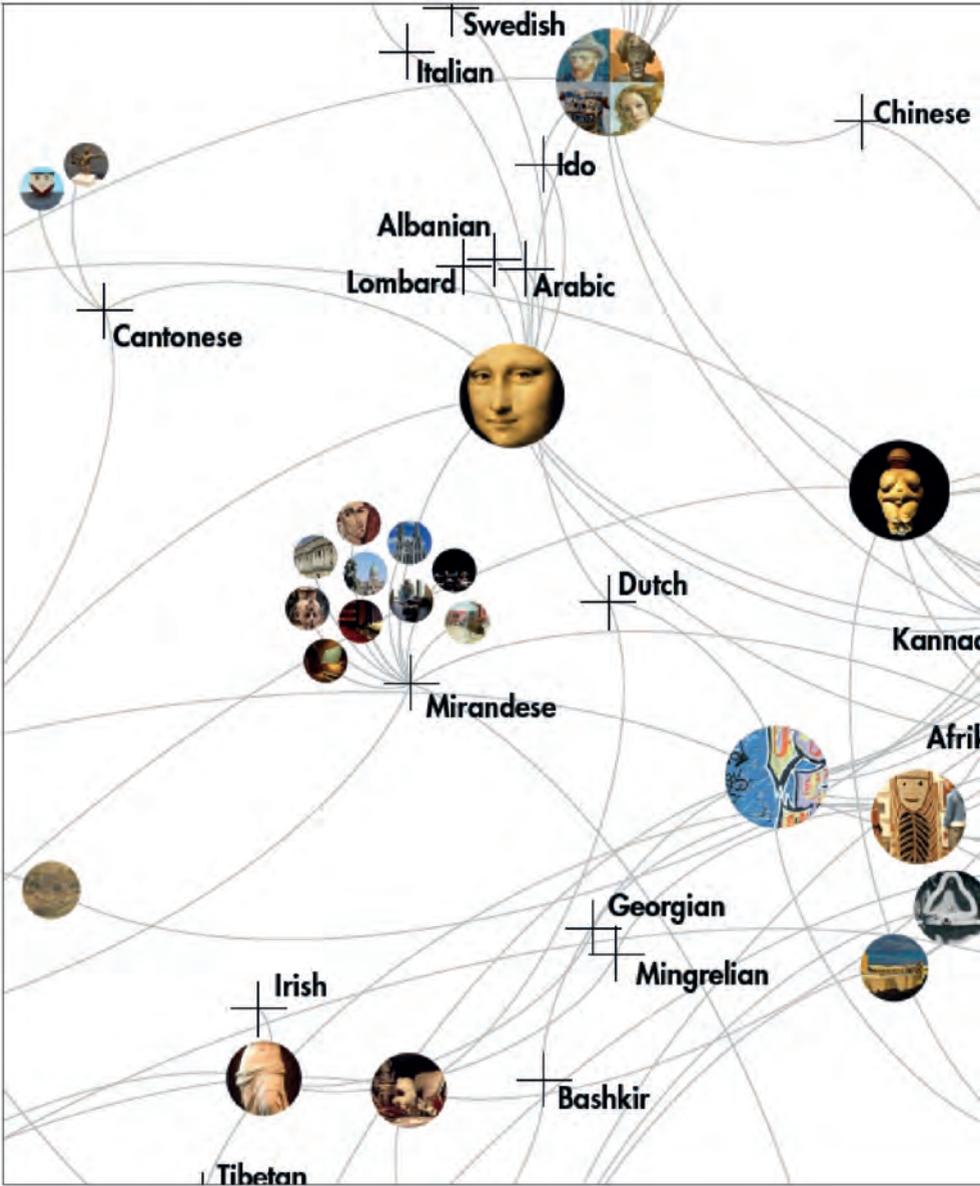
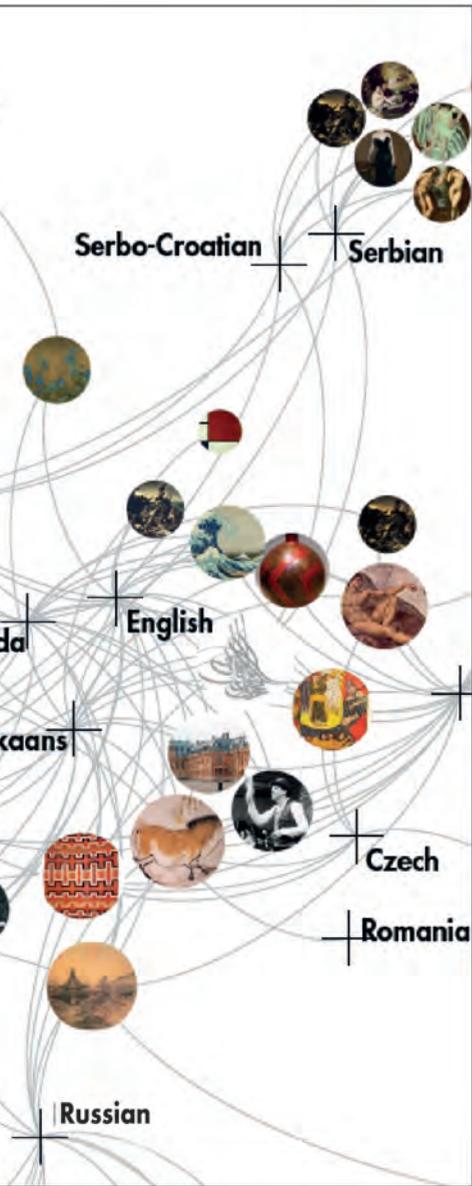


Figure 3: Wikipedia art images across 154 languages (overall network and core zoom-in). Research by: Anat Ben-David, Michael Stevenson, Federica Bardelli, Sangeet Kumar, Garance Coggins, Sarah McMonagle, Stephan Schlögl, and Han-Teng Liao, 2013. Design: Federica Bardelli. See also URL: <https://digitalmethods.net/Dmi/CrossLingualArtSpacesOnWikipedia> for a full description of the project.



The second strand examines images as tools and instruments for research. Here we can situate methods like photo elicitation, which uses photographic imagery to evoke “information, feelings, and memories” from its interviewees (Harper, 2002) by presenting them with picture[s] and asking for their associations, or, reversely, by presenting an issue or concept and asking for its associated images. In the conclusion to her handbook, Gillian Rose calls for a mixed methods approach, which will enable the researcher to explore in more depth and in more detail both the role and the meaning of images, their audiences (and who is included and excluded), and their circulation.

The programme of the Visual Methodologies Collective that we are developing in Amsterdam zooms in on visual methodologies for the digital age. This demarcation immediately calls for a mix of disciplines and skills and knowledge that is necessary to do this kind of research, including digital research methods, design, (visual) storytelling, new media theories and concepts, programming, and critical making. Our programme follows the same categories as introduced by Rose, with on the one hand, the study of images (discussed in Part I: Image research) and, on the other hand, the use of visual materials for research (as discussed in Part II: Images for research). For image research, a focus on the digital means considering images as *networked content*, thereby treating the image not as a solitary object, but as part of a network of other images, users and platforms. Chapter 1 discusses research practices that treat *images as data* and moves on to propose those that treat *images as content*. Chapter 2 zooms in on the study of platform-specific visual languages, which are referred to as *visual vernaculars*.

Part II looks at the production of images for research. Here, a focus on the digital (and thus the networked) opens up the realm of “active” data visualization, in which visualizations (and other visual practices) require an active research attitude (Venturini, Jacomy & Pereira, 2015) to facilitate collaborative research processes, drive debates, and aid the analyses, which I will discuss in Chapter 3. Attuning this work to the digital age also means we can experiment with the appropriation and playful repurposing of well-known visual formats from the digital culture, for instance, by creating research GIFs, critically augmented reality, or transparent data dashboards.<sup>2</sup> Of course, neatly demarcated categories, such as the dichotomy between *image research* and *images for research*, as presented in this publication, tend to overlap in reality. Here, these categories meet when we create visualizations or *images for image research* (discussed in Chapter 4).

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2 Working with our partners in art and (critical) design, will allow for us to contribute to such practices as visual technography (Bucher, 2018) and speculative design (Wilkie et al., 2018).

# PART I: IMAGE RESEARCH

## 1. Moving from *images as data* to *images as content*

A boy lies down in a valley made of photographs, smiling at a picture he has picked up from the ground beneath him. Figure 4 is a photograph of an installation by Erik Kessels, as presented at FOAM in 2012, for which Kessels printed all pictures that had been uploaded to the photo sharing platform of *Flickr* in one single day. The result is piles of images that flood the rooms of the museum. With this installation, Kessels wanted to visualize the experience of “drowning in representations of other people’s experiences” (Cole, 2015). As Flickr had become a place of abundant image production and sharing, we, as users, only get to witness the occasional example: a picture posted by a friend or family member perhaps. We no longer have the illusion that we can keep up fully with what is being shared.



Figure 4: 24 Hrs in Photos, by Erik Kessels as presented at Foam Amsterdam in 2012. Photo: Erik Kessels.

Erik Kessels made his installation in 2012, when the number of images uploaded to Flickr already amounted to 350,000 per day, on average. In 2018, to mention a few visual platforms and their volume of use, Instagram users upload 95 million

photos per day, Facebook users upload up to 350 million photos per day (Aslam, 2018a; Smith, 2018). Snapchat users share 9,000 photos per second, and YouTube users upload 300 hours of video per minute (Aslam, 2018b;). A massive amount of visual content is also watched and shared by users. In fact, content that includes an image is much more likely to be engaged with in social media today. Instagram users, Snapchat users collectively watch 6 billion videos daily, and YouTube users watch 5 billion videos per day (Aslam, 2018a). As these figures illustrate, the aforementioned 'pictorial turn' is not so much a theoretical shift from text to image, but rather a practice driven by users and facilitated by platforms, in which more and more users increasingly share visual content and engage with it. These practices have sparked a range of new methods for research practices as well.

As a researcher interested in visual materials, there may seem to be only one way out of (or into) this major amount of material waiting to be studied, namely, new approaches in which collections of images are studied as data. Famously, media theorist Lev Manovich has spearheaded this approach, often under the close scrutiny of art theorists due to his quantitative and aggregative 'pattern recognition' approach to cultural materials. In addition to this visual analytics approach, this publication will discuss alternative approaches that offer ways of dealing with image collections that follow a different logic wherein quali-quant methods allow for a close reading of images and their networks.

As outlined in the introduction, the methodological entry point here is that images can be studied through their *networkedness*. The diffusion of networked images also opens up a way to study affective publics that are rendered through shared sentiment, opinion, or affect (Papacharissi, 2014; Olesen, 2017)<sup>3</sup>. Studying the ways in which such publics repurpose existing images (e.g., by turning them into memes or creatively appropriating them by using filters and other visual and textual elements), provides new insights into the dynamic user cultures of a particular platform (Geboers et al., 2016). In line with the work of sociologist and philosopher Noortje Marres (2017), I argue that platforms are not only the carriers of content and channels of its distribution, but also the sites of image production (as illustrated in the work by Erik Kessels) and an entry point to visual research that can open up new research questions that require multidisciplinary, qualitative and quantitative research methods as well as novel conceptualizations.

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3 This is the central theme of Visual Methodologies Collective's PhD-candidate Marloes Geboers' doctoral research.

## Images as data

In 2007, Manovich gave a lecture at the first international *Video Vortex* conference in Brussels, Belgium. In his talk, Manovich urged media and art theory to start dealing with the scale of contemporary culture, to catch up with industry and to start developing and using tools for the collecting, displaying, and analysing of images. The humanities had a specific role to play here, Manovich argued, as these software tools could be developed based on theoretical concepts rather than on market needs (2007). But it would mean a tremendous shift in focus from the single cultural or small set of images, to images being gathered in large digital collections and displayed on wall-filling dashboards for further analysis. This analysis would then enable computational work, such as pattern recognition, as well as the capability to identify movements of images into emergent structures. Manovich urged researchers also to reflect on the software that produces and serves these images. (See also: Manovich, 2008; 2013).

Lev Manovich, Matthew Fuller, and others started organizing the emerging interdisciplinary approach to 'software studies' as a way to bring together media archaeologists, new media theorists, and other scholars interested in critical software research (including, among many others, Wendy Chun, Florian Cramer, Olga Goriunova, Anne Helmond, and Adrian MacKenzie) in *Software Studies Workshops* (e.g., in 2006 at the Piet Zwart Institute in Rotterdam, and in 2008 in San Diego). Similarly, researchers in the humanities as well as in sociology, communication science, and (techno-)anthropology started initiatives to develop new methods and tools for the study of online content (e.g. the *Digital Methods Initiative* at the University of Amsterdam).

In his own work, Manovich takes on big data and large-scale image collections as a major research opportunity to assess genres and recognize patterns by comparing images over time or across countries. For instance, in a large-scale study of selfies on Instagram, Manovich et al. set out to explore and interpret local differences in (self-)representation and composition (Tifentale and Manovich, 2015). Manovich's approach seems to focus mainly on the different qualities of the digital. The sheer amount of online data and also the possibility to digitize, visualize, and analyse large bodies of visual material opens up questions about local specificities and the meaning thereof. What are the local differences in the composition? What do these differences mean? And how do the results of such an endeavour relate to the concepts and theories that are related to traditional self-photography? (2015).

I want to complement this approach to images as data that can be read and interpreted from a distance, with other methods that allow for different kinds of questions. The humanities and the arts not only bring a framework and questions

that can lead to theoretically underpinned analytical software; they also offer a rich qualitative reading of online images as content. This aspect is what I've argued for with my approach of *networked content analysis* in a proposal to develop methods and tools that better adapt to the specificities of a particular platform or engine and how they network (visual) content (Niederer, 2018). This approach asks different questions, such as: How are particular issues depicted and represented online? Is the visual representation of an issue particular to a specific online platform? How does the platform 'perform' a particular issue? Who is represented in the data set, and who is absent? And has the depiction of a particular issue changed over time? Before discussing some of these approaches in more detail in Part II, the next section will further introduce the study of images as *content*, rather than as (merely) data.

## Images as content

As Manovich rightly pointed out, research rooted in the arts and humanities can create speculative and experimental inquiries in software and its input, interfaces and output. This focus provides fertile ground for the study of digital culture and its artefacts. For the qualitative study of images as *content*, we can draw from the field of content analysis developed in communication science and known for its unobtrusive methods and inclusive approach to all content types (text, image, sound, and audiovisual). Traditionally, content analysis has focused on existing data sets, such as a collection of television broadcasts, the photographs in newspaper articles on a particular topic, or a set of comic books. Digital media content, however, can be published or created online and enriched with new opportunities for navigation and interaction. Digital images can be placed with a news article that is networked through in-text hyperlinks, recommendations to similar articles, or pulled into social media using social media buttons (Gerlitz & Helmond, 2013; Niederer, 2018).

The most straightforward place to further explore such networked content is probably Wikipedia. Wikipedia is the well-known, collaboratively written encyclopaedia project that has been researched thoroughly in the realm of user-generated content, which has been more critically approached as "a socio-technical system" (Niederer & Van Dijck, 2010), wherein the technical structures and social hierarchies that govern the content creation process are foregrounded. Wikipedia has strict protocols and core rules for its editing. And as new articles are policed by long-standing administrators and dedicated editors with related

tools, it is difficult, if not impossible, to make Wikipedia content *stick*, especially as a new editor. Unique to Wikipedia (and other Wiki-based platforms) are its publicly accessible article editing histories (including automated edits by software robots), previous versions of each article, talk pages, and elaborate statistics, all opening up a rich research environment for the study of knowledge “in the making” (Niederer, 2016).

*Wikipedians*, as contributors to Wikipedia call themselves, try to avoid at all cost the occurrence of a dead end: an unlinked and isolated Wikipedia entry. No article should remain un-networked, and all entries should guide users to articles on the same topic in other languages and to related articles. Further, in-text links should be made to refer readers to dedicated articles and biographic entries of all people mentioned. All Wikipedia content, therefore, is or should be, networked. This characteristic of the platform provides some powerful opportunities for researchers who are interested in studying cultural phenomena, as one can study how topics are differently represented across their different language versions (Jemielniak, 2014; Rogers & Sendijarevic, 2012), wherein some (sub)topics are more controversial than others (Borra et al., 2015), and some editors may be more committed to a single issue than others (Niederer & Van Dijck, 2010).

In a collaborative project with Warren Pearce of the University of Sheffield and participants of the Digital Methods Initiative (DMI) Summer School at the University of Amsterdam, we studied the evolution of images regarding the issue of climate change across online platforms. Here we looked specifically at visual responses to the announcement by Donald Trump (in June of 2017) of the U.S. withdrawal from the Paris Climate Agreement, across Wikipedia, Instagram and Twitter. Zooming in on the images used in climate change-related articles in the English-language Wikipedia, the shift in imagery was apparent, as it moved away from photos of windmills and protests toward factual diagrams and infographics, thereby stressing the large footprint of the USA on climate (for instance CO2 emissions). Compared to other platforms that we studied, Wikipedia was in fact the platform that offered the most significant visual response to that political event (Niederer & Pearce, 2017).

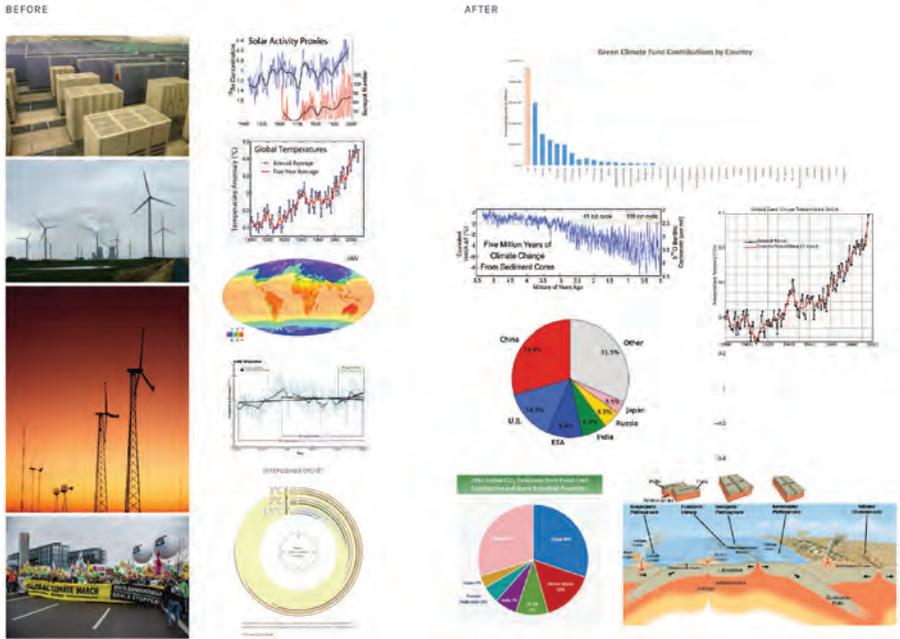


Figure 5: Wikipedia images for its climate change articles before (left) and after (right) the U.S. announced its withdrawal from the Paris Climate Agreement in May of 2017. Before the announcement, these articles included photos of wind energy and climate protests. However, the new images show only facts and figures, including diagrams that show the impact of the climate. Research: Michele Mauri and Simon Gottschalk, as part of the project, Making Climate Visual, facilitated by Sabine Niederer and Warren Pearce. See also URL: <https://wiki.digitalmethods.net/Dmi/ClimateChangeAlpsWikipedia> for the full project descriptions and analyses of responses to the U.S. withdrawal on other platforms, including Twitter and Instagram.

This example illustrates the methodological entrypoints for the study of platform-specific visual cultures, which I discuss in the next chapter in more detail using the concept of *visual vernaculars*. Working with networked images entails working with collections of images in connection with their carriers and other related objects and users. This next chapter discusses how by using visual methodologies we can work with collections of images and study both the visual representation of particular issues and the visual vernacular of particular platforms.

## 2. Image research and platform vernaculars

A large news photograph of a migrant boat packed with people is overlaid with a heat map visualizing the aggregated results of eye-tracking research. The heat map visualizes the distribution of attention by showing in bright red zones where the test persons have looked the most; green and yellow show those areas where the eyes have travelled only briefly. Other parts of the image remained entirely unseen by the test persons, and they are, therefore, now clearly visible. Next to the large photograph is what looks like a contact sheet, small-size news photographs that have been meticulously annotated to indicate compositional lines and fixation points (pinpointing particular parts of the image that have actually been looked at). This installation, titled *Gaze Plots*, was presented by the Dutch artist Coralie Vogelaar as part of the Impakt Festival 2018 (see Figure 6), and is part of her larger series of art works addressing spread of news imagery. In this series, Vogelaar asks why certain news images are featured time and time again, while others simply “vanish into oblivion” (Vogelaar, 2018:1). Her work demonstrates visual methodologies, digitally, in a variety of ways that include visual research and experimentation with new technologies (in this particular case, the use of eye tracking software) as well as annotation and visualization for further research and discussion.



Figure 6: The installation, *Gaze Plots*, by Coralie Vogelaar, as presented at the Impakt Festival in 2018. Photos: Coralie Vogelaar.

The urgency of Vogelaar’s work is heightened by her choice of subject, namely, affective images of refugees and protests, overlaid with ‘dry’ software output. They are hard to watch and make us question the place and status these Artificial Intelligence technologies have on our daily lives, and the decisions we make on the basis of their outputs. Then there is the means that the artist used to collect her images. Vogelaar chose the hands-on approach of querying Google for news images she had found in news databases. Many such researchers working with digital materials similarly collect their materials online, either by saving one

image at a time manually or (batch-) querying the search engines or Application Programming Interfaces (APIs) or by using custom-built scrapers, specifically designed and developed to help create such collections of images. The images are saved in folders and range from a small set to large sets of images, often captured along with their metadata. In addition to researching special collections on a particular issue or theme, research can also address how platforms as a whole may have a particular *visual language*. In line with “platform vernaculars” (Gibbs et al., 2015), which refers to the different narrative patterns that shape content and information flows across platforms, we can speak of *visual vernaculars* as having distinct visual patterns and practices for different platforms.

## Platform vernaculars

*Visual vernaculars* research contrasts images from different platforms are contrasted as offering different “windows” on a particular topic or issue. This approach offers researchers who critically think about the limitations of studying social media content, and rightly so, a productive way forward by asking: What is this topic according to Twitter? What is it according to Instagram? Do they provide identical, similar, or distinct views and descriptions of the same topic? Such questions will help create an understanding of both the textual and visual vernaculars as well as the cultures of use for each platform.

The example I want to offer here is also part of the aforementioned study on the visual representation of climate change. In this subproject, we looked particularly at the visual platform vernaculars on the issue of climate change on Twitter, Facebook, Instagram, Google Images, and Reddit (2017). Building on the notion of ‘platform vernaculars’ (Gibbs et al., 2015) and extending that notion to the visual realm of climate communication on different social media platforms, we set out to study climate change visual communication on six platforms: Facebook, Instagram, Reddit, Twitter, Tumblr, and Google Images. The challenge of such a cross-platform analysis was to account for the platforms’ different technicalities and adapt our means of content collection and analysis accordingly.<sup>4</sup> For the project, we devised platform-specific engagement and ranking metrics to filter and create subsets of the ‘most engaged with’ images (see the research protocol diagram in Figure 7). The reason for focusing on the most-engaged with content, rather than the diversity in visuals or the more marginal images, was that we were interested in the different dominant visual vernaculars as they demonstrate both the posting

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4 See also Niederer et al., 2015.

practices and formats of the platforms. How does Instagram 'do' climate change? And, how does this point of view compare to those images that are most engaged with on Reddit?

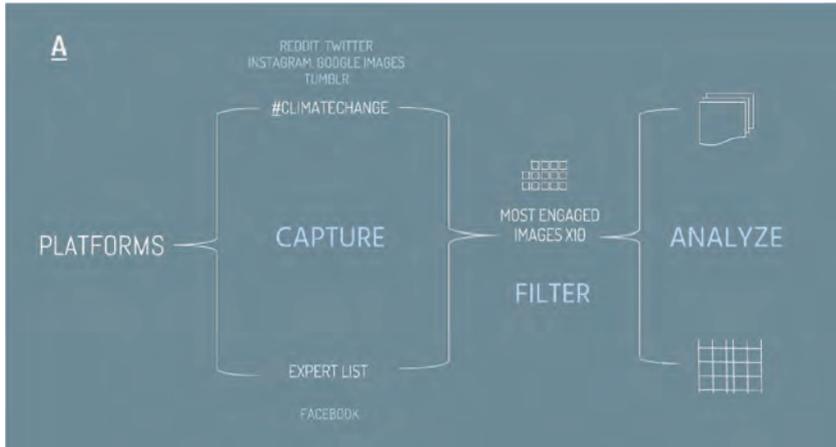


Figure 7: The Making Climate Visible Research protocol diagram. Visualization of the research process for collecting the top 10 most-engaged images per platform. Design: Beatrice Gobbo and Andrea Benedetti. See also: <https://wiki.digitalmethods.net/Dmi/MakingClimateVisible>.

An approach like this stresses the importance of being attentive to the platform or even to develop a *platform literacy* (Pearce et al., 2017). It is not straightforward to deal with different techniques and decide which metrics or features point to engagement and prominence. Here, we collected images using a variety of combined methods, by looking at expert pages (in the case of Facebook), a selection of on-topic subpages and clusters (Reddit and Instagram), engagement metrics by way of likes, comments, reposts/retweets (Twitter, Instagram, Tumblr) and top results across different languages (Google Image Search). The top images were then merged into a single image for further analysis, using Adobe Photoshop. From that study, we concluded that indeed each platform does use different vernaculars when presenting the issue of climate change, and these are discussed below alongside a thumbnail of the merged image. The visualizations can be seen in more detail on the following pages.



Instagram is a social network that is built around image and aesthetics, and this concept is reflected in its merged image. The platform offers 'awareness travelling,' with its beautifully edited travel pictures that provide an insider's perspective and action shots of landscapes under pressure. The visual language of Instagram is experience-based, thus showing the perspective of the *Insta-world traveller*. The images are visually engaging and often professionally shot. Also notable is the total absence of text on the most-engaged with images.



The images displayed in Google Image Search on climate change contrast with those in Instagram and are more hyperbolic. Here, the colours are more glaring and saturated. Images here are also more likely to conform to the clichéd visual language of climate change. Visible here, for instance, are the commonplace images of a polar bear, and a picture of the Earth in a human hand. Text is visible on some images as annotated explanatory diagrams and infographics.



Tumblr offers 'environmental screenshotting': screenshots from other social media platforms and GIFs depicting noteworthy and iconic moments wherein 'skeptics' are put in their place. Tumblr's composite image looks a lot like the Twitter platform, including a number of screenshot tweets. This visualization demonstrates that text plays an important role in Tumblr imagery (also visible is a graph of the sea ice coverage). In this composite image, Tumblr acts as an unofficial 'clearing house' for re-purposed material gathered from other social media platforms.



Twitter's visual language is particularly 'in the moment': Showing images in sync with 'breaking news' and offering a site filled with contestation. The announcement of the US's withdrawal from the Paris Agreement reanimated the ongoing controversy about climate change and is reflected in this Twitter composite image. Images include coverage of the Weather Channel's founder claiming that climate change is a hoax, and screenshot text about Al Gore's investments in carbon trading. Also visible is the presence of a fake 1977 *Time Magazine* cover, doctored to claim the coming of a new Ice Age (this fake cover debunked in 2013 still circulates today).



High engagement images on the Facebook pages on climate change organisations are heavily text-based, aiming for memetic or infographic styles. Facebook here presents 'shareable statements', mostly non-controversial statements, written in a large font, super-imposed onto photos of celebrities or cute animals.



Finally, Reddit provides a very different visual vernacular from the other platforms, presenting mainly trending mainstream (news) media content. Here, official staged 'photo ops' dominate with politicians, microphones and flags being visible, from news articles that can be linked to by the user, rather than directly uploaded by users. Smaller sub-Reddit forums, however, tend to use more user-generated images. As such, the visual vernacular of Reddit owes as much to tropes in its media coverage of climate change as it does to the behaviour of its users.



Instagram



Google



Tumblr

Figure 8: The different visual vernaculars of climate change per platform. This visualization shows a merged image of the top 10 most-engaged with images per platform. See also: <https://wiki.digitalmethods.net/Dmi/MakingClimateVisible> and Pearce et al. (2017). Design: Beatrice Gobbo, Andrea Benedetti and Federica Bardelli.



Twitter



Facebook



Reddit

The platform vernacular project addresses the ways of working with the technicity of online images and the methodological challenges they can bring. When trying to build image collections, this inclusion of the content's technicity means addressing how platforms rank, sort, network and present their images. It also entails asking critical questions about the means of data collection and the data curation practices. For instance, the researcher may ask: Do I need the 'top' image to follow the ranking of the platform? Or do I look at other means to address relevance (most networked, least-occurring, or most unique, most platform-specific, etc.)?

Further, when visualizing the collection or designing its interface<sup>5</sup>, we may again critically ask what are the limitations of the selection processes that have lead to our mappings, and how do our visualizations guide the experiences and interpretations of the materials we've studied? UX-designer and design researcher, Caroline Sindere, offers three ingredients for the incorporation of transparency into our design practices that can underpin the work: 1) *legibility* (as the "ability to understand", which includes designing with words and visuals that allow for publics to understand and read the work and its workings); 2) *auditability*, which follows from legibility and means the "ability to understand a process, data point or intention, and then understand enough to request changes or give feedback; and 3) *interaction/agency*, as the ability to affect change and/or undertake decision-making from legibility and auditability" (Sindere, 2018). The aim when visualizing (or designing an interface to demonstrate) a collection of images is not to create an objective map that is unattainable, but rather to "follow the actors" (Latour, 2005) and be descriptive as well as reflexive and transparent about the choices and the reasoning or rationale behind those choices. Furthermore, it is worth creating not only shared interpretations of mappings, but also new opportunities for people to *talk back to the map* (an approach that is further discussed in the next chapter).

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5 These reflections also led to an assignment for students in their minor on *Visual Interface Design* as part of the BA course in *Communication and Multimedia Design* at the Amsterdam University of Applied Science wherein the students were asked to create a collection and interface it in three different ways, namely, for print, for a screen, and as an installation.

# PART II: IMAGES FOR RESEARCH

This part introduces the design of *images for research*, which contains visualization and other visual practices that are not the aesthetic visual conclusion to a research project, but rather a tool for (participatory) research.<sup>6</sup> Creating *images for research* calls for a situated design approach to visualization, in which the maps are often embedded in a larger research or design process, the research question is formulated together with external experts or stakeholders, and the visual language may be attuned to the audiences and users of the maps. As will be discussed throughout this chapter, it is through design that we can create materials that facilitate encounters and make possible the participation of publics in issues (DiSalvo, 2009; Engeström, 2005; Marres, 2016; Sinderson, 2018).

## 3. Visualization as a tool for applied research

The use of visualizations in (applied) research is not confined to those with training in information design. In fact, many useful tools today make it possible to create meaningful maps and diagrams for researchers who do not have a design background. Digital research on platform content has led to visual innovations in terms of visual tools and outputs. The tool suite *RAW Graphs* for instance (developed by DensityDesign at the Politecnico di Milano), was designed specifically to improve working with the outputs of digital methods tools, thus filling a gap and making data visualization accessible to a wider community of researchers, students, and (issue) professionals.

Historically, there are famous examples of innovative visualizations that come from outside the professional field of information design. Such work is referred to as “vernacular visualisations,” those that are originating from “outside the visualisation community” and often violating some of the “golden rules” of information design (Viégas and Wattenberg, 2008). The tag cloud is a more recent example of this. Definitely the very popular colourful *Wordle.net* word clouds, break a lot of conventions -e.g. using random colours and directions without adding meaning- and yet at the same time providing to a broader audience a simple tool to use for creating an easily legible visualization of the most-used words in any body of text.

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6 In this publication, I discuss only a small selection of these formats, and I would like to recommend visiting the Visual Methodologies Collective’s website ([visualmethodologies.org](http://visualmethodologies.org)) for more research strategies and visual formats, along with tutorials and links to open design documents.

As information design has been embraced by others well outside the traditional visualization community, it has become a powerful tool for collaboration, research, and storytelling by designers, students, researchers, and professionals alike. Furthermore, the use of visualization in (applied) research contributes to a discussion raised in design research that questions the suitability of empirical social research to the situated study of issues. A combined methodology that takes seriously more subjective and personal approaches to issues and their situated experiences may be a much better fit for the study of societal challenges and debates (as foregrounded in the work by Gaver et al., 2003:15). This need for reflexivity in the visualization of networks, a practice that has skyrocketed across the scholarly fields, has also been noted by scholars in critical data studies (Chun, 2018) and social research (Venturini, Jacomy & Pereira, 2014).

Wendy Chun points out that network science (including the algorithms underlying network visualization) is based on ideas of segregation, discrimination, and bias. Chun calls for a shift from correlation of data, to the study of co-relations, taking seriously that not all clusters are formed as homophilic echo chambers, but that “opposites attract” too (Chun, 2018). Chun therefore urges us to start questioning the axioms and assumptions underlying the basis of the algorithms, software, and interfaces we design, implement, and use. Venturini, Jacomy, and Pereira point to a different aspect of network graphs which is that much of the literature focuses on how to *create* a network graph, which is a mathematical challenge more than anything else, and disregard how such an image should be *read* and *conceptualized* (2014). Venturini et al. also make explicit the *active research attitude* that is required when working (and “sometimes struggl[ing]”) with network visualizations, as when researchers are producing and using such visualizations, they need to challenge existing knowledge, search the ground for new ways of knowing, and be open to unexpected findings (2014:19). These challenges resonate in visual methodologies more broadly too.

Building on the work by Bruno Latour, and the distinction he has made between *matters of fact*, and *matters of concern* (2004), Maria Puig de la Bella Casa proposes to include “matters of care” in the study and “articulation of ethically and politically demanding issues” (Puig de la Bella Casa, 2011:94; Calvillo Gonzales & Mesa del Castillo, 2018). Applying her theory to work in design and architecture, Calvillo Gonzales and Mesa del Castillo have outlined five pointers to include in their work practice. These may be considered to be very helpful starting points for an applied research setting as well. For instance, Gonzales and del Castillo describe the importance of identifying “power imbalances that are

articulated from and with the material” (2018:179). This focus connects to the work by Chun and also that of Caroline Sindere (2018), who called for a critical reading of and design approach to the digital systems we use. In the practice of visualization, this could build on the work by Catherine d’Ignazio and Lauren Klein, whose proposal for the development of “feminist data visualisation” similarly calls for a rethinking of binaries, a consideration of context and the making visible of labour (2016).

Lastly, Calvillo Gonzales and Mesa del Castillo (2018) express the need to understand the importance of *locality*. A situated design approach takes seriously the local stakeholders that are included and thus affected by the issues and objects under study, as will be discussed later in this chapter.

## Research protocol diagrams

The first research tool I would like to present here is the research protocol diagram: a visual aid used to guide researchers, students, programmers, designers, and issue experts (and other involved parties) through a collaborative research project. The protocol diagram is a flowchart of the research process, which includes the research questions, the sites and means of content collection, the means of visualization and analysis, and their perceived outputs (Figure 9). Each research project starts by collaboratively designing this protocol and establishing when to discuss and evaluate certain steps in the process. As the protocol is a ‘living document’, which is amended during the process, it privileges collaboration, experiment, reflection, transparency and flexibility in its research process over the application of existing models or the debating of definitions and structure.

Especially when working on networked content analysis across platforms, these protocols offer a visual guide that also reveals how differences in technicities are dealt with in order to do cross-platform comparative research, and leaves space for context- and platform-specific findings as well. On a very practical level, when working with a larger group (for instance in a setting of research sprints), the research protocol diagram allows for the distribution of smaller tasks, as it reminds everybody involved of the bigger picture and the overarching research question and narrative structure. Most importantly, it is a flexible and expandable structure that offers a visual disclaimer as well as a research recipe that can be subjected to a methodological critique and may also be applied to other research questions and contexts.

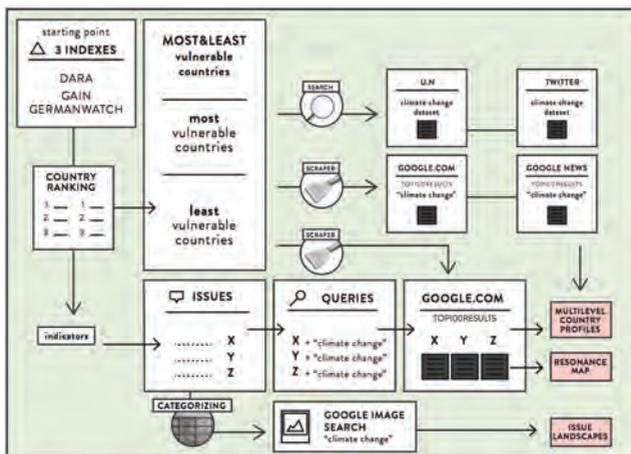
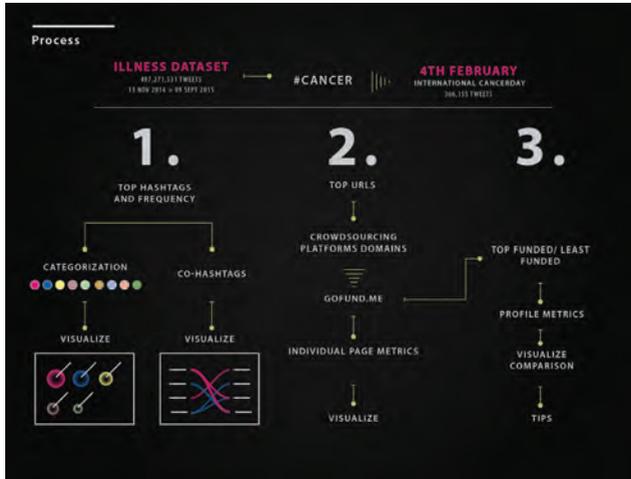


Figure 9: Research protocol diagrams that visualize the method and guide the joint research project. Top: The research protocol for the Campaigning for Healthcare project, which was part of the 2015 Digital Methods Summer School, as designed by Stefania Guerra. See also: <https://wiki.digitalmethods.net/Dmi/SummerSchool2015CampainingForHealthcare>. Bottom: Research protocol for the Mapping Climate Vulnerability project as part of the EU FP7 project EMAPS, as designed by Gabriele Colombo. See also: <http://climaps.eu/#!/narrative/who-deserves-to-be-funded>.

## Design probes and citizen sensing

In critical design and adjacent design practices, design probes and speculation are among the suggested methods that in a creative and respectful manner can mediate the relationship between the researcher and the subject and the respondent and his/her emotional response to the issue. This approach may lead to both design insights and empowerment (Boehner et al., 2007; Breitenberger, 2012; Wallace et al., 2013). Design probes are (often small) objects that are designed to trigger a response to a particular question or issue. Probes come in many shapes and forms, designed to provoke inspirational responses from unfamiliar groups, such as elderly people from a different cultural context. The original cultural probes developed by Gaver, Dunne and Pacenti (1999) were sets of objects that included postcards with questions like “Please tell us a piece of advice or insight that has been important to you”. Their probe kit also included maps on which people were invited to mark the places to go to meet people, the places to go to be alone, and the places they would like to go to, but couldn’t. Lastly, the set contained a disposable camera to prompt the participants to photograph their homes, what they were wearing, something they found desirable, something they found boring, the first person they encountered that day, or whatever else it was they wanted to show the researchers (1999:22-23).

Other design probes may take the shape of a small log book, perhaps in combination with hardware (as in the citizen sensing *Dust Box* project by Jennifer Gabrys, 2016), or simply cards that trigger a response or an atmosphere that enables the interviewee to engage with the question in a more creative or intuitive manner (Gaver, Dunne & Pacenti, 1999; Wallace et al., 2013; Raijmakers, Asseldonk & Scheepers, 2017). This method of working gives both the researcher and the interviewee more information about the lived experience, thus allowing the dialogue and the research to dig ever deeper into the topic at hand (Gaver, Dunne & Pacenti, 1999:15; Raijmakers, Asseldonk & Scheepers, 2017).<sup>7</sup>

Another way of collaboratively collecting (or producing) data could be described as tool-assisted photo-elicitation. Here, tools such as *SnappThis!* (Ten Brink n.d.) and *Measuring Amsterdam* (Groen & Meys, 2015) ask people to actively engage in mapping their own associations and sharing their trails of evidence pertaining to a particular issue. In the Visual Methodologies programme, we try to combine these techniques with digital and social research as well as critical making to develop *situated methods* for visual research. One important step is then to design

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7 The Visual Methodologies Collective has set up a collaboration with fellow-researchers in Applied Psychology at the Amsterdam University of Applied Science, to develop such probes.

moments in which people can talk back to the maps, literally inviting people who took part in collecting and producing the data to actively participate in analyzing those results and giving feedback on the maps (and also indicating what they think these maps *should have looked like*).

## Participatory cartography

Participatory cartography often combines preparatory research (be it social media analysis, collaborative workshops, or expert interviews) with participatory cartography and collaborative interpretation and annotation. For example, our project of the *Knowledge Mile Atlas* sought to map the Knowledge Mile, an area that hosts the university campuses and cuts through different neighbourhood 'borders' in the city of Amsterdam.<sup>8</sup> This mapping was undertaken through using a combination of geo-locating addresses coming from the Chamber of Commerce databases; using natively digital geocoded objects (e.g., Foursquare check-ins and geotagged photos); and querying street names in Google Search to collect and present online images of buildings on each street. Each layer offered a methodological exercise for working with different technicities in how platforms format geo-location (Niederer, Colombo, Mauri, & Azzi, 2015).

These maps were then used as navigational tools and conversation pieces during workshops and participatory sessions, such as a *city salon* hosted by Tracy Metz and Baptiste Bayé, and a local stakeholder event where local organizations, professional experts and neighbourhood inhabitants were invited to collectively map out green initiatives they knew of onto a base map. All these efforts have led to a longer-term collaboration with issue experts of *De Gezonde Stad* (The Healthy City) who organize the annual sustainable city festival *Jij maakt de stad!* (You make the city!). For these events, De Gezonde Stad has invited us to create visual surveys that relate to the urgent issues around sustainability in the city of Amsterdam (Bogers, 2017).

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8 This was a project with the Citizen Data Lab and Amsterdam Creative Industries Network.

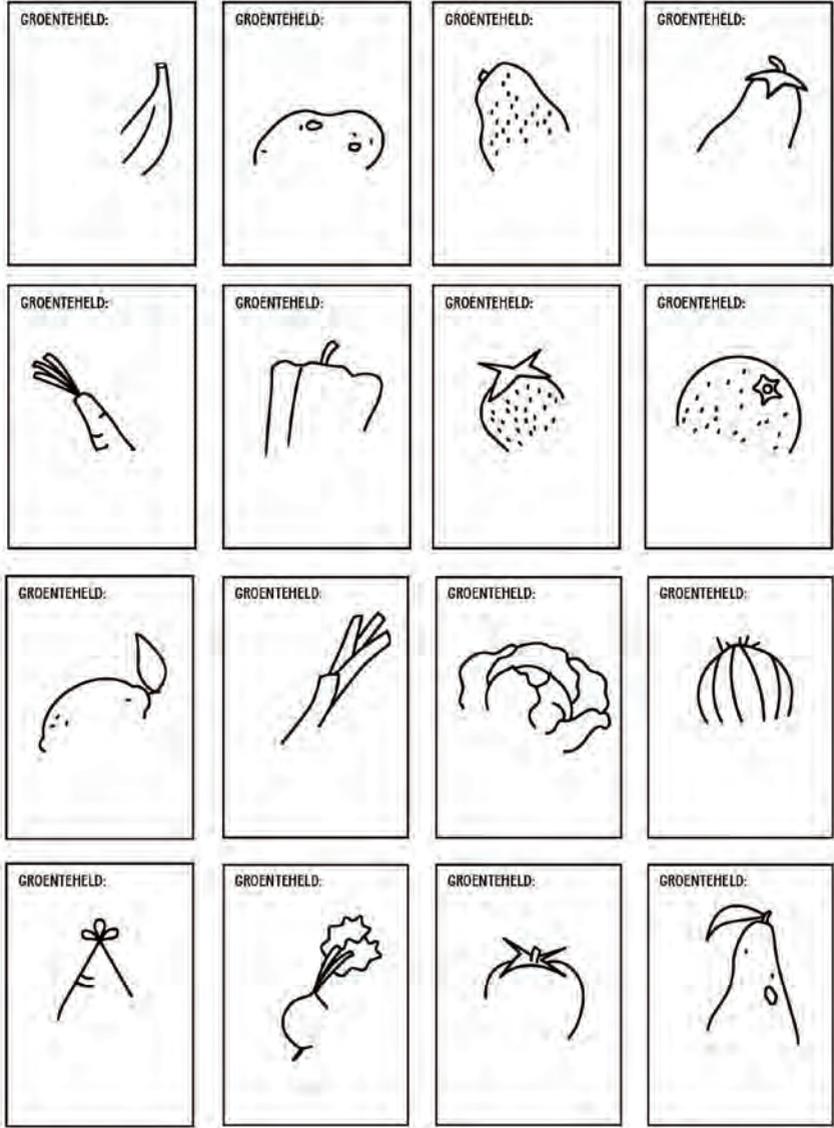
## Visual surveys

Two large posters showing an apple and a pear hang from the ceiling and next to them round stickers ranging from 'fresh' yellow (for the banana) and red (for the apple), to dotted brown and dark brown. The poster asks: How ripe can I be for you to still eat me? A visitor, while hesitantly putting a bright-yellow sticker onto the banana apologetically says: "I really don't like the texture of a ripe banana," while others start exchanging recipes for banana bread ("best with dark brown bananas!"). This is a real-life example of what probably could be best described as a *visual survey* in action. It is part of a collaboration with the organisation *InStock* and De Gezonde Stad. During the festival *Jij maakt de Stad!*, visitors plotted their acceptance of ripeness onto the fruit posters and joined in a discussion on food waste and our stance toward fruits and vegetables that do not look picture-perfect. Such low acceptance leads to food waste, and organisations like *InStock*, *De Buurtbuik* (*The Neighbourhood Belly*) and the *Youth Food Movement* then raise awareness of this issue and try to turn the tide.

These issue experts worked with us to create a visual aid for a discussion that could give direction to their workshops during the annual festival that attracts around 500 visitors who are interested in sustainability in the city. In addition to the *structured* visual survey, we invited people to draw an ode to a different-looking piece of fruit or vegetable. Here, we created a *semi-structured* format of partially line-drawn fruits and vegetables, then inviting the participants to finish the drawing and hanging it on a 'wall of fame' that celebrated imperfection and raised more awareness of food waste (Figure 10).

These kinds of visual surveys can be applied and tested in very different contexts, developing an adapted visual format that is appropriate for the audience. Each time, together with subject matter experts, we ask: should we give the audience a blank slate (for instance, an empty geo-map to plot their knowledge onto), or a semi-structure (*as in the ode to the vegetable drawings?*) or structured visual surveys (in which we ask participants to plot their opinions onto a preset structure, as in the example of the apple and the banana)? Do we ask the participants to collect content as part of a visual questionnaire, and if so, how do we make sure we also involve them in interpreting, analysing, and annotating the collected outcomes?

Figure 10 (next pages): Fruit and vegetable heroes, a participatory wall of fame developed by Loes Bogers, Federica Bardelli, Carlo de Gaetano and Sabine Niederer, and presented during the *Jij maakt de stad!* (You make the City!) Festival in 2018. A collaboration with De Gezonde Stad, InStock, and partners. Photos: Carly Wollaert Photography.





## Adapting to particular publics

A similar experiment with appropriate forms attuned to and developed in collaboration with a particular public, is a workshop in data visualization that we organised for 4- and 5-year old children, entitled *Our Data Portrait*.<sup>9</sup> Here, we wanted to experiment with the use of well-known visual materials to create a portrait made of the children's collaboratively generated, visualized, and interpreted data. For our preparation, we worked with two of the children in the group and discussed what they considered to be relevant information to map about themselves and the other children. They soon decided we should discuss colours, animals, and more general personal information, such as age, height and hair colour. We then organized a series of two short (45-minute) workshops around this concept called building a *data portrait*. It is important to realize here that we set out to work with children who were at an age where they could not read or write yet. Also, these children could have a short attention span and yet be highly creative, perceptive, imaginative, and competitive.<sup>10</sup>

The visualization that was the most exciting for the group was appropriated directly from an item on the tech news website, The Verge. The item on The Verge is called *What's in Your Bag?*, "a recurring feature where we ask people to tell us a bit more about their everyday gadgets by opening their bags and hearts to us." (What's in Your Bag? n.d.). In its simple format, people are asked to show the contents of their bag and explain what is there and why. In the workshops, we wanted to give the children a chance to showcase their own things that they brought to school and then use those objects to build an aggregate collection for them to sort and visualize together. In playing *What is in your backpack?*, the first step was to ask the children to empty their backpacks and photograph and explain all the contents to the other participants. Some children were shown to be real minimalists, bringing to school only a lunchbox, a water bottle, and a pair of gloves, while others carried an enormous collection of found objects with

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9 The children included my own daughter, Annabel (5 years old at the time), as part of her primary school's *Art Weeks* in which parents organize creative workshops for the kids. The children are asked to register for two workshops of their choice, ranging from guerilla gardening and screen printing, to concept development and designing a new public transport system. For the 'Data Portrait' workshop at the Theo Thijssenschool in Amsterdam, I worked with the designers, Federica Bardelli and Carlo de Gaetano, and my long-time Digital Methods Initiative colleague, Esther Weltevrede.

10 Of course, these are generalizations for the sake of being concise here. Indeed, every child had his or her own personality.

(Figure 11). Step two was to print the photographs, cut out all the separate items, and discuss how the aggregated collection of what they had brought should be sorted and organized by placing them on a large sheet of paper. Some categories were easy to come up with: lunch boxes, water bottles, sticks and other natural materials. But then it became more difficult. The category of “useful objects” and that considered to be “broken things” turned out to be highly subjective.



Figure 11: What is in your backpack? Pictures' showing the content of five participants' (ages 4 and 5) backpacks. This exercise was part of the Data Portrait workshops at Art Weeks (Kunstweken), which was organized by the Theo Thijsenschool in Amsterdam in 2018. Workshops facilitated by Sabine Niederer, Esther Weltevrede, Federica Bardelli, and Carlo de Gaetano.

One participant (a 4 year old boy) insisted that one of the items in his backpack was a “dinosaur lighter” and it belonged to the “useful objects” category. Others disagreed, recognizing it as a piece of a bicycle handlebars which should be placed in the “broken things” category instead. After a long discussion, the children chose to add a *miscellaneous* category that contained only the handlebar-lighter. To conclude this visualization exercise, the children received a red dot sticker that they used to vote for the object they wished they had in their own backpacks. As they had worked with all of the objects so closely, presenting them as part of personal collections and subsequently aggregating them and then discussing their coding, they knew exactly what their favourites were (see the next page for their five selected items).

From a researcher's perspective, it was very interesting to witness four- and five- year olds engaging in an emergent coding discussion and together finding a solution and a shared understanding. Through this exercise, the children not only got to know each other better by talking about why they did or did not have certain objects in their backpacks. They also learned to present a personal collection, create an aggregate collection, discuss the metadata they could give to objects, and develop a way to discuss and deal with multiple “coders” reading different meanings into the same objects. Furthermore, it was striking to see how the familiar objects taken from the children's own context (taking animal figurines,

hammer and nails, clay and other materials that used in preschool) allowed these children to create visualizations they could read and remember with ease. And finally, last but not least, they had a lot of fun doing it.

Figure 11 offers a visual report of the workshops. The findings of this small-scale experiment we can take to the next edition of this project and to other settings as well.<sup>11</sup> We found that it was crucial to include the children in the formulating of the questions. For instance, when they introduced the idea of an animal questionnaire, we (the adult researchers) could think of questions such as: which animals would you like to feed, and which animal would you like as your pet? The toddlers liked this idea a lot, and were keen to include questions such as: Which animal would you like to ride? and: which animal would you like to teach some tricks?, questions that definitely lead to more engagement in the discussions among these young participants during the workshops. For the visualization, we used animal figurines, and assigned to each question a particular *Hammer and Nails*<sup>12</sup> shape which they could use to vote with by attaching it to the pegboard below the animal of choice.

We also found that the children were remarkably good at both creating and reading the visualizations and remembering the visual language they had developed. A week after the final workshop, the results were exhibited, and the children still remembered effortlessly which shape belonged to which question, and they also knew what they and the others had voted for. Two other visualizations were equally successful in the sense that the kids considered them a lot of fun to create, heavily discussed the outcomes between each other while creating them, and were able to read and explain them to their peers and family members during the exhibition.

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11 In the workshops, the children demonstrated their own social and behavioural dynamics and we consider it key to work with experts from pedagogy for the further development of this kind of work (with an underage audience). To offer an example, the younger children in the group (age 4) each immediately identified strongly with one of the animals presented in the animal questionnaire. Their first reflex was to say, for instance, "I am the turtle!". This made it hard for them to subsequently zoom out and answer the questions. They were only open to considering other animals in their answers, after some effort from the older children in the group (age 5) to explain that the aim of the exercise was not to privilege one single animal but to share and discuss their own preferences.

12 In Dutch: Hamertje Tik.

For another visualization, we used the *3D collage* by the visual artist Chatchanok Wongvachara, as our format. Here, the participants were asked to sort mini-portraits of themselves according to their height, hair color and age, and present the results by clipping their portraits onto a line of rope in what they considered to be the correct order. This exercise sometimes asked for some very up-close inspection, for instance to establish whose hair was in fact the darkest brown, which lead to quite some exhilaration and, again discussion and decision-making. Together creating a visualization that consisted of their own portraits proved very rewarding for the participants.

Figure 12 (next pages): Images of the Data Portrait workshops which were part of the Art Weeks (Kunstweken) at the Theo Thijssenschool in Amsterdam in 2018. Workshops facilitated by Sabine Niederer, Esther Weltevrede, Federica Bardelli and Carlo de Gaetano.





## 4. Issue mapping: creating images for image research

This final chapter introduces our course on Issue Mapping for Fashion. The approach taught in the course draws strongly on issue mapping using digital methods, as developed by the Digital Methods Initiative at the University of Amsterdam, as well as on the approach of controversy mapping, as developed as an educational programme at Sciences Po in Paris. The Amsterdam and Paris approaches each have strong roots in Science and Technology studies (STS), but whereas the Parisian school operationalizes actor-network theory to zoom in on a controversy, the Amsterdam approach is to study the issues more broadly, whether they are controversial or not (Rogers & Marres, 2000; Venturini, 2009; Marres, 2015; Niederer, 2016). Both approaches have a strong visual component, as controversy and issue mappings can produce visualizations for research purposes and may also study images as objects of alignment or “group formation”, and as traces of “matters of fact” and “matters of concern” (Latour, 2004; 2005). This chapter is also where the neatly demarcated categories of *image research* and *images for research* actually intertwine, as we create ‘images for image research’.

The course *Issue Mapping for Fashion* was developed with colleagues at the Amsterdam Fashion Institute (AMFI), as part of AMFI’s Master’s programme in Fashion Enterprise Creation. The class is designed to train students – who are developing their own fashion enterprise – in studying sustainability-related issues in the fashion industry through digital and visual content. The course objective is to map an issue, namely, one current issue of choice related to fashion and sustainability, using Latourian social cartography and digital and visual methods. The research topic they choose needs to be important to the field of fashion and timely, as it connects to current societal debates. The mappings are reflexive, in the sense that the students who are working on a particular product or service to turn it into a successful business, may anticipate and hope for a particular result in their research. However, they nearly always find unexpected results that then force them to rethink their own agendas, strategies, or even priorities. The students are already fashion stakeholders but they become researchers and at times even issue experts along the way.

For their reflexive mappings, the students choose an issue that is of interest to their own business and map its resonance, sources, actors (or stakeholders), the *issue language* (the terms used by the different actors) and the visual language (captured by looking at the images used), found in different online sources using web search engines and social media platforms. Subsequently, the students select one visualization and present it with a narrative that lays out the research questions and their own research objective, the operationalization of the question in terms of the methods necessary to collect and analyse the content, a discussion of the

findings and a reflection on how these findings may impact their own position in this field within the fashion industry.

For one of the assignments, the students learn to map their issue through image analysis. Here, students are taught a range of different techniques for online image research. First, they develop a research protocol that outlines the research question and identifies keywords to use to query the web or a social media platform. Subsequently, the students can apply one or more image analysis techniques. One of the approaches we discuss with the student is *programme/anti-programme mapping*, which builds on the work of Bruno Latour and helps to map the presence or absence of different sides of a story or debate, ranging from the official narrative to the narratives countering that message. Also important to note here is that these narratives are often not limited to just two sides of a story, but can also show a range of viewpoints. For instance, when looking at the image results for 'fur' (as students Tamara Vucetic and Kirsten Thyra Hendriksen have done in the course), we may encounter a wide range of results, from anti-fur protests and images of caged animals, to fur presented as a durable material that will last a lifetime and the use of fur in high fashion. For faux fur, we may encounter images that present an innovative fabric, or voices that lament the large environmental footprint of faux fur production.

A second technique entails the comparative analysis of search results for two (or more) queries. These can be separate queries for separate issues or *programme and anti-programme* search terms, or search terms that seem like synonyms but may have a distinctive visual language. One of the students, Jing Jy Wu, chose to query competing terms and look at the differences and commonalities in these results, for "sustainable fashion", "ethical fashion", "eco fashion", "circular fashion" and "vegan fashion", then asking who or what is being foregrounded by these terms. Through her mapping, she found that sustainable fashion, eco-fashion, and slow fashion are all about protecting the environment; ethical fashion is about addressing workers' rights; circular fashion is about improving the fashion industry and particularly fashion production itself; and vegan fashion is about animal rights. By looking at the sources that hosted these images, Jing Jy also concluded that professional fashion audiences speak of *circular fashion* when talking about sustainable initiatives in the fashion industry, while a broader audience tends to privilege the broader term 'sustainable fashion'. For a student working on setting up her own sustainable fashion business, this means knowing which terms are aligned with which sub-issues, in this case for instance the rights of workers or animals, and also which words are used for (and by) which publics – circular by industry versus sustainable by a broader audience – so she can align with the language or of course choose to break with these conventions.

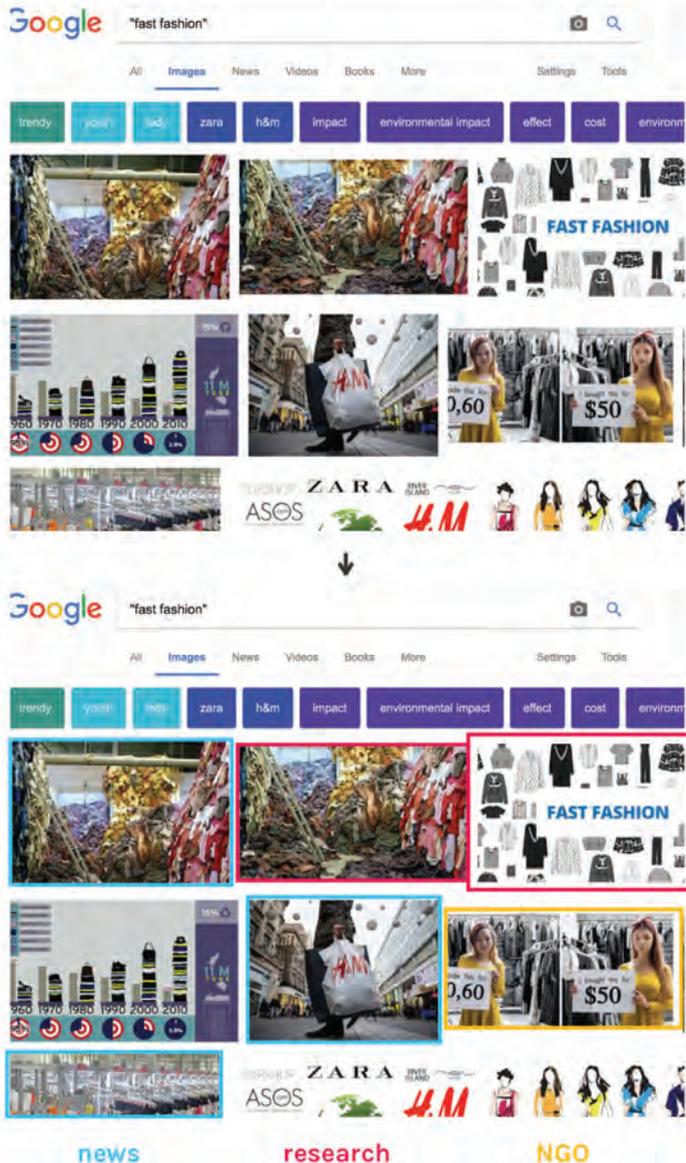


Figure 13: Selection of educational materials for the Issue Mapping for Fashion class, which is part of the AMFI MA-programme in Fashion Enterprise Creation. The images show two techniques for working with Google Image Search results.

Figure 13a: Annotating image sources.

Google "fast fashion"   

Alle Afbeeldingen Nieuws Video's Boeken Meer Instellingen Tools



700 × 367 - apparelmagazine.co.nz

FAST FASHION

FAST Apparel M

↓

oogle  data:...MUDOPB/9k= fast fashion environmental effects   

Alle Afbeeldingen Maps Shopping Meer Instellingen Tools

Ongeveer 25.270.000.000 resultaten (1,34 seconden)



Afbeeldingsformaat:  
310 × 162

Andere formaten van deze afbeelding vinden:  
Alle formaten - Gemiddeld - Groot

Beste gok voor deze afbeelding: [fast fashion environmental effects](#)

**The High Environmental Cost of Fast Fashion - Triple Pundit**  
<https://www.triplepundit.com/.../high-environmental-cost-fast-fashion...> ▼ Vertaal deze pagina  
 16 dec. 2016 - What that means is a huge volume of textile waste. The environmental impacts of fast fashion range from chemicals used to produce textiles, which can pollute rivers and oceans, to high levels of both pesticide and energy use. One of the biggest environmental costs associated with fast fashion comes from ...

**Crisis In Our Closets: The Environmental Impact of Fast Fashion ...**  
<https://prospectjournal.org/.../crisis-in-our-closets-the-environment...> ▼ Vertaal deze pagina  
 24 mei 2017 - Staff Writer Veronika Michels shines light on the environmentally damaging effects of modern fast fashion.

Figure 13b: Studying the circulation of images.

A third powerful research technique is to study the development of images for a particular issue over time<sup>13</sup>. In the first chapter, I discussed the example of Wikipedia and how the images in its articles may evolve over time, as triggered by political events. In the course, one student, Percian Petkov, chose to study the depiction of sweatshops in Bulgaria over time, as he is invested in producing his garments in that country because of his personal roots as well as his appreciation of traditional artisanal embroidery from that region. In his mapping, he found that protest imagery had taken over the issue space (Figure 13). In 2015-2016, the search results showed people working in large factories. In 2017-2018, protests for better wages and labour conditions had crowded out images of factories. This mapping confirmed the need for him to address and navigate these poor working conditions and low wages in Bulgarian fashion production facilities in order to set up a fashion business that respects the rights of the people who will be producing his garments.

In conclusion, issue mapping raises awareness among the students that their objects of study in the digital realm are rarely stable, but more often dynamic and may often change over time. They can then learn how to repurpose this characteristic to try and understand why, when, and how these issues and their objects change, which can be an important exercise for students, researchers, and practitioners alike.

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13 Giorgia Aiello has done noteworthy work in this realm, given her study of the evolution and use of stock photography, with telling results on the evolution of the depiction of fatherhood or women, for example (see, for instance, Aiello, 2016).

## Conclusions

The work presented in this publication functions as a starting point to our programme in visual methodologies, rooted in the digital and addressing the technicity of content through design and applied research. The Visual Methodologies Collective is launched at a moment in time when every second, a tremendous number of images is being shared, viewed, commented upon, and redistributed online. This is done not just as a leisurely activity; many professional situations today include a visual component that ranges from image curation in media to adding an infographic to a news article or compiling a portfolio for artistic or scholarly work.

The Visual Methodologies Collective chooses to specialise in visual practices for the digital age. This focus means we research images and digital visual culture, but also actively engage in developing innovative visual practices for research and education. Digital images are not only treated as solitary objects, but rather as part of a network of other online materials, platforms and users. The platforms and websites that host these images each have a particular way of formatting, prioritising, and recommending content. This technicity of content calls for using novel research methods to study these images as a group or as a network. This does not only entail viewing images as data, but can also be an approach to images as networked content, which allows for rich qualitative and quantitative (quali-quant) analyses. This networked content approach can be put to use to compare the particular visual languages, or *visuzal vernaculars*, of different platforms for a particular issue, revealing how different platforms present a particular view and description of the same topic. Such mappings will help create an understanding of both the textual and visual vernaculars as well as the cultures of use and technicity of each platform.

In the design of *images for research*, we recognize that visualizations can guide researchers through a joint research project and include different publics in the analysis and interpretation of the findings. These visual approaches can include research protocol diagrams that streamline the collaborative work by researchers, programmers and designers, participatory cartography in which people make and interpret maps together, and issue mapping that is used to study the actors, language, images, and objects of a social issue. Attuning the practice of visualization to the digital age also means we can experiment with the appropriation and playful repurposing of well-known visual formats from the digital culture, for instance, by creating research GIFs, critically augmented reality, or transparent data dashboards, which is something we look forward to further developing with our partners in arts and design.

The Visual Methodologies Collective will develop methods of *image research* and the design of *images for research* that are rooted in digital research, design, critical making, and the humanities, with the goal of building and supporting ethical research and design practices across these intersecting fields. This research group is called a *collective* for a reason, as this kind of research can only be successful when worked on collaboratively, by (student and professional level) researchers, programmers, designers, and issue experts.

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## Curriculum Vitae

Sabine Niederer was trained in art history as well as new media and digital culture at Utrecht University. After obtaining her MA, she worked as a lecturer in digital culture and media theory at Utrecht University and Willem de Kooning Academy in Rotterdam. In 2004, she joined the Amsterdam University of Applied Sciences (AUAS), as producer and researcher at the Institute of Network Cultures, with Geert Lovink, and as lecturer in the Interactive Media BA-programme (now called Communication and Multimedia Design).

In 2011, Sabine was visiting scholar at the Annenberg School for Communication in Philadelphia. In 2012, she became head of research at the AUAS Faculty of Digital Media and Creative Industries. In 2014, Sabine founded the Citizen Data Lab: an applied research lab specializing in participatory data practices around urban issues, as part of Amsterdam Creative Industries Network. In 2016, she obtained her PhD in Humanities with supervisors Professor José van Dijck en co-promotor dr. Bernhard Rieder, with a study of the climate change debate on the web and in social media. In 2017, Sabine was appointed Professor of Visual Methodologies at the Amsterdam University of Applied Sciences.

Sabine teaches Issue Mapping for Fashion at the Amsterdam Fashion Institute (AMFI) in the Master's programme of Fashion Enterprise Creation. At the University of Amsterdam, Dept. of Media Studies, Sabine is part of the Digital Methods Initiative and works as thesis supervisor in the MA-programme New Media and Digital Culture. Sabine takes part in the international research network Public Data Lab and the Amsterdam Research Institute in the Arts and Sciences (ARIASNL). She is member of the board of CLICKNL, the advisory board of Amsterdam Data Science, and the supervisory board of CREA. Sabine has published her work in edited volumes, handbooks, academic journals, and cultural publications.

Every second, a tremendous number of images is being uploaded and viewed online. These images become 'networked' when users like, share, comment or tag them, and also when platforms and engines format, filter, feed and recommend them to others. Each platform and engine handles images in distinct ways, thereby revealing platform-specific technicities. Both the networkedness and technicity of online images call for an approach attuned to the medium.

Networked image research not only examines platform dependencies but also develops and designs images for research. These visualizations may be research protocol diagrams as well as maps for navigating and grouping content. Visualization and mapping practices guide researchers, designers, programmers, students and issue experts in their learning, analysis and public participatory work.

In her inaugural lecture, Sabine Niederer presents visual methodologies that take into account the contemporary state of digital images and demonstrates how visualizations may be put to use for collaborative research.



COVER  
Beatrice Gobbo,  
Andrea Benedetti  
& Federica Bardelli

