**KLEPPE — Tracing**

<1 photo>

**Tracing the Afterlife of Iconic Photographs Using IPTC**

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In recent popular and scientific products of historiography, ever more similar-looking photographs of (mostly symbolic) happenings are used as an instrument to tell a story about important events or structural trends. These types of images can be called iconic photographs (Hariman and Lucaites, 2007). We consider iconic photos as photographs that have been reproduced more than once and have a special composition. They refer to archetypes and have the potential to be an archetype itself, and thus represent more than what is being displayed. Although this symbolic meaning is immediately obvious, it may change over time when the photograph is published in different contexts during its afterlife (Kroes, 2007). Since a group of people know these photographs and attribute the same meaning to it, they are part of a ‘collective memory’ (Kleppe, 2013a). Well-known examples of iconic photographs are the photo of a girl running naked and screaming after a napalm bombardment in Vietnam in 1972 or the man in front of a line of tanks at Tiananmen Square, Beijing, in 1989. These examples can be considered to be ‘global super icons’. However, iconic photographs also exist within a national context (Paul, 2008). This paper describes how we determined which Dutch photographs can be called iconic by using IPTC technology. This technique is being used in the media industry to transfer information on photographs in unified standards. We applied this technology to efficiently research our two questions that form two elements of the above-formulated definition of an iconic photograph: (1) Which photo is published most often in a dataset and therefore functions as an iconic image, and (2) How can the changing symbolic meaning during the afterlife of iconic photos be studied?

**Method**

The International Press Telecommunication Council (IPTC) develops technical standards for news organisations.1 By applying the same standards, a photographer can embed the information of a photo inside the file and send this to an editor at a newspaper who can download the metadata in the local ICT-infrastructure. This technique not only facilitates the exchange of files between journalists, but academics, digital libraries, and cultural heritage institutions can also use IPTC to include information about their objects in the digital files (Grijsen, 2012; Reser and Bauman, 2012).

We used this technology to determine which Dutch photos are published most often by analysing 5,000 photographs in 400 Dutch history textbooks, published in the period from 1970 to 2000. All photos were digitized and analyzed by assigning 41 variables (such as topic, caption, person, and year). However, finding similar images in a large dataset can be a challenge given the high level of subjectivity when interpreting photographs (Finnegan, 2006; Rose, 2007) and the lack of standardized thesauri to describe photographs (Kleppe, 2012). To overcome this ‘semantic gap’ (Smeulders et al., 2000) we formulated a list of historical events based on a literature review, creating metadata that were tailored to our research question (Wallace, 2010). Together with all factual information about the photo, this data was included in the IPTC fields that are embedded within the digital file of the photograph by using the commercial software program Fotostation Pro.2 This program not only allowed us to do full text searches through all assigned metadata but we were also able to share our research data with other researchers who could import the information in the IPTC fields of their photo-, editing- and viewing software. Moreover, we were able to export all values to CSV-files that were importable into statistical software packages such as SPSS.

**Results**

By making frequency tables of the list of topics we described about all photos, we calculated which topics were most present in the set of photographs. We then manually went over the images that illustrate these topics to find the images that were used most often. This method allowed us to answer our first research question on which photo is published most often and therefore functions as an iconic image. Results show that a 1912 photograph of Dutch socialist politician Pieter Jelles Troelstra is used most often in the analyzed textbooks. On the photo, Troelstra gives a speech in which he pleads for universal suffrage (see photo 1).



Photo 1. The photo of Pieter Jelles Troelstra that was published most often in the analysed Dutch History textbooks. Source: Cornelis Leenheer, IISG, https://www.flickr.com/photos/iisg/4071852722/in/set-72157622724066432.

To study our second research question on the changing symbolic meaning of iconic photographs during its afterlife, we could return to our database since each photo is not only described based on the list of historical events, but we also noted factual information such as the chapter title in which the photo was published and the accompanying caption. By going over this information we could examine in which context the photo of Troelstra was used. By simply typing in the name ‘Troelstra’ in Fotostation Pro, we found all books in which the photo was used and could go over the information in the accompanying IPTC field. By following this approach we could answer our second research question on the changing symbolic meaning during the afterlife of iconic photographs.

In the case of the photo of Troelstra, we found that the photo is incorrectly dated in one-third of all history textbooks. Nowadays, in Dutch historiography Troelstra is not known for his plea for universal suffrage but mainly for his failed attempt to start a revolution to overthrow the queen in 1918. Our research shows that in one-third of all Dutch history textbooks the photo of 1912 is used to illustrate the events of 1918 instead of the demonstration of 1912, clearly illustrating the changing symbolic meaning of this iconic photograph during its afterlife as visual illustration in history textbooks.

**Discussion**

Even though our database is relatively small, the case study of the photo of Troelstra shows that by adding metadata in the IPTC fields, we were able to quickly track down all the textbooks in which the photo is used to determine the context in which the photo appears. Studying this afterlife can even be taken a step further when databases with the same approach can be linked, e.g., collections that are described with the ICONCLASS System (Brandhorst, 2012) or the GTAA (Oomen and Brugman, 2010). It will then be possible to research how photos are being reused in other types of historical sources, such as newspapers or magazines. Therefore we made our database available for future researchers (Kleppe, 2013b) in order to be reused to answer humanities research questions or further exploration on the use of IPTC within the digital humanities.

However, going over the frequency tables and subsequently looking up the information in the database and IPTC fields remained a manual process. Even though the software allowed us to quickly search through all data, we still had to rely on our own judgment and scrutiny, leading to inevitable human errors or false interpretations. Therefore, we envision that the current developments in image retrieval by using image recognition (Wu et al., 2009) will be of assistance for this type of research. At this moment, several search engines offer reversed image lookup (RIL), such as Google Images and Tineye.3 Users can upload an image and retrieve similar images located at indexed websites. This type of technology is already being used by commercial parties to track down copyright-protected images across the Web,4 to assess the impact of scholarly images online (Kousha, 2010), to find patterns in large image databases (Losh, 2014; Manovich, 2009), or to analyse the reuse of digital images of cultural and heritage material (Terras and Kirton, 2013). Applying this type of reversed image lookup to find similar images within a dataset has only recently been explored by Resig (2013) and Doug (2014), who developed software based on TinEye’s MatchEngine.5 Given its promising results, scholars using visual sources to study the afterlife of imagery should explore the possibilities of computer vision to find the recurrent use of similar images in visual datasets.

**Notes**

1. http://www.iptc.org.

2. http://www.fotoware.com/en/Products/FotoStation/.

3. https://images.google.com; https://www.tineye.com/.

4. http://blog.photoshelter.com/2013/04/find-your-images-online-using-reverse-image-search-on-google/.

5. https://services.tineye.com/MatchEngine.

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