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Facebook: A Source for Microhistory?

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Chapter 8. Facebook: A Source for Microhistory?

Abstract: In this chapter, we discuss whether social networking services (SNSs), especially Facebook, are sources for microhistory. It can be shown that SNSs indeed form a valuable source for historical science. Due to the huge amount of data content in SNSs, the greatest problem the researcher faces is being overwhelmed with unmanageably large datasets. We propose to structure the datasets by applying informetrics and statistical methods as a means of producing a quantitative history. We do this by working with a single case study, *Kerpen und Ex-Kerpen*. This Facebook group addresses Kerpen (a small town in Germany) as well as its historical development. The aim of this moderated group is to preserve historical images and videos and to make them publicly accessible. We will informetrically analyze all (nearly 2,000) wall posts of the group during 2014. For each post, we will investigate its type (text, image, and video), category, topic, number of likes, shares, and comments as well as the date (month, day of week) and the author's name. The chapter will conclude with recommendations for cultural heritage institutions to both collect and preserve important Facebook content.


Keywords: History, Local history, Microhistory, History from Below, Written orality, Social Network Service, Facebook, Informetrics, Wall posts, Post authors, Likes, Shares, Comments, Kerpen (Germany).

Introduction

“History is not the sum total of events, nor the course of all things, but a knowledge of what happened. Without this understanding, it is as if the past never happened; it will be lost. Only if remembered by one who has knowledge of it, is it everlasting” (Droysen, 1977, p. 397).¹ With the above quotation in mind, we ask is

¹ “Die Geschichte ist nicht die Summe der Geschehnisse, nicht aller Verlauf aller Dinge, sondern ein Wissen von dem Geschehenen. Ohne dies Wissen würde das Geschehene sein, als wäre es nicht geschehen; es würde vergangen sein. Nur er-innert, soweit und wie es der wissende Geist hat, ist es unvergangen.”

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it possible to preserve “a knowledge of what happened” by studying the content contained in social network services (SNSs), especially the type found on Facebook?

Our chapter is structured as follows. First, we discuss basic ideas about history and its study, particularly historical methodology, sources for historiography, and approaching the research by applying microhistory or *history from below*, which refers to the history of, or life experienced by, the great masses of society rather than the events associated with great personages. Next, we discuss the data contained in Facebook as a source for microhistory. To overcome the challenge presented by huge amounts of data (“big data”), it is necessary to develop specific Facebook metrics derived from informetrics and quantitative history. We describe our quantitative approach in the methods section. We then apply this methodology to the case study known as *Kerpener und Ex-Kerpener*, a public Facebook group dedicated to the history of the town of Kerpen, Germany. In the results section we present our statistical findings, including the distribution of post authors; the number of posts by date; rankings of top “liked,” shared, and commented-on posts; multimedia versus text posts; and finally, posts arranged by content categories. Afterward, we discuss the role of Facebook in cultural heritage. The chapter concludes with recommendations for Facebook (e.g., developing appropriate search and download options) and for local archives.

Facebook and History

How can we achieve a useful remembrance of historical events, creating deeper knowledge and understanding about what happened in the past? Facts in the progress of time become history precisely when memory prevents us from forgetting about the events. Without historical knowledge and without tradition, however, there can be no historiography. Leopold von Ranke, one of the founders of modern historical science, emphasizes the historian’s task is to present “how it actually was” (Ranke, [1824] 1885, p. VII).² Every era has its individual orientation, its own validity. Ranke does not intend to assess history or to explain historical events by generally applicable laws and philosophical derivations. The facts themselves must be placed in the forefront of historiography.

Researching mere facts, however, is not sufficient to justify history as a science. Johann Gustav Droysen has developed a methodology of historical

2 “Wie es eigentlich gewesen.”

science, which clearly differs from the methodology practiced in the natural sciences, with an aim to achieve research objectivity. The first step toward such impartial research starts with the discovery the historian works with material that resides in both the present and the past. Historical research draws on a mental image of a past (created by analyzing and interpreting available evolved facts), “which would be dead and would remain dead, if research does not revive [them]” (Droysen, 1977, pp. 9 f.). The main feature of the historical method is “to understand by means of research” (Droysen, 1977, p. 22), which is most often achieved by interpretation. Droysen’s approach thus characterizes the central thesis of methodological historicism.

Alan Mayne speaks of an interplay between words and things. “The historical value of studying material culture lies in such interweaving of words, things, places, and memories, in order to more fully understand lives and habitats in the past, and their points of connection with the present day” (Mayne, 2012, p. 60). Sources are precious to us, and we assign meaning to them. Historical study therefore is also aimed at understanding the culture of an era. “Culture is a finite segment of the meaningless infinity of the world process, a segment on which human beings confer meaning and significance,” as expressed by Max Weber (1968, p. 91).

Culture consists of a texture of manifold symbols composed and formed by humans. From the vast amount of facts those are highlighted, which seem to be important to people in a certain timeframe. Records of these highlights can be found in textual sources or material objects (such as clothes, pictures, videos, and buildings). Sources are not constructed without any meaning or ideas about values. Accordingly, the science of history must also pay attention to a source’s cultural background. Thus we observe historical and cultural studies are closely interrelated.

Which elements ought historians always consider in the process of their research and examination? First, the historian seeks out sources that can convey knowledge about the past to us. The historian must remain aware of his selective and subjective bias, because the past cannot ever be completely revealed; the past is constructed, however. The selection of sources also is guided by the historian’s cognitive interests. Historical research is an open-ended analysis of earlier source materials.

What are the guidelines a historian uses in studying primary sources? Roughly speaking, *source criticism* describes and checks the source object in terms of language, origin, date of origin, location, and credibility; *source interpretation* is used to analyze and to evaluate the source and place it in its historical context. Furthermore, an intersubjective verifiability should be attained where and whenever possible, such as by linking various sources that connect humans

to the past, including texts, objects, buildings, images, or videos. This is not surprising. “People have always used all five of their senses in their intellectual, affective, expressive, and communicative practices” (Auslander, 2005, p. 1016).

In SNSs, people often write and exchange information about events, persons, buildings, and so forth, frequently posting images and videos besides pure text. Leora Auslander (2005, p. 1019) emphasizes the central role of people handling objects: “(H)uman beings need objects to effectively remember and forget; and we need objects to cope with absence, with loss, and with death.” Objects tell stories about our relationship to the physical environment and to other people. Documented objects can become memory objects. “This kind of ‘information’ would immediately be of interest to friends and family, but if this ‘memory object’ is kept for long enough and passed down through generations (as heirlooms) then it transcends the barrier of personal memory. ... Nonetheless it begins to become reminiscent of a shared family memory or even cultural memory. As time progresses the ‘memory object’ becomes more reminiscent of a time period and its culture, and becomes a ‘heritage object’.” (Pitsillides, Jefferies, & Conreen, 2012, p. 57).

Of course, then, online data can also be considered memory objects. Digital data offer new possibilities for dialogs and contacts, but additionally for constructing “viable, continuous ‘memory communities’ that creatively reassemble fragments from a shared past into a dynamic, reflective expression of contemporary identity” (Silberman & Purser, 2012, p. 16). Joanne Garde-Hansen (2009, p. 136) agrees: “SNSs like Facebook serve to shore up the relationships between already existing, or once-existent friendships in very niche ways. In our fast-paced world of work and play, such sites appear to ensure that personal and collective memories are maintained and preserved.”

Regarding the huge amount of online data, these digital memory objects present challenges when considering storage, accession, and arrangement of them. “It is obvious that developing increased data storage technology is a double-edged sword: it can give us a richer resource of the past than ever before, but it can also overwhelm us and make us too much reliant on technology” (Pitsillides, Jefferies, & Conreen, 2012, p. 66). Indeed, SNSs contain digital memory objects, but the collection may produce an unmanageable stream of such objects. If we do not structure the data and make them manageable, “we could be in danger of losing any understandable personal narrative in favor of the vast collection” (Pitsillides, Jefferies, & Conreen, 2012, p. 64). Corey Slumkoski (2012, p. 159) states, “Facebook has become an increasingly useful tool for mobilizing historians in the digital age.” We understand SNSs obviously are producing rich historical resources, but at the same time, they are difficult to use in sociocultural and historical research.

History From Below

The term *history from below* refers to the accounts of those who comprise the masses of a given society; it is also known as history of the common people, or history from the ground or bottom up. What can we gain by turning our attention toward such microlevels of history? Social change does not happen in the same way all over the world. It is not enough for historians to focus solely on a major global event, such as a world war or global economic crisis. These greater events have often been launched by smaller developments. Thus, we must not forget the little event next to the great.

Such smaller events can play pivotal roles in local history. Raphael Samuel (1976) defines “local history” as “the idea of place as a distinct and separate entity which can be studied as a cultural whole” (p. 197). As James Batley (1973) states, “[the] charm and the significance of local history lies in the particular rather than the general” (p. 359). Therefore, the historian can take different approaches when analyzing historically relevant events in smaller regions. We offer the following subdivisions as examples: local history, history of regions and cities, history from the perspective of common people (in contrast to the perspective of the forceful personalities seen in political leaders). We call history from the perspective of common people “microhistory” (Brewer, 2010) or “history from below” (Thompson, 1966). Such an approach enables one to study the structural development and the concrete destiny of people living at a given place and time. In addition, there is interdependence between microhistory and macrohistory. Max Bauman (1991) states the researcher always must ask “the reverse question as well, whether details influence, change or even form the whole, the superior” (p. 179). Besides professional historians and archivists, lay historians and average citizens especially can ply the tools of microhistory. Lay historians work as citizen scholars cocreating historically relevant content (Sikarskie, 2013). According to Amanda Grace Sikarskie (2013), the “collective intelligence” of citizen scholars is gathered by online communication, especially by social media. Michelle T. King (2012) describes the Internet as an archive of the future: “Beyond the promise of increased access to digitised archival holdings, the greater potential of the Internet is to make ordinary individuals into public archivists of their own histories, by allowing them to post texts, images, blogs, videos – historical documents, in other words – of their own making” (p. 23). Citizens participate in the production of historically relevant knowledge. Their experiences are parts of local history; they are no longer merely observers (Nack, 2012, p. 52).

Wall posts and comments in SNSs are user-generated content. If an archive or any other cultural heritage institution captures and preserves such content, this becomes a kind of “participatory cultural heritage” (Liew, 2014). Huge amounts of

users participating in the cultural heritage domain are characterized as “crowd-sourcing” by Johan Ooman and Lora Aroyo (2011). This process “has the potential to help build a more open, connected, and smart cultural heritage with involved consumers and providers: *open* (the data is open, shared, and accessible), *connected* (the use of linked data allows for interoperable infrastructures, with users and providers getting more and more connected), and *smart* (the use of knowledge technologies and web technologies allows us to provide interesting data to the right users, in the right context, anytime, anywhere)” (Ooman & Aroyo, 2011, p. 147). SNSs, with their well-documented dialog and content, appear to be excellent sources for constructing an account of history from below.

Facebook

The use of Facebook as a source for material does present a challenge for today’s historical science. Cayce Myers and James F. Hamilton (2015) state that “the genre of social media presents a new (post)modern genre within twenty-first century historiography” (p. 222). In contrast to *Historypin*,³ which aims to be a picture story book (Crow, 2010), collections of historically relevant photos (e.g., *Old Pics Archive*⁴), *Flickr*⁵ (van Dijck, 2010), and *Instagram*⁶ (Jensen, 2013), Facebook consists not only of images but additionally of textual posts, comments, shares, and “likes,” which all are components of the numerous dialogs that comprise the majority of the site. Donghee Sinn and Sue Yeon Syn (2014) name Facebook as a source of prosopography (the study of people and their lives): “Facebook content indeed indicates information of self-presentation and personal documentation of everyday lives of users” (p. 95). Joanne Garde-Hansen (2009) adds: “Facebook is a database of users and for users; each user’s page is a database of their life, making this social network site a collection of collections and collectives” (p. 141). For Garde-Hansen (2009), SNSs are a symptom of a need “for identity, for memory, for stories, and for connectedness” (p. 148).

Facebook⁷ is an SNS, an important and popular kind of social media. Danah M. Boyd and Nicole B. Ellison (2007) define SNSs as “web-based services that allow individuals to 1) construct a public or semi-public profile within a bounded

³ <https://www.historypin.org/>

⁴ <http://www.oldpicsarchive.com/>

⁵ <https://www.flickr.com/>

⁶ <https://instagram.com/>

⁷ <https://www.facebook.com/>

system, 2) articulate a list of other users with whom they share a connection, and 3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site” (p. 211).

From a global viewpoint, there are SNSs other than Facebook, many of which are also popular and constitute a “standard” (Baran, Fietkiewicz, & Stock, 2015) in a certain world region, for example, VKontakte in Russia and neighboring countries (Baran & Stock, 2015). In Russia, local historians mainly work with VKontakte when exploring SNSs and their content. Since Facebook is (with about 28 million users in Germany in 2014) the standard SNS in Germany, and we are working with a case study from Germany, it will be our study object.

Facebook and “Written Orality”

On Facebook, as with other social media, “people easily can communicate and publish whatever they like. As a result, people are able to create huge amounts of data” (Abbasi & Liu, 2013, p. 441). A crucial aspect is data credibility. “This kind of system provides first-hand data, but one pressing problem is to distinguish true information from misinformation and rumors. In many cases, social media data is user generated and can be biased, inaccurate, and subjective” (Pinheiro, Cappelli, & Maciel, 2015, p. 113). When applying the technique of history from below to material sourced from Facebook, the historian must consider these challenges. Facebook posts are often not written by professional historians but rather by lay-people; the posts as historical sources have not been evaluated. Therefore, we need methods to separate historically relevant information from misinformation and rubbish.

Historical research, especially with constructing history from below and local history, many times makes good use of oral sources. According to Alessandro Portelli (1981), “oral history” is “the use of oral sources in history” (p. 96). The sources of local history are often “heavily biased towards local government” (Samuel, 1976, p. 193). Raphael Samuel (1976) states, “oral evidence makes it possible to escape from some of the deficiencies of the documentary record, at least so far as recent times are concerned (i.e. those that fall within living memory)” (p. 199). Oral sources are narrative sources (Portelli, 1981, p. 98) and may not always be objective (Portelli, 1981, p. 103). The subjectivity of oral sources thus depends heavily on speaker credibility (Portelli, 1981, p. 99).

Facebook and other social media include literal expressions, which are similar to orality. Jörg Kilian (2010) has coined the term “written orality in com-

puter-mediated communication”⁸ to capture this idea (p. 63). One advantage of written orality is its durability, independent of “living memories.” Andrea Hajek (2012b) states, “Facebook reproduces orality in a very similar way as when you’re going through a photo album. The tags and comments, which read very much like spontaneous, real-life or telephone conversations, substitute the pointing out of people or places in an album. This effect is amplified by the use of a wide range of special characters, text symbols and emoticons.”

Facebook Groups and the Study of History

Many public Facebook groups have dedicated themselves to the subject of history. One example mentioned in the literature is the “Beautiful buildings and cool places Perth has lost” Facebook group, an example of an “emotional community of shared values that has been created via social media” (Gregory, 2015, p. 42). Jenny Gregory stresses that such a Facebook site is an attempt at “social curation;” it is an independent and unofficial “from the bottom up” development of cultural heritage. This virtual community consists of people who “*feel* they belong to it” (Gregory, 2015, p. 26).

Deirdre McKay (2010) examines historical photographs of Filipino users on Facebook, stating these digital images enable “users to deploy digital images in new ways and the images themselves become actors, shaping new modes of interaction and norms for relationships from kinship to romance to friendship to ethnic or national belonging” (p. 496).

Andrea Hajek (2012a) studies “the collective sharing of a series of photo albums of the 1977 student movement in Bologna, on the social networking site Facebook” (p. 375). These photo albums on Facebook have a positive effect on collective memory, “as people or events that have been left out of official history are now re-inserted into a collective and alternative history from below, thus allowing for a more inclusive history of the 1970s” (Hajek, 2012b).

8 “Geschriebene Umgangssprache in computervermittelter Kommunikation.”

From Quantitative History via Informetrics to Facebook Metrics

Sometimes, historical research is in need of quantitative methods. According to François Furet (1971), quantitative history relies on “the use of quantitative sources and of calculation and quantification procedures” (p. 151). It is important to work, *inter alia*, with statistical methods. Quantitative history “illustrates the historical narrative with statistical data” (Marczewski, 1968, p. 179). Applying statistical methods, especially to economic history, is called “cliometrics” (Meyer & Conrad, 1957). SNSs and, in particular Facebook, store billions of posts, and further billions of comments associated with those posts. In such a situation, we indeed would need the help of statistical methods for two reasons:

- to understand the behavior of users or of formal user groups, who intend to provide historically relevant data via Facebook, and
- to separate historically relevant topics from the magnitude of Facebook posts and comments.

To manipulate such “big data” and apply calculations from content assembled from information services as Facebook, we apply quantitative methods borrowed from information science. *Informetrics* studies information users and usage, the state and quality of information systems and services, as well as the information itself (Stock & Stock, 2013, p. 445). Because we will analyze Facebook content, our research topic falls under the category of “information itself.” This field of analysis also is sometimes called “bibliometrics” (Pritchard, 1969). “Methods of data gathering in informetrics concerned with information itself comprise citation analysis and publication analysis, including subject analyses of publication. The challenge of ... informetrics is the creation of a meaningful set of search results for analysis” (Stock & Stock, 2013, p. 447). Informetrics originates in scientific communication wherein researchers have applied it to measure the scientific dialog in terms of publications and citations. In SNSs, we find a dialog that can be measured as well. Enrique Bonsón and Melinda Ratkai (2013) write: “The likes, comments and shares of Facebook can be considered dialog” (p. 796). The wall posts function as articles; the likes, comments, and shares are analogous to citations. Furthermore, we will offer descriptions of the wall posts’ content, which then serve as annotations.

In the sense of dialogic theory, “it is not the outcome that is important within the communication, but the process itself. ... It is more about open and negotiated discussion than agreement” (Bonsón & Ratkai, 2013, p. 790). Who initializes a dialog? Are there many different authors who trigger dialogs, or is a group domi-

nated by only a few authors? A well-known informetric distribution is the inverse power law (Stock, 2006), which in our case means there is one highly productive author of wall posts, some additional medium-level productive authors, and a long tail that follows, consisting of authors who contribute only a few posts. Rankings (e.g., authors by their productivity) are a typical form of informetric data processing. Of course, ranking of other items, insofar as reasonable, also is possible. It could be helpful to detect quantitative figures on wall posts, ranked by their number of likes, shares, comments, topics, and single events as well.

Which elements constitute Facebook (or, in general, SNSs) metrics? Basic figures to count and analyze Facebook dialogs are the absolute and relative numbers of wall posts, and the number of likes, of shares, and of comments (Bonsón & Ratkai, 2013, p. 791). An important aspect is the number of posts by authors. To analyze the content of wall posts and comments, one may apply content analysis (Krippendorff, 2004). Whenever possible, calculating rankings can be helpful to detect important wall posts. The following are the challenges of bibliometric analyses of Facebook (“Facebook metrics”):

- to create a meaningful set of wall posts including likes, shares, and comments,
- to count and analyze wall posts (as triggers of dialog),
- to count and analyze likes, shares, and comments (as dialogical responses on or to wall posts),
- to count and analyze wall posts by authors to derive distributions of authors by their entire number of posts,
- to analyze the content of dialogs, and
- to create appropriate rankings of wall posts by numbers of likes, shares, comments, and topics as well as by single events.

One aim of our study is to divide the amounts of posts and comments into two groups, namely, historically relevant items and less relevant or not credible items (see Figure 1). We apply Facebook metrics to a single case study and try to find threshold values in terms of numbers of posts per topic as well as likes, comments, and shares per post, separating historically relevant posts and topics from all other posts.

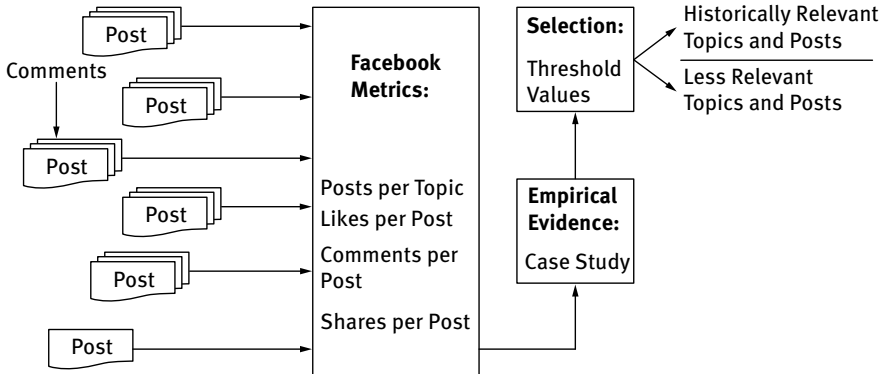


Figure 1: Our Research Model.

Methods

We analyze informetrically all wall posts from our case study that occurred during 2014. For each post, we investigate its type (text, image, video), topic (applying online content analysis), numbers of likes, shares, and comments, as well as the date (month, day of week), and author's name.

On the appointed date of January 19, 2015, we downloaded all wall posts of the public Facebook group *Kerpener und Ex-Kerpener* to an offline hyper-text markup language (HTML) file (about 42 MB in size). We gathered only the visible comments in our offline file, yet all other comments are visible only in the online version. If necessary, we visited the online version of Facebook to read the answers to open questions on comments. We ignored all posts lacking in content (e.g., posts without any text, images, or video due to deleting by administrators). The result was a file consisting of 1,951 total wall posts. As a consequence of the huge amount of comments (26,319), we decided not to evaluate their content. We constructed a database with the following field scheme:

- date (month, day),
- day of the week,
- author,
- type of post: text, image, video, text and image, text and video (intellectually coded),
- shared post (post from external source),
- number of likes,
- number of shares,

- number of comments,
- kind of image and video: current image, old image, current placard, current video, old video (intellectually coded),
- content category (intellectually coded),
- content description (keywords, intellectually coded).

First, we roughly screened the posts to summarize them and to determine content categories. The result of our analysis yielded nine categories:

- caution (warnings),
- curiosity (“what is happening there?”),
- current impression (“current” means “only some months old”),
- news,
- notice (announcements, tips),
- old impression (more than some months old, in most cases many years or even decades old),
- private (all posts of private nature, including recommendations and requests for help),
- report / criticism (complaints, experiences),
- request (questions of general interest).

In contrast to Sergio Davalos et al. (2015), who preferred automatic word counting for content analysis of Facebook posts, we intellectually indexed all 1,951 wall posts in terms of the field scheme as well as the content categories, afterward transferring all collected data into a Microsoft Excel spreadsheet.

Our case study for a local history-from-below type of analysis is the Facebook group *Kerpener und Ex-Kerpener*⁹ (see Figure 2). This Facebook group addresses Kerpen as well as its historical development. Kerpen is a town of 65,000 inhabitants (2012) located in the German Rhineland near Cologne. The aim of this moderated group is to preserve historical images and videos and to make them publicly accessible. It is a perfect case study for our endeavor to analyze Facebook and microhistory. The group *Kerpener und Ex-Kerpener* was founded in 2012 and by the end of 2014 had been successful in attracting 5,455 members to join the website.

⁹ <https://www.facebook.com/groups/kerpener/>

Case Study: Kerpener und Ex-Kerpener

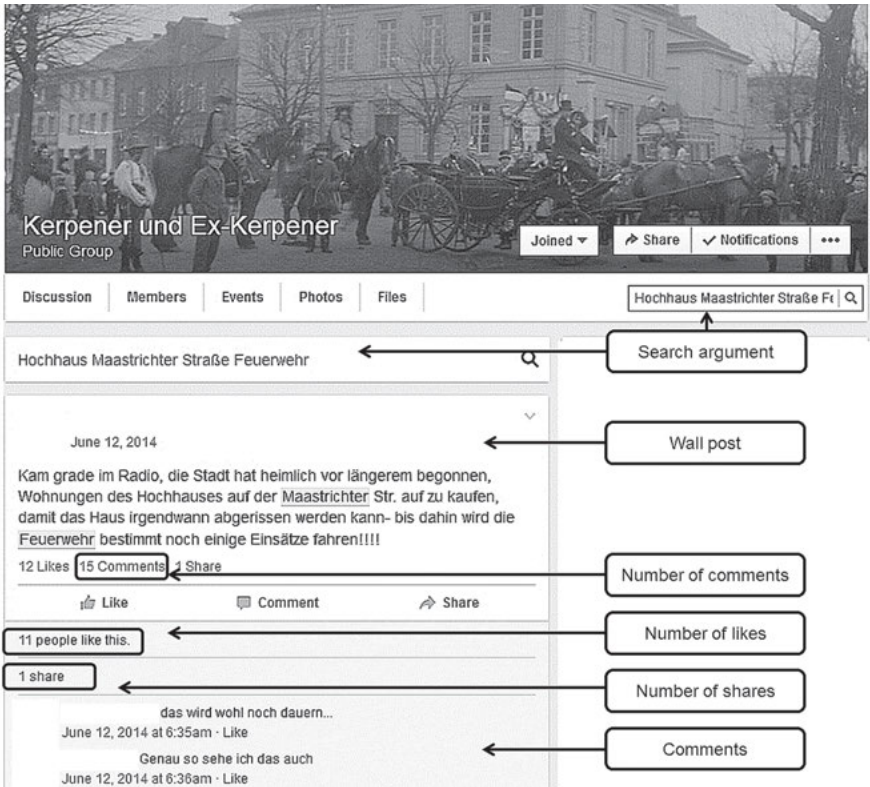


Figure 2: Pin Wall of *Kerpener und Ex-Kerpener*. (All Names Omitted.)

According to the group's founder, the city's historical developments should always be at the forefront of group members' considerations and postings, and the following rules should be taken into account. Desirable posts are historical images and videos, for example, old postcards, impressions of buildings, places and the landscape in and around Kerpen, and old family photos. Not allowed are small advertisements, commercial posts, recommendations (haircutters, doctors, etc.), images, and videos for which the poster does not hold the copyright, vulgar remarks, and offensive postings. Moreover, off-topic posts are not wanted; unauthorized posts will be deleted by the group's administrators. These administrators sort images into topic-related photo albums. In addition to this main group that shares a broad interest in the town, there exist subsidiary groups, for example,

*Kerpener und Ex-Kerpener Smalltalk*¹⁰ and *Sindorfer und Ex-Sindorfer*¹¹ (Sindorf is a district of Kerpen).

Table 1: *Kerpener und Ex-Kerpener*: Basic Figures for 2014.

Basic Figures (2014)	“Kerpener und Ex-Kerpener”
Number of Posts	1,951
Number of Unique Post Authors	582
Number of Top Post Authors (Producing 50 % of all Posts)	24
Number of Likes	25,686
Likes per Post (Average)	13.17
Number of Shares	1,658
Shares per Post (Average)	0.85
Number of Comments	26,319
Comments per Post (Average)	13.49
Number of Images and Videos (in Posts)	1,236
– Number of Current Images	679
– Number of Old Images	427
– Number of Current Placards	111
– Number of Videos	19

In Table 1, we present some basic figures from our case study. We list 1,951 posts written by 582 different members; hence, the share of active members is 10.67%. Only a small segment of members is actively involved in writing wall posts. The majority of members obviously does not trigger discussions. Of course, some people respond to wall posts by liking, sharing, and commenting. Others, indeed, are only “lurkers” and pure consumers. A wall post in the year 2014 has on average 13.17 likes, 0.85 shares, and 13.49 comments. There is a weak correlation (Pearson) between the number of likes and the number of comments ($r = +0.214$). It is valid for some posts: The more likes there are, the more comments (and vice versa). 63.35 % of all posts include images and (to a much smaller extent) videos.

¹⁰ <https://www.facebook.com/groups/kerpen.dies.und.das/>

¹¹ <https://www.facebook.com/groups/960496633967892/?fref=ts>

Distribution of Post Authors

Who are the active members regularly contributing posts? We sorted the entire set of posts by authors. In Figure 3 is exhibited the distribution of all 582 active members according to number of posts. We can identify an extremely leftward-skewed distribution following an inverse power law. This means only few highly productive authors post regularly. Additionally, many authors contribute one or two posts per year.

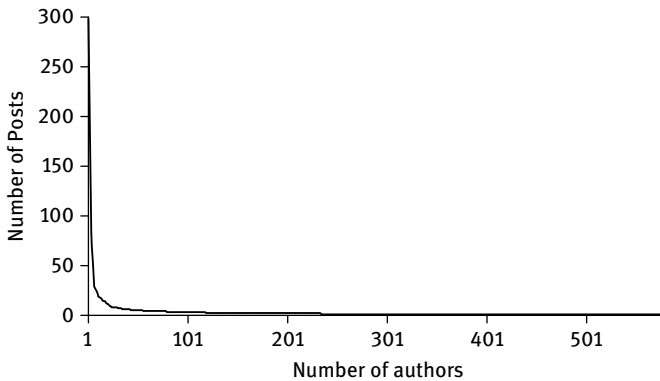


Figure 3: Distribution of Post Authors in 2014.

Next, we calculated the median of the author distribution. There are 24 authors producing 50 % of all posts (see Figure 4). The most productive author, “A,” alone is responsible for 15.27 % of all posts. Thus, the group of interest relies on the activities of only a very few highly active persons. In this context, many scientists speak of “crowdsourcing.” The “crowd” of our case study consists of just a few people. Thus, for our case study, the term “crowdsourcing” does not appear appropriate in describing author distributions in SNSs.

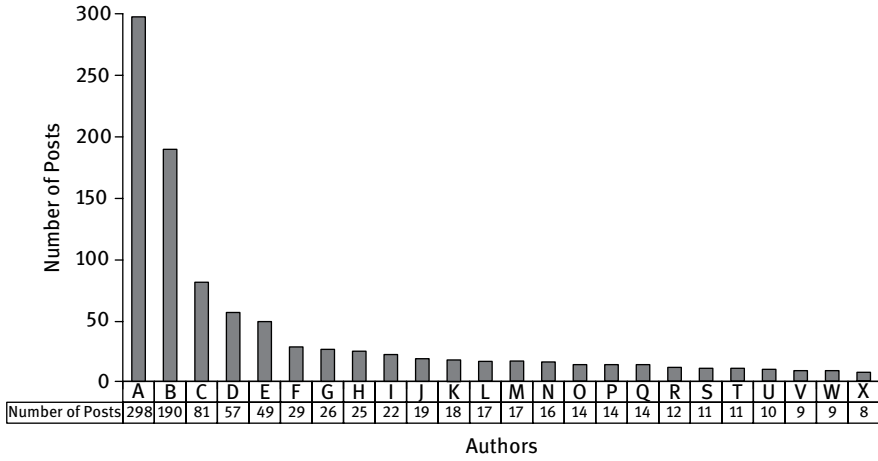


Figure 4: Distribution of Top Post Authors.

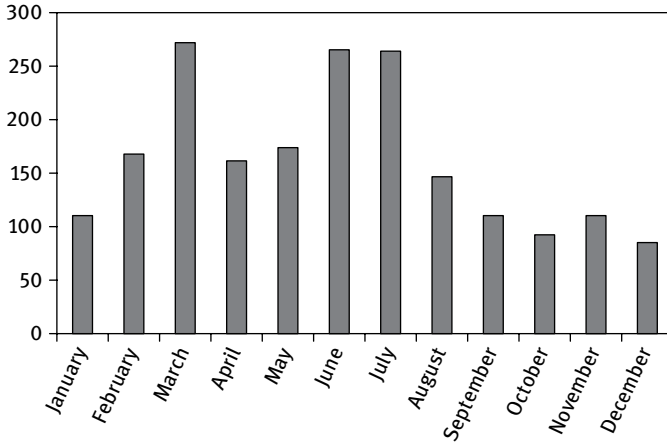


Figure 5: Posts per Month.

Distribution of Posts per Month and Day of the Week

In three months of 2014, more posts were published than in the other nine months (see Figure 5). How can we explain these outliers? In March 2014, Kerpen's inhabitants celebrated Carnival, an important festival in the Rhineland. Also in March, in many posts, Alt-Mödrath (a former part of Kerpen that was bulldozed some decades ago) was mentioned. One group member found old images, scanned them, and published them over the course of March. In June 2014, thunderstorms shocked Kerpen's inhabitants; fires broke out in Kerpen's problematic apartment building at *Maastrichter Straße* (Maastricht Street); and finally, the new railway station in Horrem (a district of Kerpen) opened. It was holiday time in July 2014, obviously leading to many posts with old images. Additionally, in July, Kerpen's citizens celebrated their city festival and the winner of the soccer world championship.

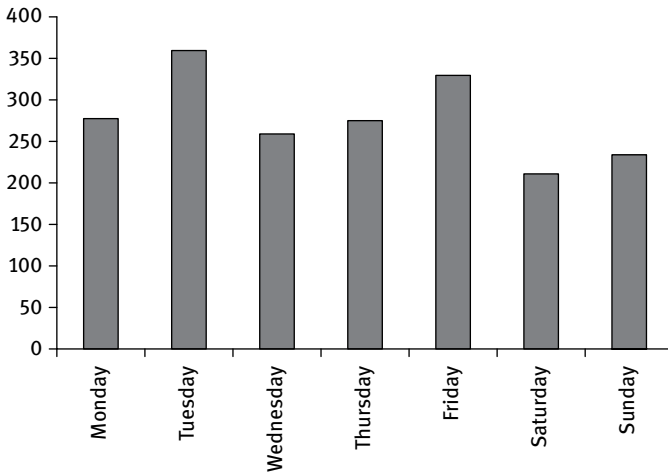


Figure 6: Posts per Day of the Week.

We observe that Tuesday and Friday are the favored posting days (see Figure 6), but lack any explanation for this phenomenon. We found it remarkable there were only few posts made on weekends.

Top Liked, Shared, and Commented Posts

We have ranked our wall posts according to numbers of likes, shares, and comments. The rankings of posts by likes and shares are – similar to the authors' distribution – left-skewed distributions. Only a few wall posts received many likes and shares. In contrast, posts with comments follow another distribution type (the so-called “inverse-logistic distribution”; Stock, 2006), insofar as in this distribution, three posts (instead of only one, which is expected for an inverse power-law distribution) at the top of the ranking received many comments.

In Table 2, one can see the top 10 posts ranked by the number of likes. In most cases, group members like current and old impressions. The top-liked post is an image of a wrong place-name sign at the new motorway A4 (Bergdorf instead of Bergheim). Interest in Michael Schumacher (a world-famous former Formula One champion racing car driver) is understandable, since Schumacher once was a citizen of Kerpen. Moderately highly liked wall posts are impressions of winter in Kerpen, a rainbow, a new indoor swimming pool, and so forth.

Table 2: Top Posts by Number of Likes.

Rank	Likes	Shares	Comments	Kind of Post	Description
1	640	0	114	Current impression	Wrong place-name sign (Bergdorf instead of Bergheim)
2	338	0	23	News	Michael Schumacher awake
3	275	0	61	Old impression	Winter in Kerpen (2010)
4	205	1	27	Current impression	Rainbow
5	198	0	53	Current impression	Indoor swimming pool in Kerpen
6	166	0	14	Current impression	Winter in Kerpen (2014)
7	160	0	26	Current impression	Soccer World Cup – Honking fest
8	155	0	59	Old impression	Kerpen cinema in summer (1986)
9	150	0	15	Current impression	Fountains in Kerpen
10	133	0	92	Old impression	Kerpen Stiftsstraße (1980)

How does the distribution of shares look? Half of the top 10 wall posts by number of shares are private requests and requests for help; the other half are warning notices (see Table 3). One post occupies a high position in the ranking. Of the members, 722 shared the wall post searching for a hit-and-run driver. Two posts

cover the issue of burglary and ask for attention. Six posts are devoted to dogs and cats, for example, dog found, dog poisoned, cat disappeared, and – most horrible – cat halved. On the scale of things, we thus summarize that shares are often used for current events. The more shares, the more historically irrelevant a wall post may, on the surface, seem to be. However, there are exceptions: Posts about burglary are not necessarily historically irrelevant. Shares and likes need little cognitive effort to produce; they represent just one click, a touch of a button, while reading the information on the screen. Contrariwise, producing a comment that might include images and videos along with text requires greater elaborative cognitive effort.

Table 3: Top Posts by Number of Shares.

Rank	Likes	Shares	Comments	Kind of Post	Description
1	58	722	120	Request for help/private	Wanted: hit-and-run driver
2	35	175	205	Caution	Burglary / tramp's sign
3	8	161	33	Request for help/private	Found dog
4	8	92	20	Caution	Poisoned sausages (for dogs)
5	6	87	42	Caution	Dog poisoned in Brügggen
6	24	77	22	Caution	Caution: burglar in Sindorf
7	36	72	35	Report and criticism / private	Sad experience in Kindergarten
8	3	30	27	Request for help/private	Disappeared cat
9	4	27	61	Request for help/private	Cat halved. Offenders wanted
10	1	23	1	Caution	Dog owners! Shots in Marienfeld

The 11 top posts by number of comments include requests, notices, news, one current impression, and one warning (the above-mentioned post about burglary) (see Table 4). A hot topic in Kerpen is an empty apartment tower that has been set ablaze several times. Questions of general interest (e.g., “What do you associate with Kerpen?”) trigger high numbers of comments. The post about the kiosk around the corner describes a shop with an upholstered sofa on the sidewalk in front of the house, which has received many comments. Within the top commented posts, one can identify historically relevant posts (such as the problematic apartment tower) as well as gossip and tittle-tattle (e.g., the kiosk around the corner).

Table 4: Top Posts by Number of Comments.

Rank	Likes	Shares	Comments	Kind of Post	Description
1	23	0	359	Notice	Fire: Apartment tower Maastrichterstraße
2	19	0	353	Request	What do you associate with Kerpen?
3	69	0	299	Current impression	Kiosk around the corner
4	26	0	217	Notice	Fire: Apartment tower Maastrichterstraße
5	16	1	216	Notice	Chinese restaurant closed forever
6	35	175	205	Caution	Burglary / tramp's sign
7	30	0	184	News	Girl gets hit by a car
8	12	0	152	News	Dog feces on lawns
9	5	0	146	Request	Something new? Sindorf station
10	12	0	143	Request	Residential complex at Sindorferstraße?
11	3	0	143	Request	Priority in traffic: Parking lots at Erftkarree

Multimedia Versus Textual Posts

Is there any noticeable difference between multimedia posts (i.e., posts including at least one image or video) and purely textual posts in terms of likes, shares, and comments? In contrast to text, the “right picture tells us what the place really looked like” (Batley, 1973, p. 359).

We divided these two types of posts, and identified 1,261 multimedia posts and 690 textual posts. For each set, we calculated the average number of likes, shares, and comments, and the respective standard deviation, which is a measure for the dispersion of values. A value of 0 implies no dispersion; the higher the value of the standard deviation, the higher the grade of dispersion. To calculate the probability that both sets of posts are indeed different, we applied the method of confidence intervals. In statistics, normally three levels of significance are distinguished: two sets of values are different with a probability (p) of at least 95 %

(marked by one asterisk: *), 99 % (**), and 99.9 % (***). Probability values below 95 % are regarded as “not significant (*ns*).”

Table 5: Multimedia and Text Posts by Numbers of Likes, Shares, and Comments.

	Multimedia (N = 1,261)	Text only (N = 690)	Significant difference?
Average number of likes (SD)	17.77 (30.51)	4.73 (10.29)	***
Average number of shares (SD)	0.24 (5.05)	1.97 (28.85)	<i>ns</i>
Average number of comments (SD)	10.41 (19.71)	19.13 (30.89)	***

SD: standard deviation; *ns*: not significant; ***: $p < 0.001$.

Our results (see Table 5) clearly exhibit highly significant differences (at the 99.9 % level) between multimedia and text-only posts in terms of the average numbers of likes and comments, but no statistically noticeable difference with regard to the average number of shares. Multimedia posts on average received 17.77 likes per item in contrast to only 4.73 likes per textual post. This is nearly four times the amount in favor of multimedia posts. In contrast, text-only posts on average garner 19.13 comments, while multimedia posts only get 10.41 comments. This share is just about double, but this time, favoring textual posts. Obviously, multimedia posts often provoke many likes (meaning “This image pleases me,” and therewith, everything has been said) and only few comments. Text-only posts lead to the opposite type of user behavior. Such posts are moderately highly liked, but also provoke many comments.

Wall Post Categories

We classified each wall post into one of our nine categories. Results of the average numbers of likes, shares, and comments for all categories are presented in Table 6. Outstanding categories according to the average number of likes are *old* und *current impressions*. Both categories received more than 23 likes per post. From this we can deduce people like old as well as new images of their hometown. In contrast to the high number of likes, both types of impressions’ categories only get moderately high numbers of comments (about 11 and 12 comments per post

and actually no shares). Only very few likes per post go to the categories *private* and *request*, but both categories include large numbers of comments (for *private*, 15, and for *request*, 28 comments per post). Private posts and requests of general interest call for answers (comments) rather than for likes.

Only one category received many shares: *Caution*. Wall posts in this category are devoted to current burglaries and to warnings concerning dangerous situations for cats and dogs. Here, rapid information dissemination is vital, and this can be achieved by immediately sharing *caution* posts. Additionally, these posts receive high numbers of comments (29 on average) and moderate numbers of likes (8 on average). All other categories consist of only small numbers of shares or no shares at all.

Three categories attracted out attention concerning the average number of comments: *Report / criticism* (34 comments per post), *Caution* (29), and *Curiosity* (29 as well). *Report / criticism* includes wall posts on vandalism, criticism directed against the city administration, prices of groceries, noise, and so forth. *Caution* posts are about burglaries, electrical failure, threats to one's life, car traffic, radar trap, and so forth. *Curiosity* posts turn on "What is happening?" topics. Posts about the categories *News* and *Notice* receive a sparse number of comments. Users acknowledge news and notices, but do not heavily comment on or share these categories of wall posts.

Table 6: Categories by Average Numbers of Likes, Shares, and Comments.

	Average number of likes	Average number of shares	Average number of comments	N
Caution	8.45	16.31	29.03	29
Curiosity	7.90	0.00	28.93	30
Current impression	23.10	0.05	10.91	330
News	10.03	0.00	6.51	275
Notice	7.88	0.12	9.35	221
Old impression	23.62	0.07	11.80	417
Private (incl. recommendations, request for help)	3.36	2.17	14.82	475
Report / criticism	17.80	1.31	33.83	59
Request	5.10	0.03	27.78	115
<i>All</i>	<i>13.17</i>	<i>0.85</i>	<i>13.49</i>	<i>1,951</i>

Top Topics

Top topics are defined by the absolute number of wall posts, sorted by keywords. We identified three topics as “Top Topics” (see Table 7) and closely considered the content of the appropriate posts. Do these posts provide historically relevant information that can perhaps supplement news articles reported in local newspapers? The top topics reveal moderately high numbers of likes and comments as well as nearly no shares.

Table 7: Top Topics.

	Average number of likes	Average number of shares	Average number of comments	N
Thunderstorm	18.63	0.03	17.67	30
Maastricht Street	21.32	0.04	52.00	25
Highway A4	50.20	0.70	14.95	20
<i>All</i>	<i>13.17</i>	<i>0.85</i>	<i>13.49</i>	<i>1,951</i>

On the topic *thunderstorm*, we found 30 wall posts. Yet in the local press (*Kölner Stadtanzeiger*; June 10, 2014), we found only one article about it. In the wall posts, we read people’s reporting on subjective feelings, concrete impressions of vested interest, and offers of help. In one instance, a person posted about his emotional state on June 9, 2014 at 9:59 pm:

Not again, please. I am totally afraid.

Another person triggered a conversation about a fallen tree:

Post (June 9, 2014 at 10:20 pm): *My friend the tree is dead. Am really sad. Liked my tree.*

Comment (June 9, 2014 at 10:21 pm): *ok chainsaw needed yet.*

Comment (June 9, 2014 at 10:22 pm): *I take the wood.*

After the problem was published, in the next two minutes, part of the problem was solved. One finds many wall posts offering help, for example:

Post (June 9, 2014 at 9:33 pm): *If someone needs help can get in touch because of cellar full of water or so.*

Comment (June 9, 2014 at 9:34 pm): *that’s very nice, X (poster’s name) I’m on hand.*

Comment (June 9, 2014 at 9:38 pm): *I do not live in Kerpen but I’ll gladly help in Quadrath.*

Kerpen's citizenry obviously comment immediately on recent events, and offer help and are willing to prepare for further actions. Such up-to-the-minute information one will never find in printed newspapers.

There are 25 wall posts devoted to the topic "Maastricht Street." This subject is frequently reported in the local press as well, because there are many fires and there is popular discontent on this "eyesore." The *Kölner Stadtanzeiger* covered, among other things, arson attacks on the unoccupied building (June 2, 2014), actions taken by the city administration of Kerpen (June 6, 2014), and security problems experienced by the town's residents (June 26, 2014). In contrast, wall posts concentrate on offenses, personal experiences and hints to handle problems. Here, we describe only one wall post ("our house burns yet again;" June 10, 2014 at 11:15pm), which triggered an intense discussion. One comment documents an offense to some of Kerpen's citizens:

Comment (June 10, 2014 at 11:21pm): *always after 11pm ... what about the people getting up early ??? it is too loud to sleep.*

In another comment, the author presents a detailed assessment of the situation:

Comment (June 11, 2014 at 12:23 am): *However, it is quite annoying that the fire department has to march out. the house is empty and nobody is in danger. every time where this house will be extinguished, human life could be in danger elsewhere, and help comes too late, while this house burns once again. and at present the fire department has to do enough because of the thunderstorm.*

A "nice" piece of advice is offered in the following comment:

Comment (June 11, 2014 at 1:03 am): *then no one should just call the fire department. then it will have burned down faster. if the fire is always put out, however, you have to try it more often.*

It is obvious that one will not find such a comment published by the local press, but such a posting certainly demonstrates the mood of some of Kerpen's citizens. These all provide excellent examples of the type of material a historian might draw on when crafting a narrative that includes elements of history from below.

One wall post on the topic *Highway A4* reports the wrong place-name sign *Bergdorf* instead of *Bergheim* (our top-liked post). This post was in fact the source of an article published in *Kölner Stadtanzeiger* (September 16, 2014):

The new sign with the misspelling ... appeared in Facebook at the weekend and received more than 600 likes within the group "Kerpener für Ex-Kerpener" [the group Kerpener und Ex-Kerpener is meant].

These wall posts and comments share a common thread: they represent subjective estimations of “average” people rather than published news of professional writers or journalists. We believe these statements can be a wonderful starting point for the historian who, when examining events from the perspective of history from below, wishes to include them in her or his research.

Facebook and Cultural Heritage

In a couple of wall posts, group members exchange memories and experiences relating to their native country, region, and city. Often, these posts include images that encourage dialogs among circles of interested readers. We turn to some examples. In Kerpen and the surrounding region, lignite (brown coal) is once more being mined, with some districts being totally eliminated. Inhabitants are being forced to leave their ancestral homeland, and while they receive compensation for a new home, it must be located in a different place. Whole areas (including buildings, streets, and forests) are being dredged and become large lignite mines. Even cemeteries are not immune, with graves exhumed and their contents reburied in new plots in new cemeteries. One bright spot: After exploiting the coal, revegetation of the disturbed land is resumed. *Tagebau Frechen* is a former lignite mine located between Frechen and Kerpen. It is not surprising that old and new images regarding this topic have been posted and have received comments repeatedly. On July 25, 2014, a wall post showed an image of Frechen’s open cast mine in 1994, which applies to that area where the newly created *Marienfeld* is located now. The post has received 100 likes and 21 comments, the latter of which are diverse.

On the one hand, some people rather wistfully remember the lost home in which they were born. On the other hand, the current revegetation is regarded as truly beautiful. Another person wonders at which location a Starfighter crashed in the 1960s. In response to this question, a timeline is begun, and the crash site of the former maneuver in flight and the names of the four dead pilots are provided in a following comment. As further contributions to the discussion ensue, the wall post’s author adds an image around 40 years older than the first one. The photo from the 1950s shows roughly the same location, but this image includes a street with houses, a bridge, cars, and two people visible. On October 19, 2014, someone posts a current picture of the referenced area. It is an aerial photograph illustrating the revegetated landscape. We see many wall posts that are even now historically relevant because the images presented bear witness to a sunken or

altered cityscape. In one instance, former citizens of Alt-Mödrath (i.e., a destroyed city before resettlement) tell their stories and reminisce together.

Concerning cultural heritage, one must identify at which location and at which time an event described by a textual post or even a photo happened. What follows is a paradigmatic example. On July 11, 2014 at 11:01 pm, an author posts two images and mentions in the text:

Cardinal Frings in Kerpen. I don't know the year.

A day later, another person offers a first idea:

Comment (July 12, 2014, at 2:41 am): *approximately 1950 I think.*

In another comment, the date stamping becomes more exact:

Comment (July 14, 2014 at 1:47 pm): *Yes that's right [name of the first commenting author], at this time I was about 6 years old, on the left image beside the priest.*

Based on the two comments, an accurate time stamp has been determined: the photos were taken in 1950.

As regards the current talking point, such dialogs contribute experiences, ideas, and solution possibilities intragroup. These interactions may lead to enrichment and innovation. Individual group members remember former events, tell personal stories, and share their knowledge with other (perhaps not personally known) people. Not every wall post or comment includes historically relevant aspects; many simply touch on Christmas greetings or private interests, notices, and requests. We always must consider that these contributions to a discussion are not being made by professional historians, but rather by laypeople. We are thrilled to witness, however, the rich networked exchange of images, videos, and ideas, that is, activities accomplished by the “crowd.”

How shall we go about identifying and preserving historically relevant Facebook content? The conservation of Facebook data is important, especially in the long run, “when Facebook is gone” (McCown & Nelson, 2009, p. 251). The retrieval functionality of Facebook is suboptimal. Although one can search for keywords from inside Facebook groups, there are no elaborated search functionalities, such as Boolean operators (and, or, not), brackets, proximity operators, or algebraic operators, for example, dates (Stock & Stock, 2013, ch. D.1). There is no sorting function, which meant we could not sort posts according to their numbers of likes, comments, or shares. Additionally, Facebook fails to offer a function for output and download of posts and comments. Archivists are thus forced to intel-

lectually gather and manually download desired sources. To accomplish this, we think the decision criteria for assembling historically relevant and credible sources should include the following conceptual markers:

- a high number of posts per topic in a given time interval (e.g., a year) (one must know which topics are relevant – we performed our searching by indexing all posts via categories and keywords),
- a high probability of historical relevance exists for the categories *old impression*, *current impression*, and *news*; additionally perhaps selected posts from the *notice* and *report / criticism* categories,
- historically relevant multimedia posts (images, videos) have a moderately high number of comments and a high number of likes,
- some wall posts of historical relevance exhibit a high number of comments,
- high numbers of shares seem to be indicators for rapid requests and warnings that are seldom historically relevant.

There are different ways to download wall posts and comments from Facebook (McCown & Nelson, 2009, pp. 252 f.):

- copy and paste screenshots or text and images into a word processing program,
- import even large quantities of data into an HTML file (this was our approach – but nearly all comments will be missed in this way),
- apply the Facebook Application Programming Interface (API)¹² or any other API working with Facebook content (e.g., restfb).¹³

Due to Facebook's insufficient retrieval and output functionalities, we have determined at this point, archivists no doubt will find it a considerable challenge to process and store posts and comments from this SNS, at least from our experience working with our dataset.

Conclusion

Does Facebook provide sources to use for historical science? Sources and objects common to material culture, such as texts, events, objects, buildings, images, and videos, connect humans to both their present world and the past. Professional

¹² <https://developers.facebook.com/docs/graph-api>

¹³ <http://restfb.com>

historians describe, verify, analyze, and evaluate historically relevant sources and place them within their historical context. When practicing historical science, we must remember to be inclusive in choosing source material; we should not train our focus solely on global events because greater events often depend on many smaller developments. History from below or the practice of microhistory must include the development of smaller regions, cities, or people living at a given place and in a particular time. On Facebook, non-experts or, sometimes, amateur historians publish digital sources about all of the above-mentioned regional aspects. We think two challenges exist if one hopes to use Facebook posts in historical science, namely, the huge amount of the data and its very credibility. To manage the increasingly huge datasets, methods of quantitative history in terms of Facebook metrics are essential.

In our case study, we were able to demonstrate that specific distributions of posts per topic, as well as likes, comments, and shares per post can help in selecting historically relevant topics and posts from among all other less relevant topics and posts. The data's credibility can be detected by analyzing and evaluating dialogs occurring between posting and commenting authors. For example, we could demonstrate how Facebook users might approach verifying the correct date stamping of a photo. In sum, Facebook can be an important historical source record that complements other historical sources. On Facebook, one can find information that would rarely will be found elsewhere: first-hand impressions, images, and comments from the “common people.”

Since we worked with only one case study, further scientific investigations must analyze other Facebook groups whose members demonstrate an interest in historical aspects of their environment. Additionally, the application of Facebook metrics should be broadened and calibrated. Taken together, however, we think this combination of two academic disciplines – information science and history – proved successful as a research method, one that can be expanded to include other SNS groups whose postings and observations may help produce a fuller historical record of both our time and place, along with those in the future.

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