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Sundin, Olof; Haider, Jutta

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LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

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Short paper: Professional Digital Encyclopaedias as Socio-Technical Systems

Olof Sundin, Lund University, Sweden, email: olof.sundin@kultur.lu.se
Jutta Haider, Lund University, Sweden, email: jutta.haider@kultur.lu.se

Abstract

This paper presents on-going research on the production of knowledge in contemporary professional digital encyclopaedias. By adopting a theoretical perspective that considers the interplay of humans, non-humans and practices at the same level, it develops further a socio-technical perspective on knowledge production. Methodologically, the project involves an ethnographic study staring from two editorial sites – the Swedish *Nationalencyklopedin* and the Norwegian *Store Norske Leksikon*. The empirical material consists of participatory observations, semi-structured interviews, informal conversations, internal documents, as well as the two encyclopaedias appearance on the web, in social and legacy media. The preliminary results point to a co-existence of old and new orders of knowledge. Traditional taxonomies and formal expertise blend with social media, Google Analytics and new orders of work. The way encyclopaedias adjust to Google exemplifies, albeit in different ways, the fundamental role of 'management by Google' in contemporary networked society. It is concluded that digital encyclopaedias, Wikipedia as well as *Nationalencyklopedin* and *Store Norske Leksikon*, constitute interesting arenas for investigating changing demands on the production of public knowledge.

Keywords: media and culture, socio-technical theory, ethnography, digital encyclopaedias, knowledge production, trust

Introduction

This paper reports on and presents some tentative results from the on-going research project *Encyclopaedias' Trustworthiness in the Digital Media Landscape*. The project investigates the production of professional encyclopaedic knowledge in contemporary society. The over-all question addressed regards what happens in the encounter between encyclopaedic knowledge – traditionally communicated in print – and the

changed conditions for production, communication and accessing knowledge that digital media and networks bring with them? This is primarily done through an ethnographic study of everyday work at the Swedish *Nationalencyklopedin* (NE) and the Norwegian *Store Norske Leksikon* (SNL).[1] The project highlights issues surrounding public knowledge, digital information, trust and credibility, new forms of information resources, and challenged expertise. These issues are related to the unofficial "unique selling point" of professional encyclopaedias – namely trustworthiness. An earlier paper based on the project focuses solely on NE (Sundin & Haider, 2013).

Aside from Wikipedia, the professional general reference encyclopaedias NE and SNL are the major source of reference for encyclopaedic knowledge in their respective countries. Both encyclopaedias went online in the year 2000, incidentally the same year Wikipedia started out. NE is a commercial product, mainly financed trough selling subscriptions or user licenses. SNL on the other hand, is today, after having tried different business models, financed by a foundation and is free to access for the user. NE contains approximately 180 000 long articles and 20 000 "easy-read" articles for school pupils while SNL contains about 177 000 articles. NE has developed over the years without major interruptions. The target group are increasingly school pupils, which also is reflected in many of the priorities of the encyclopaedia. The editors of NE have an extensive network of external experts, but the editors often also update articles on their own. SNL, on the other hand, was transferred in the year 2010 from its earlier publisher to a foundation. In the process, the entire editorial staff were replaced. As a result of this process, SNL was made freely available and the encyclopaedia's working methods came to be more in line with how the Web works. At the same time, SNL has a system where external experts, often from the academy, are responsible for writing and updating articles. Despite the many differences between the institutional structure and modus operandi of the two encyclopaedias, there are also many similarities and the empirical material for both is presented together.

Encyclopaedic knowledge has strong roots in western culture and for a long time it has symbolised modernism, Enlightenment and education (Van Doren, 1967). For centuries

[1] An open-ended questionnaire on the role of encyclopaedias in peoples everyday life is also a part of the project, but not discussed further in this paper.

the mighty volumes making up printed encyclopaedias have brought public recorded knowledge to libraries and, during the 20th century increasingly also to people's homes. An edition of for example *Encyclopaedia Britannica* would function as a point of reference for what is important to know and what to believe for a generation. At the same time, the form of encyclopaedic expression has changed throughout history (Michel & Herren 2007). Since early 2000, encyclopaedias have been one of the most popular sites on the web. But the logic of the web has challenged both the traditional business model and, which is the focus of this paper, the production forms of and for professional encyclopaedias. Professional encyclopaedias on the web have in many cases transformed themselves from stable reservoirs of expert-driven knowledge to laboratories for different forms of knowledge production. While Wikipedia has attracted extensive research professional encyclopaedias, traditionally often with national ambitions, are almost scholarly unexplored territories, despite their popularity and status.

Theoretical perspective

A theoretical perspective on knowledge production, which considers the interplay of people, encyclopaedic practices and digital technologies, all seen as actors, underpins the study (cf. Czarniawska, 2011; Johansson, 2012; Mager, 2009; Niederer and van Dijck, 2010; Sundin, 2011). By emphasising the concept of actors – both humans and non-humans – the co-construction of knowledge is stressed (Latour, 2005). These actors include among others editors, social media applications, content management systems, guidelines, websites, experts, users, legacy media, and – not least – Google (Search, Analytics, Drive and Reader). The research task is then to put the spotlight on how different actors and their practices together form encyclopaedic knowledge and its trust. Theoretically speaking, the project investigates the configuration of the interplay between different actors from which encyclopaedias' trustworthiness derives, especially considering the affordances of digital and networked media. In that way we are investigating the "machineries of knowledge construction" (Knorr Cetina, 1999, p 3) or the "black box" (Latour, 1987) of public knowledge.

Method

Methodologically, the paper reports from a project involving an ethnographic study (e.g. Hammersley & Atkinsson, 2007) at two physical sites and a variety of virtual sites; at the editorial rooms of NE and SNL and the various online services they use. Ethnographic perspectives have recently attracted increased interest from information studies / library and information science (IS/LIS) (e.g. Johansson, 2012; Lundh, 2011; Sundin, 2011).

The material analysed in the paper at hand was collected over a period of 12 months, between March 2012 and February 2013. All together, 17 days were spent at the editorial offices of NE (13 days) and SNL (4 days). The everyday work of the staff was followed, including editorial meetings, writing of articles, discussing of user statistics and meetings with external experts. Besides the time spent at the offices, NE's and SNL's online presence were also followed (the web sites of NE and SNL, Twitter, Facebook).

The methods used included, participatory observations, semi-structured interviews, informal talks, and text analysis of how the two encyclopaedias communicate on the web. 13 digitally recorded interviews have been carried out (between 20 and 80 minutes), seven at NE and six at SNL. Internal documents have also been collected, including material from Google Analytics (primarily SNL). During the time at the two editorial offices, detailed field notes were kept. Quotations from Swedish and Norwegian have been translated into English. The empirical investigation was multi-sited (Marcuse, 1998) in the sense that we followed the knowledge production at both the physical locations and in digital channels, such as Facebook, Twitter and the digital encyclopaedias as such. The analysis is grounded in the empirical material, but with the theoretical perspective guiding our attention. The notes were read repeatedly and the recorded interviews were summarised and partly transcribed. Central actors were identified and related to each other. Themes were developed through a constant comparative analysis.

Preliminary results

NE is located in the harbour of Malmö, which has gone through an extensive process of regeneration and gentrification from traditional industry to media industry and university buildings. The location as such symbolises the in-between position of NE, a

professional encyclopaedia now working under very different circumstances. The office space is full of old encyclopaedias signalling tradition and legacy. The building is a business building containing also other businesses, many far away from publishing. When entering the building, two receptionists ask for your name and you are given a nametag before being allowed any further. SNL, on the other hand, is located in a bourgeois part of Oslo with many embassies in the neighbourhood. In fact, the editorial office is located in an annex to the Norwegian Academy of Science and Letters, a fine-looking house from late 19th century. The location as such indicates close ties to the academy rather than to business. At the same time, a very young and relaxed atmosphere, more akin to new media business than to the academy meets you on entering the office. The bookshelves are mostly empty and almost everything and everyone seems to be online.

Googleisation of encyclopaedic knowledge

The traditional, paper-based, organisation of knowledge in encyclopaedias is in the form of articles in alphabetic order, combined with references to other articles (internal references or links) and some kind of taxonomy. All these organisation principles still exist in both NE and SNL. However, the users find their ways to the encyclopaedias predominantly through Google. At NE 65 % of users arrive from search traffic (Field note, 2012-06-28) and for SNL the figure is as high as 85 % (Field note 2013-02-25). The differences in figures between the two sites have many causes, but one is most likely the intense search optimisation that SNL is working with (Interview, web analysis, 2013-02-25), something SNL is using almost like a "trade mark". In an interview in a morning paper with the SNL's web analyst, she declares: "Store Norske Leksikon was a party without guests. That is, they had few hits in Google. It doesn't help if you have the best articles, or the best music on the party, if no one turns up" (Bøe, 2011). The four editors and the web analyst put a lot of effort to turn up high in Google's PageRank; in attracting the users to SNL from Google results page through a clear and short introduction; and to keep them there after they have started to read the article by using user friendly language (Field note 2013-02-26). In fact, Google seems to be the single most central actor in the construction of trustworthiness of digital knowledge. That is not to argue that highly ranked pages are per se more trustworthy or that working with search engine optimisation increases a page's "de facto" trustworthiness. However, Google

orients work in almost every regard. It is tool and measure of the process and the results of work as well as the compass, which guides visitors to the encyclopaedia and the arena for meeting and judging competitors. For instance, another important actor who shapes encyclopaedic knowledge is predominantly mediated through Google; Wikipedia, which is consistently number one in almost all relevant Google searches. Clearly NE and SNL need to position themselves in relation to Wikipedia, but Wikipedia as it is seen through Google (Google Search, but also other Google products). Hence, trustworthiness is here a complex blend of tradition, of users, statistics, other encyclopaedias, other media, taxonomies, editors, and so forth and all of these exist increasingly in relation to Google (Latour, 2005; comp. Mager, 2009). While this is very explicit at SNL, it is less so at NE, yet nonetheless it is just as important.

Prioritising through quantification

Having just counted users amongst actors that shape encyclopaedias trustworthiness, we might have to step back and specify this claim somewhat. A new organising principle has come to dominate much of the ordering of work, namely that of user quantification. Google Analytics and the editorial system of NE quantify user behaviour; thus, the managers of both encyclopaedias are aware, among other things, how many users they have, when they are visited by users, how long users stay at the site and which articles they read. Not least the last issue, which articles are read, constitutes an important tool for prioritising which articles to update or rewrite. However, we have to bear in mind, what managers see are statistics, compiled on users, yet not as in people, but users as in IP addresses, together with conveniently graphically prepared graphs as delivered through Google analytics, all accessed through the Google interface. Once again, Google is the most central actor, which shapes role, position, and form of other actors and of their relations, here specifically of users in relation to articles. Although article writing depends on what happens in science, politics and media, the prioritising between subjects is highly contingent on the popularity of an article. At NE, statistics on user behaviour give priorities to which articles they should work with and at SNL leaning on user statistics seems even stronger. Despite the differences between the two sites, it is possible to say that encyclopaedic work is less grounded in academic disciplines and more in user statistics than earlier.

Dialogue with the user

The "user" appears as an actor also in a different, less quantified form. NE and SNL use social media to connect to users and potential users. However, SNL stands out in their extensive use of social media. When talking to the web analyst at SNL, she demonstrates how they used the social media analysis tool *Sproutsocial.com* to analysis how SNL and their editorial members are discussed in social media. The policy is always to connect to the user when SNL is mentioned. For example, one person tweeted that she would never use SNL anymore since she could not find anything. The web analyst answered her: "That's a pity. What do you look for? We can help you?" (Tweet SNL, 2013-02-26). When someone complains about an article, the editor in charge for the subject area contacts his or her subject responsible person in order to check the article. When the article is amended, they contact the person who complained in the first place. Both encyclopaedias are alert to what happens outside the office. For instance, when SNL publishes a re-written (or new) article in relation to a jubilee or similar event this is often marketed in social media and sometimes even in legacy media, which hence become drawn into the network of actors backing up their trustworthiness. The use of social media and high publicity in legacy media distributes the construction of trust in encyclopaedic knowledge to include other arenas than the encyclopaedia itself.

The new knowledge worker

What characterises the competences of an editor in a contemporary digital and networked encyclopaedia? At NE, the numbers of editors has decreased significantly during the past few years, from 30 to 9. At the same time, the editors are part of a larger company with approximately 30 employees, including sales persons, administrations and marketing staff. At SNL, the numbers of employed in the editorial office are seven. The editorial office has an economist to support them, and they buy technical support and development from outside. In addition, they have a steering committee at the foundation. The editorial members of NE have in most cases been employed for many years. They have witnessed the changes towards increasingly working in project form. A project-oriented approach to work is also something that has become more common at SNL. NE has employed many editors with a PhD degree over the years and there are still editors who have a background in the academy. However, today they work less and less in their own fields of expertise due to the decreasing number of editors. The editors at

SNL have all been all employed within the last two years and the mean age at the time of the field study was only 29. They are well educated with mostly masters' degrees and one holds a PhD. In the model for article production at SNL, the editors have even less expertise in the specific articles' subject areas. The editors of SNL could accordingly be described as project leaders rather than writers (or even editors) of encyclopaedic articles.

Conclusion

Digital professional encyclopaedias, such as *Nationalencyklopedin* (NE) and *Store Norske Leksikon* (SNL), constitute highly interesting arenas for investigating changing demands on knowledge and newly developing forms of knowledge production. The way encyclopaedias adjust to Google's products (not just Google Search) exemplifies, albeit in different ways, the fundamental role of what could be called 'management by Google' in the contemporary knowledge society (cf. Eklöf & Mager, 2013). Google Analytics and other tools for tracking user behaviour and supposed interests govern in a pragmatic compromise which developments in science, media or politics are ultimately worth knowing about. Encyclopaedic knowledge production is highly socio-technical and a result of many actors' co-production. This on-going study demonstrates various ways of encyclopaedias being digital, in production as well as distribution, and not just being a digitised paper product. However, the encyclopaedic tradition is always there – in the role of formal expertise, in the role of the paid editor and in form of a physically central, albeit as in the case of SNL digitally distributed, editorial office.

References

Bøe, A. (2011-02-09). Nettliksikon bruker blogger som lokkemat. *VG*.

Czarniawska, B. (2011). *Cyberfactories: How News Agencies Produce News*. Cheltenham: Edward Elgar Publishing Limited.

Eklöf, J. & Mager, A. (2013). Technoscientific Promotion and Biofuel Policy: How the Press and Search Engines Stage the Biofuel Controversy. *Media, Culture & Society*, volume 35, number 4, pp. 454-471.

Hammersley, M. & Atkinson, P. (2007). *Ethnography: Principles in Practice*. 2rd ed. London: Routledge.

Johansson, V. (2012). *A Time and Place for Everything? Social Visualisation Tools and Critical Literacies*. Borås: Valfrid. PhD thesis.

Knorr Cetina, K. (1999). *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge, Mass.: Harvard University Press.

Latour, L. (1987). *Science in Action: How to Follow Scientists and Engineers through Society*. Open University Press: Milton Keynes.

Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford University Press: Oxford.

Lundh, A. (2011). *Doing Research in Primary School: Information Activities in Project-Based Learning*. Borås: Valfrid.

Mager, A. (2009). Mediated Health: Sociotechnical Practices of Providing and Using Online Health Information. *New Media and Society*, volume 11, number 7, pp. 1123-1142.

Marcuse, G. (1998). *Ethnography through Thick and Thin*. Princeton, N.J.: Princeton University Press.

Niederer, S & van Dijck, J. (2010). Wisdom of the Crowd or Technicity of Content? Wikipedia as a Sociotechnical System. *New Media & Society*, volume 12, pp. 1368-1387.

Sundin, O. & Haider, J. (2013). The Networked Life of Professional Encyclopaedias: Quantification, Tradition, and Trustworthiness. First Monday, volume 18, number 6. Available from: http://firstmonday.org/ojs/index.php/fm/article/view/4383/3686 [2013-06-17]

Sundin, O. (2011). Janitors of Knowledge: Constructing Knowledge in the Everyday Life of Wikipedia Editors. *Journal of Documentation*, volume 67, number 5, pp. 840-862.

Van Doren, C. (1967). The Idea of an Encyclopedia. In M. Kochen (ed.), *The Growth of Knowledge: Readings of Organization and Retrieval of Knowledge*. New York: John Wiley, pp. 66-71.