

How to Build an Encyclopedia for the 21st Century: Lessons Learned from *The Great Norwegian Encyclopedia*

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ABSTRACT: After more than 100 years of existence, Norway's *Great Norwegian Encyclopedia* went through a major crisis between 2010 and 2014, as the transformation to the new, digital reality became commercially unviable to the publishing house that owned it. The country's universities came together, formed The Great Norwegian Encyclopedia Association, and created a new editorial team, which has transformed the encyclopedia into an online success with high-quality articles assessed and updated by some of Norway's leading scholars. The partnership with academia, a purpose-made publishing software, a decentralized production model, and confidence in the original brand have been keys to building this public service encyclopedia that other, likeminded institutions across Europe can learn from.

Keywords: Great Norwegian Encyclopedia; *online encyclopedia*; *academic partnership*; *academic transparency*

Introduction

Digitalisation has proven to be the biggest challenge ever encountered by Europe's strong encyclopedic traditions. As free online sources of information have flourished, few have seen the purpose of upholding what are often viewed as rigid and outdated encyclopedias; the public is not interested in paying subscription fees that can finance updating and expanding online encyclopedias, and these are consequently becoming even more outdated and even less attractive to the public. Governments, especially in Western Europe, are often unwilling to provide adequate funding for high-quality online encyclopedias, as they have been viewed as old-fashioned and with low prestige compared to high-tech digital teaching tools and other communications projects.

This happens at a time when easy access to verified, high-quality encyclopedias is more important than ever, as »fake news« and »alternative facts« flourish in many countries, and propaganda by foreign countries, extremist political groups, and commercial interests try to sway the population in one way or another. The report »Europe’s online encyclopaedias: Equal access to knowledge of general interest?«, published in early 2018 by The European Parliamentary Research Service (EPRS), emphasizes in its introduction that »Public access to basic, reliable background information about history, culture, society and politics is an essential part of our societies’ complex knowledge ecosystem. Trustworthy general-interest knowledge is an important tool for anybody searching for basic information or facts and figures, helping them to understand the ‘big picture’ and avoid being manipulated.«¹

Between 2010 and 2014, *The Great Norwegian Encyclopedia* went through a crisis that changed the traditional institution from a commercial, paper-based money drain with a failing website into an acclaimed and updated online encyclopedia with up to 2.45 million unique users per month (in a country with five million inhabitants), owned by the country’s universities and appreciated by schools, the media, and the general public alike. This article aims to tell the story of how this transformation progressed and what lessons have been learned that other encyclopedic institutions can take into account regarding their own digital transformation. While access to resources and encyclopedic traditions vary from country to country, it is clear that the SNL’s recent history can nonetheless serve as an example to other countries. A lean and independent organization where fresh ideas are encouraged, a purpose-made publishing software, partnerships with academia, strong confidence in the traditional brand, willingness to learn from one’s mistakes, and a strong devotion to the encyclopedia as a public service project are the keys to this success.

Historical background

As in many other countries, encyclopedias were a central part of the Norwegian nation-building project. After 500 years as a subordinate to Denmark and Sweden, Norway regained its full independence in 1905. The first general encyclopedia, *Illustreret norsk konversationsleksikon* (*Illustrated Norwegian Conversational Lexicon*), was published by Aschehoug in 1907. Several other general encyclopedias followed, by various publishing houses: Gyldendal published the first of three editions of *Gyldendals Konversationsleksikon* in the 1930s, and Cappelen challenged the first two with the publishing of their cheap 1,539-page, single-volume encyclopedia *Nyco Konver-*

¹ Naja Bentzen. »Europe’s online encyclopaedias: Equal access to knowledge of general interest?«, European Parliamentary Research Service, Brussels, 2018. Accessible here: [http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/614657/EPRS_IDA\(2018\)614657_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/614657/EPRS_IDA(2018)614657_EN.pdf)

sasjonsleksikon in 1935, renamed *Cappelens leksikon* in 1939, *Cap leksikon* in 1978, and later known as *Caplex*. In 1932, the labour movement produced their own encyclopedia, the *Arbeidernes leksikon* (*Workers' Encyclopedia*), aiming to »break the bourgeoisie's monopoly on dissemination of knowledge«, a tradition carried on by leftist publisher Pax with the publication of *PaxLexicon* in 1978–1981. All encyclopedias had been published in Bokmål (»Dano-Norwegian«) until 1948, when the first Nynorsk language (Neo-Norwegian) encyclopedia was published – the ten-volume *Norsk allkunnebok* (*Norwegian Book of All Knowledge*). The *Norsk biografisk leksikon* (*Norwegian Biographical Encyclopedia*, first edition) was first published by Aschehoug in 1921, covering 5102 biographies over 19 volumes. Several other small or topical encyclopedias were published well into the 1990s.

In 1975, Norway's two largest publishing houses, Aschehoug and Gyldendal, merged their encyclopedias, and created the dedicated publishing house Kunnskapsforlaget (»House of Knowledge«) to publish the *Store norske leksikon* (*The Great Norwegian Encyclopedia*). Over the next 30 years, the *Store norske leksikon* was published in four editions: 1978–1981 (12 volumes), 1986–1989 (15 volumes), 1995–1999 (16 volumes), and 2005–2007 (16 volumes). The first three editions were huge economic successes, making Kunnskapsforlaget a »cash cow« for its owners.

The fourth and last edition, however, with its 150,000 articles, 130,000 reference articles, 16,000 illustrations, and 18,000 literature references, was an economic disaster. The Norwegian public was not interested in paying large sums of money for a printed encyclopedia that was outdated as soon as it left the press, and free online sources of general knowledge, such as *Wikipedia*, were on the rise.

The SNL was launched online already in 2000, as one of the first Norwegian websites with a paywall. *snl.no* was relaunched in 2009, as the old content was replaced with the content of the 2005–2007 paper version. The paywall was dropped and the encyclopedia offered free of charge, but with advertising. Editorial control and signed articles were combined with the option of contributions from users who registered under their full name.

The last paper edition had driven Kunnskapsforlaget near bankruptcy, and advertisement revenue was nowhere near levels where it could pay for keeping *snl.no* profitable. Hence, in 2010, the publishing house announced that they would discontinue the entire encyclopedia, which led to a heated public debate, in newspapers and in Parliament: was the content and heritage of the SNL too important to be lost? Was financing an encyclopedia, which until recently had been not only commercially viable, but extremely profitable, a responsibility of the state? The thought of a fully state-financed online encyclopedia was not attractive to many politicians, and several argued that *snl.no* could never compete with *Wikipedia*, and hence would be a waste of public money. The SNL was »a giant« that had »mercilessly been side-

tracked by itself, by competition, and by its users«, said one parliamentarian.² »Running an encyclopedia is not a natural task for the state«, said the minister of culture, who had just turned down an application for funding from Kunnskapsforlaget.³ *Wikipedia* was viewed as a more flexible, democratic, and engaging option and it was free and demanded no public resources.

The debate, however, also generated new ideas about who could finance and manage a verified source of general knowledge in the Norwegian language online. The National Library was one mentioned actor, while others included private foundations active in financing culture and freedom of expression and the universities. Norway's two largest private foundations, *Fritt Ord* and *Sparebankstiftelsen DNB*, took over the content, established a new organization and a young editorial team in 2011, and funded the transition period until a more permanent solution could be found. An office was established in the old stables next to the villa housing the Norwegian Academy of Science and Letters. Three years later, in late 2014, the Norwegian universities decided to take collective responsibility for the encyclopedia, and established the Great Norwegian Encyclopedia Association. The two mentioned foundations, The Academy and the Norwegian Non-Fiction Writers' and Translators Association (NFFO) were central in establishing the association, and continued as members.

University model

The Great Norwegian Encyclopedia has been owned and published by the Great Norwegian Encyclopedia Association since 2015. The association is registered in the Norwegian non-profit registry, and is a private and independent, membership-based organization, where the members are institutions paying an annual membership fee based on their total number of employees.

The membership base has been gradually expanded during the years that the association has existed, and in early 2019 included all of Norway's nine universities; the Norwegian Meteorological Institute; the Norwegian Academy of Music; the National Museum of Art, Architecture and Design; and the National Library, in addition to the foundations *Fritt Ord* and *Sparebankstiftelsen*, the Academy of Science, and the NFFO. The membership fee provides about 65 percent of the annual budget of just below € 2 million, while 30 percent comes from the state budget. 60 percent of the expenses are related to content production (payments to experts and

² Tajik, Hadia. Parliamentary debate 1 June 2010: <https://www.stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Referater/Stortinget/2009-2010/100601/1#a5>

³ Huitfeldt, Anniken. Parliamentary debate 1 June 2010: <https://www.stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Referater/Stortinget/2009-2010/100601/1#a2>

authors, software development, etc.), 30 percent are salaries and other expenses of the editorial team, and 10 percent other expenses (rent, administration, etc.).

Norwegian universities have three major obligations to society: research, teaching, and dissemination of knowledge. The latter obligation is central to the SNL's association model: through their membership in the SNL, the universities make sure that updated general knowledge is easily available to the public online. The encyclopedia has hence become one of their main channels to reach the general public, and the model has support and commitment at the highest level at all universities. If the universities themselves individually were to try to establish online platforms for their academics to spread knowledge to the public, their efforts would be more costly and have limited reach.

The encyclopedia now has a stable organizational structure with connections to the academic institutions, and this safeguards the national encyclopedia for the future. The university model also lends credibility to the SNL, as readers are made aware that the country's foremost academic institutions are behind the encyclopedia. The model also secures an institutional independence for the encyclopedia and its editorial team, which also creates credibility. The SNL adheres to *Redaktørplakaten*, which is a joint declaration by the Norwegian editors' association and the owners of media organizations, establishing and defending editorial independence from interference by the owners. This means that neither the owners/members of the association nor the board of the association can instruct the editor-in-chief in anything related to the content of the encyclopedia. This kind of independence is vital for a 21st century public service project to gain and maintain public trust.

The content

The Great Norwegian Encyclopedia Association currently publishes four different encyclopedias: *The General Encyclopedia* (*Store norske leksikon* – SNL) with about 162,000 articles; *The Great Encyclopedia of Medicine* (*Store medisinske leksikon* – SML) with almost 13,000 articles; the *Norwegian Biographical Encyclopedia* (*Norsk biografisk leksikon* – NBL) with 5,855 biographies of central personalities in Norwegian history, published between 1999 and 2005; and *The Encyclopedia of Norwegian Artists* (*Norsk kunstnerleksikon* – NKL) with 3,819 biographies published from 1982 to 1986, which is owned by the National Museum but hosted by the SNL. While the first two are subject to constant updates and revisions, the content of the latter two is kept as first published.

All four are published at *snl.no*, where one search can generate results across all of them. Nevertheless, each article bears the visual trademarks and title of the encyclopedia to which it belongs, as they (and especially the medical encyclopedia)

are strong brands within certain professions and the general public. Having all encyclopedias published at the same URL is important, as it makes the content more visible and accessible. For example, high readership numbers for articles on the history of religion in the SNL mean that less-read articles on, say, obscure medical conditions in the SML are ranked higher in Google search results than they otherwise would be.

While the front page is an important gateway to the SNL's articles, it is far from the most important: in 2018, 89 percent of all visits to *snl.no* were the result of a Google search. The SNL does not pay to make its articles more visible in Google search results. The focus has rather been to make both code and content as clear as possible in order to make sure that the encyclopedia's articles turn up in Google.

Of the 175,000 articles in the SNL and SML, about 66 percent had been updated on 1 January 2019, since the last paper edition. Most of these have been updated and revised several times. About 33 percent had not been updated since being published online in 2009. However, since the editorial team has prioritized updating the most-read articles, these statistics look very different when we look at readership numbers. Less than 9 percent of read articles have not been updated, which means that 91 percent of the time a reader visits the SNL, they read an article that has been updated since it was first published 10 years ago (and 62 percent of articles read in 2018 were updated in 2018). Additionally, many of the remaining nine percent are articles that do not necessarily need updates, such as glossary and reference articles. The SNL had nearly 80 million page views in 2018, compared to a population of about 5 million (see Graph 1).

All articles are signed by one or several authors, accompanied by a photo and institutional affiliation. Most of the authors also have a biographical text about their experience and academic credentials at *snl.no*. Every revision of every article is also easily available. A click at the bottom of each page reveals who has written which part of the article, who has proposed changes and, equally important, who has approved them. Over time, the update history forms the story of who has defined the Norwegian knowledge heritage. This radical transparency is central to the SNL's success, and was also a prerequisite set by Parliament in their notice to the subsidy scheme for the online encyclopedia: »The Committee would like to point out that transparency about the author is essential for the exercise of direct source criticism, and thereby provides quality-assurance and improvement to live encyclopedias.«⁴ This is central, as the mastering of source criticism is an increasingly important prerequisite to becoming knowledgeable.

⁴ Parliamentary budget proposal for 2014: »Innstilling fra familie- og kulturkomiteen om bevilgninger på statsbudsjettet for 2014, kapitler under Barne-, likestillings- og inkluderingsdepartemen-

The public service the SNL provides to the Norwegian public encompasses verified facts and knowledge that is easily accessible online and written in a language and using terminology and words they can understand.

The regularly updated status of the SNL is a result of two factors: a self-developed publishing software which makes it easy to prioritize which articles to update and to make the updates quickly and easily, and a decentralized production model where ten editors manage almost 800 topic experts who write and assess the articles. The following two sections are devoted to these two pillars of the SNL model.

A production model for the 21st century

At the start of 2019, the SNL had 10.5 people working in the editorial team in Oslo. Each editor is in charge of a certain part of the encyclopedia, which is divided into 3,600 categories, where each article belongs to only one category. Each individual editor is responsible for between 10,000 and 22,000 articles, but most have additional responsibilities within areas such as management, budgeting and finance, administration, technical development and events, communication and public relations. The SNL has no administrative employees.

The articles are written by external topic experts (*fagansvarlige*), who are not employees of the SNL, but are paid once a year based on their production in that specific year, calculated by characters, multiplied by a standard rate set by the Non-Fiction Writers' Association, which is currently 0.461 kroner (about € 0.04) per character. At the start of 2019, SNL had 766 topic experts, most of whom are academics employed at the universities that are members of the encyclopedia association. It is through these topic experts that the universities fulfil their obligation to disseminate the science and knowledge they produce.

For some less academic categories (e.g. car brands, sports, entertainment etc.), the SNL also hires more generalist topic experts, including former encyclopedia editors, journalists, teachers, and others who have a proven expertise within the area. The topic experts are assigned to one or more categories, and only one person can be responsible for each category. He or she has his or her name, institutional affiliation and profile picture publicly displayed on each article within the category for which he or she is responsible. It is the topic expert's job to control, update, revise and expand the articles within his or her category, and to author new articles when needed. This is done in close cooperation with his or her editor.

tet, Kulturdepartementet og Kunnskapsdepartementet (rammeområde 2 og 3)«: <https://www.stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Innstillinger/Stortinget/2013-2014/inns-201314-014/4/>

The main task of the editors is to recruit, instruct, guide and help the topic experts, and to edit their articles. The editors generally do not review the topic experts' edits or new articles before publication, and this is where the SNL's production model stands apart from most other encyclopedias: the quality control lies in the recruitment and initial instructions of the topic expert, not in each text they produce. All topic experts are allowed, both as policy and technically, to publish directly. Only after publication will one of the editors review the article to make improvements to language or style, or to give feedback to the topic expert on additional work needed but, at this point, the unreviewed article may have been accessible online for a day or two.

This decentralized production model clearly creates room for hiccups. There have been instances where topic experts have published articles and edits that are factually wrong, and spelling errors and other mistakes occur. However, central to the SNL's policy lies the principle that this risk is offset by an enormous upside, which is an efficient way to keep almost 200,000 articles updated and relevant for the public. If editors were to review and give feedback to every single edit done in the encyclopedia, it would be nowhere near as updated as it is today; the SNL would not be relevant to the public it serves, and financing the encyclopedia would be much less attractive for the stakeholders.

Additionally, in the SNL's contracts with each author, the SNL reserves the legal rights to update the articles. This means that the SNL and any other or following topic expert the editorial team sees fit for the task has the full right to build on, edit, adjust, and delete the articles that are already there, and authors are added to the article's author list. This, again, is a central tool to keeping the encyclopedia updated and relevant. Limiting updates to being done only by the original author, getting permission from the original author to have someone else edit their previously written articles, or, even worse, soliciting completely new articles from a new author even if the existing article only needed minor updates or changes, only out of copyright considerations, would be both extremely time-consuming and financially unsustainable.

Finally, the articles in the SNL are generally not referenced. As the articles are not meant to present the latest breakthroughs within a scientific field or argue for a specific standpoint within a scientific debate, but rather present and explain the basics and the general consensus on a topic, the article authors themselves are defined as primary sources. This policy is also a consequence of the SNL's obligation to the public – firstly, if authors had to source every single piece of information in the article, updating the encyclopedia would be much more time-consuming and less attractive for the topic experts. Secondly, from our experience with focus groups and classroom visits, and from other public information and media projects, people

tend to think that articles with many inline references are less trustworthy and carry less authority, as the author leaves the impression that he or she has to rely on other people to make factual statements. In other words, if an encyclopedia both wants to stay updated to serve the public and gain people's trust, citations should be avoided, and the SNL follows this principle.

The SNL's editorial team is a group of relatively young people with varied experience and competence. They hold degrees in biology, physics, sociology, international relations, history, psychology, medicine, music, etc., most with Master's degrees and two with PhDs. Their most important skill, however, is the ability to make texts about complicated issues readable and understandable to the average person.

Contributing to SNL is not limited to the hand-picked experts, however. Everyone who sets up an account on *snl.no* under their full name can suggest new articles and edits to existing ones. This is done by clicking a link at the bottom of each article, saying »Suggest changes to this article«. The user can write his or her edits directly into the text, whether these are full paragraphs or just updated numbers or corrections of misspelled words. Both the topic expert and the editor responsible for that category receives a notification, and can choose to accept, edit, or reject the suggestion. In this way, the SNL tries to balance quality control by experts with public participation.

This decentralized, trust-based production model with a small editorial team and 766 independent topic experts is the main reason why more than 35,000 articles in the SNL were updated in 2018 alone. However, this could not have been done without the purpose-made, self-developed publishing software that has been continuously improved since 2010, and which is discussed in the next section.

A purpose-made publishing platform

A modern encyclopedia is entirely dependent on a good technical platform. The SNL has created its own system for managing content and production, specifically tailored to create an online encyclopedia. It is based on Ruby on Rails and PostgreSQL, was first launched in 2010, went through a major revision in 2016, and has since been continuously improved. Over the course of eight years, the SNL has spent about € 2.5 million on the platform.

The basic role of the system is, of course, to give both editors and external topic experts easy access to publishing and revising articles and photos, but it also does much more. It keeps track of all revisions of every article, making the complete history of each article accessible to everyone, in line with the SNL's policy of radical transparency; it tracks readership figures for every article, creating vital statistics

that help editors and topic experts prioritize which articles to work on first; it keeps track of the different roles of authors, editors, assistants, and topic experts, giving them access to different levels of editing tools to make sure that only authorised persons within a particular category can update articles within that category; it helps create task lists for the experts; it calculates payments and handles »payment ceilings«; it handles comments and user contributions and much more. In other words, the publishing system is the core of the encyclopedia, and makes it possible for the staff of 10 to manage 766 topic experts and 175,000 articles.

The encyclopedia has a number of distinctive needs because of our decentralized production model, and the publishing system is a result of that. It must be clearly defined who is responsible for each article, the system must keep track of who has updated what, who will get paid for it, and whose responsibility it is to approve or decline user contributions and give answers to comments.

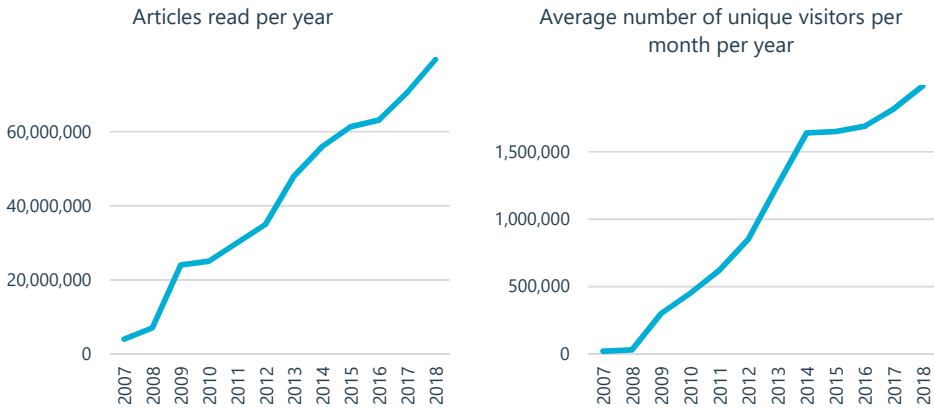
The SNL's public success

Establishing an independent, non-profit, membership-based, university-owned encyclopedic organization, with a young, technically minded editorial team to manage a decentralized production model with 766 topic experts through a purpose-made and constantly developed technical platform has reaped great results.

Before removing the paywall, *snl.no*'s unique users per month could be measured in the tens of thousands (Graph 1). After opening up in 2009, that number rose rapidly to almost 300,000, and has climbed steeply ever since. In 2017, *snl.no* passed two million unique users per month (calculated as an average of ordinary school months) and, in January 2019, it set a new record with 2.45 million unique visitors in that month alone. This makes *snl.no* the second largest non-commercial Norwegian website, only surpassed by the public broadcaster NRK, Norway's largest media house.⁵ The number of articles read per year has almost quadrupled, from about 23 million in 2009, the year the paywall was removed, it passed 60 million in 2015, 70 million in 2017, and reached 80 million in 2018.

The most read individual articles are closely related to school curricula. Over the last few years, the five major world religions, Christianity, Islam, Hinduism, Buddhism, and Judaism, have all been at the top of the list. History articles, such as The Cold War and World War II, are also among the most read, and so is the history of Norwegian literature. By category, however, medicine is by far the most read topic, a result of people's urge to find out whether they have the symptoms of a certain disease, what their uncle died from, what their doctor really tried to tell them, etc.

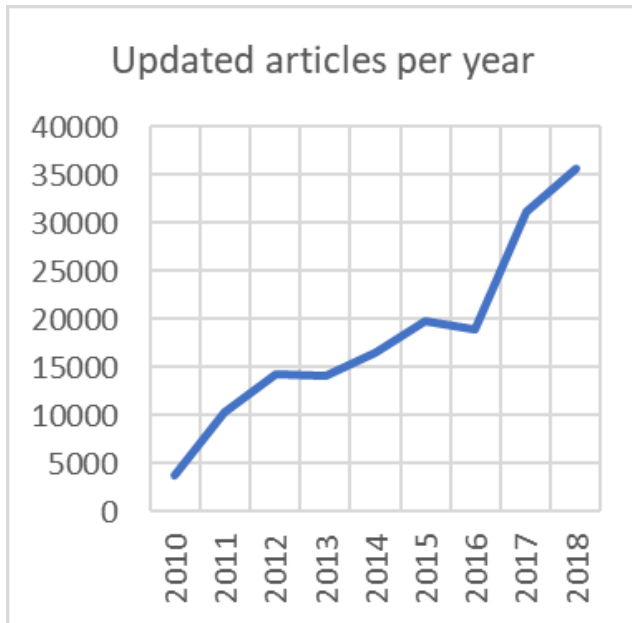
⁵ Calculations based on Kantar TNS Media Ranking (*'TNS-listene'*) and Google Analytics.



Graph 1.

The SNL's increased readership is mainly a result of the combination of three factors. Firstly, the piece-by-piece improvement of important and much read articles, especially those central to the school curriculum. This creates trust among the readers, and makes them return to the encyclopedia for information on other topics. The second factor is the work done by the SNL to create trust especially among teachers, students and school pupils, who make up the SNL's largest user group. The first two factors are closely related to the third – the more read articles on *snl.no* are, the more *snl.no* is recognized by Google as a trustworthy and popular source, which again lifts articles on *snl.no* higher in Google searches. Google's algorithms have thus been an important factor in the SNL's growth, and 89 percent of the articles read are results of Google searches. These three factors work together in a virtuous circle, or maybe rather a spiral, each reinforcing the others to create steadily rising reading numbers.

The pace of updating the encyclopedia has also gone through a rapid development over the last few years. In 2010, the year when the new organizational model was established, the editorial team and topic experts were able to update less than 5,000 articles (Graph 2). This steadily increased to around 18,000 in 2016. In 2017, the year when several new editors were hired, new content management tools were introduced to the publishing system and some semi-automated updates were made, this increased by 77 percent to more than 30,000 articles; 35,000 articles were updated in 2018.



Graph 2.

The number of active contributors, both those recruited as topic experts and others, has also increased steadily over the years, from around 400 in 2010 to more than 1,300 in 2017. This trend marks a stark contrast to the development that *Wikipedia* has gone through in the same period. *The English Wikipedia*, by far the world's largest, peaked in 2007⁶ and has fallen since, even though the number of core contributors, the so-called »very active editors« (more than 100 edits per month) seemed to stabilize in 2015 at just below 3,500⁷. *The Norwegian Wikipedia* peaked in 2009, when just below 700 contributors made five or more edits. This has been steadily dropping since, to less than 400 in 2015, the last year when Wikimedia Norway published these numbers.⁸ It is also worth remembering that the SNL's contributors are handpicked, proven specialists within their fields, writing and editing under their full names, while *Wikipedia*'s contributors are self-recruited people usually publishing under pseudonyms.

⁶ Aaron Halfaker et al. (2012). »The Rise and Decline of an Open Collaboration System: How Wikipedia's Reaction to Popularity Is Causing Its Decline«. *American Behavioral Scientist*, vol. 57, 5: pp. 664–668. (Available here: https://www-users.cs.umn.edu/~halfaker/publications/The_Rise_and_Decline/halfaker13rise-preprint.pdf)

⁷ Wikimedia Foundation 2017: <https://blog.wikimedia.org/2015/09/25/wikipedia-editor-numbers/>

⁸ Wikimedia Foundation 2015: <https://meta.wikimedia.org/wiki/File:Stats-nowiki-2015-08-25-5-editors.png>

The SNL's model also provides an opportunity to contribute actively to pluralism in public dissemination of knowledge and science. For example, editors work actively to recruit more women as authors and topic experts, as they are generally underrepresented on other platforms. There is still some way to go. In January 2018, 31 percent of the SNL's topic experts were women, and the goal is to get close to 50/50. In 2011, only 13 percent of *English Wikipedia's* contributors were women.⁹ Only ten percent of contributors across *Wikipedia* projects in 2018 were women,¹⁰ and it is estimated that the percentage of women is even lower among the »top editors«.¹¹

Handpicking by a centralized editorial team versus self-recruitment can have large consequences for the content produced. A University of Oxford study from 2011 revealed how 84 percent of articles across *Wikipedia* (all languages) tagged with a location were about places in Europe or North America, and that »Antarctica had more entries than any nation in Africa or South America«.¹² Even a small, but well-run editorial team can make priorities to produce an encyclopedia that is more balanced in its presentation of reality. One case in point: as the editorial teams behind the paper versions of the SNL that were highly dominated by middle-aged men, the current editors have worked specifically on recruiting scholars who could write about topics important to both Norwegian history and our current society that were not the focus of previous editors, e.g. handicrafts and other topics traditionally viewed as »women's issues«.

Media references is another area where the SNL's increased popularity is visible. While the encyclopedia was referred to in 3,640 news articles in Norwegian media in 2010, that number had risen by 82 percent by 2018, with 6,649 news references (Graph 3). A bump in 2014 was due to the public debate about establishing the encyclopedia association, which was closely followed by the media. This trend is also the opposite of what *Wikipedia* has experienced over the same period: it reached a peak in 2012–2014 with just more than 16,000 news references, but fell below 12,000 in both 2017 and 2018, a decline of more than 25 percent.¹³ Based on the number of

⁹ »Define Gender Gap? Look up Wikipedia's Contributor List«, *The New York Times* January 13 2011. <https://www.nytimes.com/2011/01/31/business/media/3link.html>

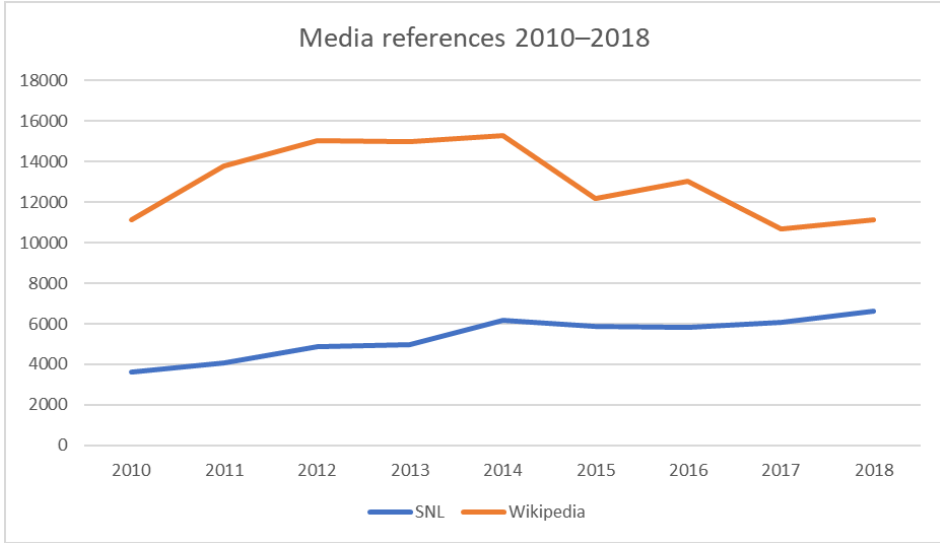
¹⁰ »Gender Bias on Wikipedia' by Wikipedia« https://en.wikipedia.org/wiki/Gender_bias_on_Wikipedia Accessed January 26 2019.

¹¹ »90% of Wikipedia's Editors Are Male—Here's What They're Doing About It«, *The Atlantic* October 25 2013. <https://www.theatlantic.com/technology/archive/2013/10/90-of-wikipedias-editors-are-male-heres-what-theyre-doing-about-it/280882/>

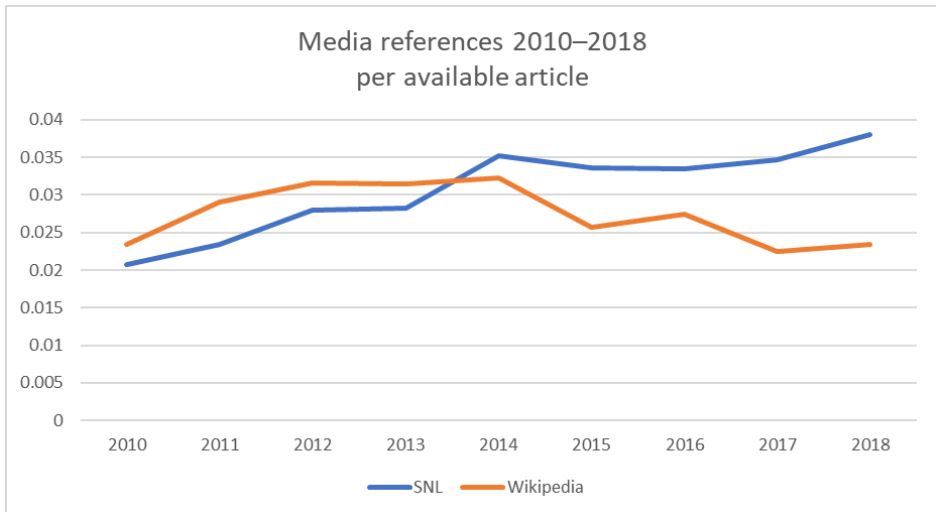
¹² »The Decline of Wikipedia«, *MIT Technology Review* October 22 2013. <https://www.technologyreview.com/s/520446/the-decline-of-wikipedia/> (Study available here: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-9663.2009.00563.x>)

¹³ Numbers collected from Retriever media insight service (<https://www.retriever-info.com/>).

articles the *Norwegian Wikipedia* and SNL have available to reference, the SNL has had more media references per available article since 2014 (Graph 4).



Graph 3. References made to the SNL and *Wikipedia* in Norwegian print and online newspapers per year. Source: Retriever.

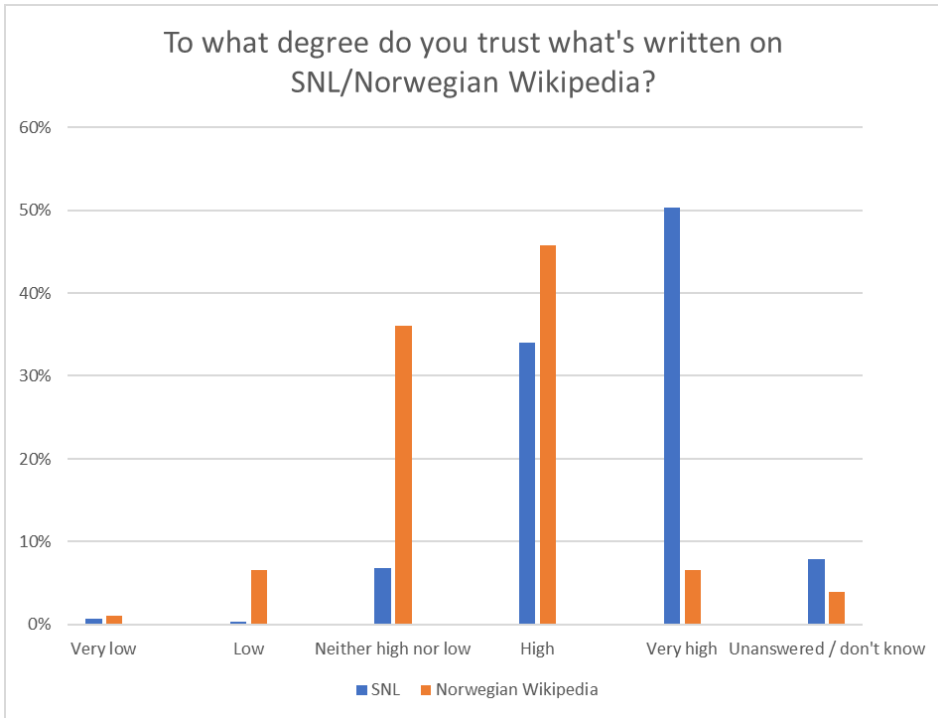


Graph 4. References made to the SNL and *Wikipedia* in Norwegian print and online newspapers per year, divided by number of available articles in each encyclopedia. Source: Retriever.

All of this has resulted in a high level of trust towards the SNL among the Norwegian public, which is evident in a public opinion poll conducted in January 2019.¹⁴ Of those who knew about the SNL, 84 percent said they could trust the content to a high or very high degree, while only one percent said to a low degree. The numbers for the *Norwegian Wikipedia* were 53 and eight percent, respectively, while 40 percent were not sure (see Graph 5). Asked which they trust more than the other, 75 percent said SNL (somewhat or completely), while only five percent said *Wikipedia*. 87 percent replied that they agreed somewhat or completely with the statement that »I have great confidence in that what is written in SNL is correct«, while 53 percent said the same about *Wikipedia*. Five percent said they had found incorrect information on *snl.no*, while 50 percent said the same about *Wikipedia*.

Another sign of trust is the use of the SNL in schools, both by teachers in class and during final exams. 2018 was the first year when all 18 counties (the middle administrative level in Norway, responsible for upper secondary education) allowed their students to use *snl.no* during final exams. That number had until then increased steadily, but in 2017 two counties still did not allow their students to access the SNL during final exams. The SNL cooperates with the schools to make this possible: A separate »no cheating« version of *snl.no*, where article comments, user suggestions and internal messaging is blocked, is made available to the schools' IP-addresses, while the full version of *snl.no* is blocked for the same IP-addresses. Editors work closely with schools and students to learn how to make the content more accessible and understandable for that group of readers. Special thematic pages where curriculum relevant articles are collected are created, and a special Facebook group for interaction between the SNL's staff and teachers around the country has been established.

¹⁴ Conducted by *Opinion for Store norske leksikon*, 16–25 January 2019, 1,007 respondents.



Graph 5. Percentage of Norwegian population trusting the content of the SNL and *Norwegian Wikipedia*, respectively. Opinion poll conducted by *Opinion* for SNL in January 2019.

Challenges

Resources are always the main concern for any organization. There is no doubt that the quality of the content of the encyclopedia would be higher if the organization had more funds to hire more editors to manage more topic experts. It will be hard to keep up the pace of the last few years without adding more editors to the staff. Nevertheless, the last couple of years have shown that impressive results can be achieved even with limited resources, through the combination of human competency and digital tools.

The big part of the success owed to the SNL's ranking on Google makes the SNL vulnerable to changes in Google's algorithms and/or policy. This vulnerability is hard to mitigate. But one could argue that the longer the SNL is taking advantage of today's upside of high visibility on Google, the stronger the brand becomes and the less dependent on search results the SNL becomes to attract readers. The SNL might actually already have turned the corner, as the percentage of visits generated

by Google has decreased somewhat over the last couple of years, from close to 95 to 89. This can probably be attributed to increased use in schools.

Furthermore, it is important to remember that, because of the SNL's strong brand, many google »[term] + snl« to find an article, instead of going to *snl.no* and then entering the term into the page's internal search engine, as the latter involves more actions and is slower. The actual percentage of visits coming from unbiased Google searches is hence impossible to know.

Conclusion and lessons learned

As stated in the introduction, the main task of this article is to present the story of *The Great Norwegian Encyclopedia's* transition over the last few years in order for similar institutions in other countries to learn from it, and maybe copy what's relevant to them, to be able to achieve the same kind of status as the SNL has achieved in Norway. Most encyclopedias in Western Europe have gone through the same challenges that the SNL experienced a few years ago, and some are even going through them right now: the lack of a business model to finance a digital encyclopedia on the one hand, and the huge demand for expert-written, quality-assessed content and dissemination of knowledge and science online in the face of fake news, opinions presented as facts, conspiracy theories, and propaganda. In Eastern Europe, where many encyclopedias are state-owned or sponsored, production models are stuck in the 20th century: They are well staffed, but resources are still spent on printing books and digital presence is poor or non-existent. It is clear that a modern encyclopedia cannot be run as a traditional business, but has to be viewed as a digital public service project.

The crisis the SNL went through between 2010 and 2014 is similar to the situation many other European encyclopedias have found themselves in over the last few years, and some are still in the middle of them. Creating a model where academia takes collective responsibility for one common encyclopedia online has proven a success. This is hence the most important lesson that the SNL can provide for similar encyclopedias in other countries.

By going from a privately owned 'cash cow' to a publicly funded, independent public service project, the objectives of the organization has also changed. The SNL exists for its users, and must be written in a way that they can understand. It must provide the absolute basic information about a term or subject, but also be able to give deeper knowledge for people who are already well-oriented. Hence, academics who are the best in their field, but are not able to write in a way which is understandable to an average 18 year-old or their uneducated grandmother is not the kind of author a modern online encyclopedia should hire. Picking topics to expand and

update should also be based on what we know about demand – do not start with the most complicated academic issues, but build readership and trust through well-written topics that many people seek information about and that one or two expert authors can do better than a collection of self-recruited, volunteer *Wikipedia* editors. In other words, one should start with the history of one's own country and neighbouring countries, and leave basic geographical information, the discography of ABBA and sports biographies to *Wikipedia* (for now).

If a centralized encyclopedia is to be kept reasonably updated and relevant to its readers, an effective and intuitive publishing platform is essential. In order to be efficient, editors should keep most of their work far away from Word documents, and try to keep all work within the platform. The SNL has spent huge resources on developing such a platform, which will in 2019 for the first time be adopted by another encyclopedic institution, the *Trap* statistical-topographical encyclopedia of Denmark and *Den Store Danske Encyklopædi* (*The Great Danish Encyclopedia*), now both published by the newly created non-profit organization *lex.dk*, after Danish publisher Gyldendal decided to discontinue the digital *Den Store Danske* in 2018 due to financial difficulties.

There might be other encyclopedias, apart from the SNL, that have also developed good publishing platforms, which means that encyclopedias should seek cross-border technical cooperation rather than trying to invent their own system. The more encyclopedias participate in the development of one purpose-made platform, the lower the costs, and the more resources are freed up to creating great content, which is the core of our obligation to the public.

Lastly, it is important to recognize that the brand names of Europe's encyclopedias are very strong. These brand names should follow the encyclopedias as they go online, and not be changed into shorter, fancier names to try to create a more 'modern' image. Our credibility and heritage are our most important assets in combating fake facts online, and that credibility and heritage are carried by our brands that people have known for decades, if not centuries. Concentrating several encyclopedias under one brand at one URL is also an important lesson learned by the SNL. This makes sure more people will discover and trust the content of all articles.

While the format of encyclopedias has changed, their mission – to serve the people as a gateway to understanding the world that surrounds them – has not.

KAKO IZGRADITI ENCIKLOPEDIJU ZA 21. STOLJEĆE: POUKE IZ *VELIKE NORVEŠKE ENCIKLOPEDIJE*

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SAŽETAK: Nakon više od 100 godina postojanja, *Velika norveška enciklopedija* doživjela je veliku krizu u razdoblju od 2010. do 2014. jer je tranzicija u novu, digitalnu stvarnost postala komercijalno neodrživom za njezina izdavača. Stoga je zajedničkom inicijativom norveških sveučilišta osnovano udruženje Great Norwegian Encyclopedia Association te novo uredništvo. Ono je preobrazilo enciklopediju u uspješno online izdanje s ažuriranim, visokokvalitetnim člancima koje su razmotrili i ažurirali vodeći norveški znanstvenici. Partnerstvo s akademskom zajednicom, namjenski softver, decentralizirani model proizvodnje i pozitivna reputacija izvornoga izdanja pokazali su se ključnima za izgradnju ove opće enciklopedije, čije bi iskustvo moglo biti od velike koristi za institucije sličnih namjera diljem Europe.

Ključne riječi: Velika norveška enciklopedija; *mrežna enciklopedija*; *akademsko partnerstvo*; *transparentnost u znanosti*



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