

1. Excellence

1.1. State of the art, knowledge needs and project objectives

From its inception in the 19th century, the fundamental procedure of national literary histories has been to select canons of representative texts that can foster a sense of national identity. Recently, book historical studies have shown that national literatures were less national than believed, and quantitative studies of digitized literary archives have questioned the representativeness of established national literary historical narratives (Damrosch 2003, Bode 2019). The discipline of national literary history is faced with an emergent problem of scientific as well as educational urgency: Scientifically, it is becoming evident that national literary history writing has eclipsed important dimensions of intercultural exchange. Educationally, national literary history is becoming untenable as a protocol for community building, because the insular vision of the nation upon which it rests resonates badly with today's ethnically diverse student populations. *ImagiNation* addresses this problem by rethinking national literary history and its community-making potential in a digital context.

In Norway, several studies have claimed the existence of unnoticed international dimensions in Norwegian literary history (Oxfeldt 2012, Fulsås and Rem 2018, Sondrup and Sandberg 2017). However, these studies have revolved around a few canonized authors, and they have not considered the epistemological consequences of digitized archives. Consequentially, a critical reassessment of the "Norwegianness" of Norwegian literary history is still lacking. Meanwhile, policymakers and educational programs use nationalistic narratives of literary history for purposes of national identity production. If literary history shall be a relevant community-making resource, we urgently need historiographical and educational approaches that are adequate to our globalized and digital present.

ImagiNation is a research project that will combine text-mining tools, digital maps and perspectives of critical literary geography, to accommodate this knowledge need. The project will uncover, model and study, how representations of geographical space were negotiated in Norwegian literature from 1814 to 1905. This period marks the parallel rise of the Norwegian nation state with modern literature, globalization, and new means of communication. Our core idea is, that literary representations of geographical space are not neutral settings, but *imagined geographies*, deeply embedded in historical and political contexts. As the National Library has digitized its complete collection of books, Norway is the first country in the world to have its *entire* written cultural heritage digitally available. With this resource, we can chart the historical development of imagined geographies in literature by collecting, counting, and visually mapping every toponym (placename) mentioned throughout this formative period. These toponyms are not confined to Norwegian territory but refer to places all around the world. As such, they demonstrate that Norwegian literature was more internationally oriented than what established literary historical research and teaching has led us to believe. By unlocking this unseen dimension of our written cultural heritage, *ImagiNation* will radically renew our understanding of literature and nation building. Our objectives are:

- to identify the national and global geographies that circulated in Norwegian literature from the year of the constitution to the declaration of independence;
- to identify and analyze the historical impulses that caused the making and shifting of these imagined geographies;
- to identify how textbooks in literary history have passed on imagined geographies to form identity-producing national narratives and stereotypes;
- to identify how teaching in digital literary geography can renew literary history education in ways that avoid insular visions of the nation and promote a sense of global citizenship.

1.2. Novelty and ambition

Methodological advancements: Methodologically, we will break new ground from the onset. In a Norwegian context, digital humanities have not been sufficiently integrated in literary studies. Despite having one of the world's most comprehensive archives and infrastructures for digital literary studies, Norwegian literary scholars have so far neither mustered the technical skills, nor the theoretical insights needed to creatively integrate this resource into research and teaching. Internationally, several projects – such as ETH Zurich's *A Literary Atlas of Europe* at (2006–), University of Amsterdam's *Encyclopedia of Romantic Nationalism in Europe* (2008–2018), Lancaster University's *Spatial Humanities* (2012–2016) and *Chronotopic Cartographies* (2017–2020), and Stanford University's *The Emotions of London* (2015–2017) – have documented that integrating digitized textual sources with geographical perspectives can benefit our understanding of national identity production in literature (Piatti 2008, Leersen 2018, Gregory and Donaldson 2016; Murrieta-Flores et al. 2017; Bushell 2020, Wilkens 2013, Hauser et al. 2016). However, none of them have had digitized corpora representative of an entire national literature. There has been a considerable problem within digital literary history, that available digitized archives are not close to comprehensive. As a result, several studies have been criticized for making general claims to knowledge based on weak and random corpora (Bode 2017). The unique comprehensiveness of our archive allows us to transcend these shortcomings, by curating corpora from which we can generalize research results in ways that national literary studies have never been able to before. *ImagiNation* thus has the potential to expand literary historical and literary geographical thinking with new knowledge of how a nation in the making imagined itself in relation to its geographical surroundings, and to serve as a template for future scholarship on digitized national literary archives.

Empirical advancements: We will find, index, and study material that has never been accounted for, including forgotten Norwegian authors and translated foreign authors who were much read, but have never been considered part of Norwegian literary history. Recent studies in book history have revealed that book markets and reading habits were more international than what we have traditionally believed (Bjørkøy et al. 2019), but we know very little about where (and why) writers directed their geographical attention in literature. Our pilot study of Knut Hamsun's collected works indicates a clear political motivation behind the international distribution of toponyms in his writing (Boasson 2020). Hence, we expect to find that our national literature was more internationally oriented – and politically motivated – than what conventional literary historical scholarship has admitted.

Educational advancements: A nation's relation to its literary history is contingent upon literature's status, place and function in its educational system. A reconfiguration of literary history must thus also involve reassessment of educational practices. *ImagiNation* will closely integrate theoretical and methodological development in basic literary historical research with that of literary history education, and therefore potentially redefine how literary history is conceptualized and taught in Norwegian classrooms. The new national curriculum, implemented from 2020, requests that contextual and critical reading shall be a means to foster students' sense of democracy and citizenship (Udir 2019). Still, existing practices seem unprepared to accommodate this ambition. Literary education in Norway is still marked by transactional reader response theory and new criticism (Claudi 2019, Rødnes 2014), and *literary history education* remains an understudied field. Textbooks still construe literary history as a timeline along which authors represent aesthetic epochs. Newer studies from primary and secondary schools indicate that literary history is given little attention (Gabrielsen, Blikstad-Balas & Tegnberg 2017), and that students are often left reading alone (Ottesen & Tyssvær 2017). By offering a theoretical and methodological framework of digital literary geography for Norwegian literary history education, *ImagiNation* will contribute with a timely renewal of the scholarly and practical field.

A particularly ambitious part of *ImagiNation* is our effort to rethink the community-making potential of literary history, in line with UN's sustainability goal of promoting global citizenship through quality education (goal 4). In recent years, the UN's promotion of multilateralism and global citizenship has become threatened by an upsurge of nationalist sentiment (Guterres 2018; Garcés 2019). The urgency of this matter comes with a double call to educators and researchers across the humanities. On the one hand, there is a need to educate teachers and students who work against insular visions of the nation and misguided appeals to past moments of national greatness and cultural purity. On the other hand, we must still commit to historical knowledge that can foster a sense of belonging to a community. To scholarship and teaching of national literary history, this call is a challenge and an opportunity to assess if we can invest educationally and emotionally in our nations' written heritage without reproducing nefarious nationalistic biases. Our proposal is an answer to this call.

1.3. Research questions and hypotheses, theoretical approach and methodology

The core idea of *ImagiNation* is that imagined geographies – whether purely fictitious or with real world referents – bear witness to how writers and communities have conceived of themselves and their surroundings throughout history. The prospect of being able to model the imagined geographies of Norwegian literature from the year of the constitution to the declaration of independence, provokes the following over-arching research questions with accompanying hypotheses:

RQ1: What do the imagined geographies of Norwegian literature look like from 1814–1905? The first hypothesis is that the imagined geographies are more international in scope than what national literary histories have conceded so far. The second hypothesis is that the period's imagined geographies attest to antagonisms between opposing ideas of the nation and the world.

RQ2: Which historical impulses informed the geographical attention of writers throughout this period? The hypothesis is that the geographical attention of writers was informed by 1) the period's communication infrastructures; 2) historical events; 3) influential writers.

RQ3: How have imagined geographies from the period's literature been passed on and informed processes of national identity production in Norway? The hypothesis is that only selected parts of literature's imagined geographies were integrated into the nation building narratives of educational textbooks and literary histories.

RQ4: How can literary geographical teaching strategies benefit our students' understanding of and identification with our written cultural heritage? Our hypotheses are 1) that explorative engagement with digital resources that highlight how 19th century writers imagined a becoming nation in a globalizing world, will advance students' understanding of how cultural expressions produce social reality; 2) that a geographical approach to literary history will promote students' understanding that nation building is essentially a processes of intercultural exchange.

Methodology: The project is organized in five work-packages assigned with specific tasks, and each task requires different methodological approaches. Therefore, the following methodological explanation also outlines each wp.

The task of **wp1** is to prepare the project's main and reference corpora for spatial analysis and visualization within a GIS environment. Wp1 has a three-stage workflow: *the first stage* is corpus building. The archive currently holds 21 233 books from 1814–1905, ranging from mechanical handbooks to poetry. The books are not indexed according to genre, and we will therefore have to manually sift through the archive and sort every first publication into the following tentative crude categories: literary discourse (poetry, prose fiction, drama, and non-fiction), *translated* literary discourse, religious discourse, scientific discourse, geographical discourse, political discourse. Such

manual, rather than automatic, corpus building will secure accurate and scholarly classification of the material, which is imperative to conduct reliable analyses in the project's later phases. The corpus building will be conducted by way of an Application Programming Interface (API) in a Jupyter Notebook environment, through which we can access the archive as a list with meta data and links to every digitized text. The result will be a list of URNs (the unique address in the archive) with accompanying meta data. The functionality of the API allows us to automatically extract sub-corpora based on parameters such as author, gender, year, keyword, as well as reference corpora made up of books or newspapers, for comparison. To compare the imagined geographies of Norwegian literature with those of Norwegian literary history, we will also build a reference corpus comprising every national literary history book and every textbook used for literary history education published from 1814 to the present. The technical solutions for corpus building are ready for use.

The second stage in wp1 is geoparsing. This means to extract every toponym (placename) mentioned in our corpora, and to provide every toponym with a real-world reference with three coordinates: latitude, longitude, and time of publication, so that they can be plotted on digital maps. Our method of choice here is corpus linguistics (CL) and natural language processing (NLP), a sub-discipline of computer science, devoted to automatic analysis of human language by computers. Specifically, we will use an NLP tool called Named Entity Recognition (NER) that can extract names of locations, persons, corporations, etc. from unstructured text. A prototype of a NER for the National Library's archive already exists, but it needs refining to handle a 19th century corpus which normally has more optical character recognition (OCR) errors and varying spelling conventions than modern corpora. Our NER tool also extracts more abstract topoi (Paradise, Hell, the Ocean, the road), that cannot be given coordinates on a map. However, such topoi are important literary-geographical data that will be analyzed both quantitatively and qualitatively. To convert toponyms into unambiguous geographical identifiers, toponyms will automatically be cross-referenced with a gazetteer. This method will separate fictitious placenames and topoi from toponyms with a real-world reference. A similar method has proven efficient in the *Edinburgh Geoparser*, developed by the Language Technology Group at the University of Edinburgh. The result of this process will be a list of toponyms that are linked to the URNs from our corpora, and that can be plotted on digital maps; and a list of fictitious placenames and topoi equally linked with URNs and ready for data analysis in Python.

The third stage involves visualization. Since the data is now GIS-ready, the researchers in the project will be able to visualize toponyms from chosen periods and sub-corpora on digital maps at their convenience through an online map-based platform. In addition, wp1 will build a digital map for educational purposes that visualizes the year-to-year-distribution of toponyms in our literary discourse corpus throughout the entire period. The map will have interactive visualization functionalities to ease exploration of the content in the corpus, such as differentiate between toponyms with higher and lower frequency rates. It will also have a time bar to select single years or periods from 1814–1905, and filters through which users can display the map according to genre, author name, author gender, author nationality, translated literature, single work. It will also have links to the National Library's reading interface, to facilitate navigation from toponyms in a given year on the map to the digitized literary texts mentioning them. Fictitious places and topoi can be visualized in different ways, from network graphs showing frequent co-distribution of places in texts to manually and creative mappings of how topoi are distributed in a text or a corpus (see wp5).

Wp2–4 will combine in-depth analyses of shorter time intervals with a bird's eye perspective on the entire century. On the one hand, our articles and PhD-dissertations will conduct parallel enquiries of our research questions into three different time periods (wp2: 1814–1850, wp3: 1850–1880, wp4: 1880–1905). On the other hand, our co-authored book will span the whole period by historically

tracing the role and conditions of imagined geographies in processes of nation building. Our chosen periodization has three important functions: 1) It divides 91 years into manageable intervals. 2) It enables us to compare established epochs, and thereby identify if the spatial history that we are modelling offers other continuities and contingencies than those received from the traditional narrative of literature and nation building. 3) It allows us to compare the literary production of imagined geographies before and after historical events and infrastructural developments.

Wp2–4 will combine methods ranging from the quantitative dimension of counting toponyms and topoi to the qualitative dimension of hermeneutical text analyses. To analyze features and political biases (RQ1), we will use what Gregory and Donaldson (2016) call “geographical text analysis”. This involves plotting toponyms on digital maps (GIS) and using pattern recognition tools, such as hot/cold spot analyses. The benefit of such quantitative approach is that it offers a bird’s eye view on the “geographical investment” (Wilkens 2013) of literary texts within and across historical periods. The limitation of the method, however, is that it offers little knowledge of *how* toponyms and topoi were displayed in the literature. Therefore, we will also conduct digital collocation analyses through which we can measure the word patterns surrounding a given toponym over time, or measure which toponyms that often appear in the textual proximity of chosen keywords. The benefit of this method is that it adds semantic context to the quantitative study, e.g. “these are the most frequent words used to describe Germany throughout the 1870s”. However, collocation analysis can “only” count and calculate the actual words on the page and cannot hermeneutically interpret the context of a literary place description. Therefore, we shall also conduct close readings that analyze how and why chosen toponyms and topoi are represented in literary texts. Close reading provides in-depth understanding of how single texts and authors have imagined geographical space. It is a fruitful method to advance new hypotheses and research questions, but as a method for obtaining generalizable knowledge, close reading has serious limitations. By combining these levels of analysis, we will be able to identify connections, as well as discrepancies, between the quantitative dimension of NER and the qualitative dimension of hermeneutical text analysis.

To examine historical impulses (RQ2) that may have impacted the distribution of geographical attention throughout the period, we will compare patterns in the geographical distribution of toponyms before and after significant historical events; compare patterns in the geographical distribution of toponyms with historical developments in communication infrastructures (transport, postal, and telecommunication), and with the whereabouts and actions of chosen key writers (agents). These comparisons will be accompanied by media archaeological close readings that examine how communication technologies may have impacted chosen literary representations of space, and book historical investigations that trace the literary geographical influence of key authors in specific texts. Lastly, to study and discuss how the imagined geographies of literature may have influenced national identity production (RQ3), we will compare the distribution of geographical attention in our literary corpus with that of several reference corpora, the most important being a complete collection of Norwegian literary history textbooks from 1814 to the present.

The main task of **wp5** is to develop a theoretical and methodological framework for a geographical literary history education for lower and upper secondary school (RQ4). We will set up an action research design (Reason & Bradbury 2008), where teacher students, schoolteachers and students at NTNU’s partnership schools collaboratively explore the distribution and representation of places in Norwegian literary history, using different mapping activities to reflect on the ideological contexts of the nation building era and to compare its production of imagined geographies with today’s situation. The workflow has four stages: In the first stage, researchers will conduct MA level courses for teacher students in two different teacher training programs at NTNU. The courses have two purposes: to train

teacher students in theories of literary geography and digital mapping practices, and to design literary geographical teaching sessions. In cooperation with wp2–4 we will select texts suitable for lower and upper secondary school students. Our teacher students will be divided into three groups to create different teaching designs: one will focus on close readings of representations of place, another will prepare sessions where students engage with the digital map created by wp1, and a third will task students to visually map literary texts, inspired by earlier pedagogical experiments (e.g. Ivanchikova 2017, Luchetta 2016, and Lancaster University's *Litcraft*-project). For the second stage, we will recruit two MA students from each teacher training program that, together with researchers and schoolteachers, will implement the test sessions in four classes at NTNU's partnership schools. The test sessions will last over a period of two weeks and will provide data for our teacher students to use in their master theses. Although entire classes will be involved in the teaching sessions, we will establish two focus groups with 4 students in each class. Primarily, data will be collected through video recordings of the focus groups and thinking out loud protocols of singular students who "report their thinking as they do a task" (Pressley & Afflerbach 1995:1). Datasets will be triangulated with student interviews, field notes and physical material that students produced (e.g. maps of literary texts). In the third stage, MA students and researchers will analyze the data. The MA theses and experiences from our test-sessions will be used to redesign the teaching sessions for the following year, so that the process can be repeated twice. The results will go into the development of a geographical theory of literary history education, presented as a co-written book published with Universitetsforlaget.

Theoretical approach: The main theoretical framework of our project is literary geography, which refers to the discipline of studying imagined geographies. The latter term delineates our study object, defined as literary representations of geographical space. An imagined geography in this sense is an emergent property that can be studied on the micro-level of a single text, on several different meso-levels (authorship, period, regional literature, etc.), or on a macro-level aggregated by text-mining tools and visualized by GIS. Imagined geographies will often bear witness to what Benedict Anderson called Imagined communities, e.g. a writer's notion of cultural and territorial communion (Anderson [1983] 2006:7). As such, they offer a rich source to study how writers draw up a sense of a nation through local as well as international representations.

Literary geography includes a long-standing tradition of spatially oriented literary criticism (Miller 1995, Bradbury 1996, Moretti 1997, Thacker 2003), human geographers with an interest in literary texts (Brosseau 2017), and advocates for a genuine interdisciplinarity between the two (Hones 2018, Westphal 2011). Literary geography offers important theoretical distinctions and premises. The most basic is that between places in fiction that refer to actual locations, and places in fiction that are purely imaginary (Piatti 2008: 23). This seemingly trivial distinction is important for *ImagINation* as it determines which toponyms that can be given coordinates on a digital map. "[T]he goal of literary geography", writes Barbara Piatti, "is both to explore how works of literature negotiate their relationship to the space of the external world and to consider how this negotiation influences the way those works are read and received" (Piatti 2016: 89). This definition underpins the theoretical premises for our project, pertaining to the referentiality and performativity of places in literary texts: 1) Places in literature refer to the physical world. This reference comes not only from the fact that literary and real life often share toponyms, but also from the potentially wide range of referential features, geographical as well as demographical, that literary descriptions can attribute to a place in the real world. 2) The referentiality of a literary place makes it performative in the sense that it impacts a reader's, and hence a community's, imagination of a real-world location. In consequence, representations of places in literature contribute to the historically specific social and political production of places in the real world (Miller 1995: 5).

Our investigation of the imagined geographies' material conditions of possibility will draw on infrastructure studies, a field of interest including practitioners from STS (Bowker and Star 1999, Edwards 2003), sociology (Beniger 1986), and media studies (Peters 2015). Our interest lies in how 19th century communication infrastructures (transport, post, telecommunication) interlinked the world and changed the economic organization of society from local segmented markets to a system of interdependent global localities (Beniger 1986: 278, Mattelart 2000: 32). A communication infrastructure does not only emerge historically as the hardware of railroad tracks or steam ship harbors. It also emerges through the social iterations of travel, communication, and commerce between places, *and the imagined geographies that such iterations produce*. In this line of thinking, imagined geographies are indeed cultural effects of communication infrastructures.

To examine the politics of the period's imagined geographies, and to analyze questions of national identity production, we will mobilize perspectives of imagology. Imagology is the "discursive study of ethnotypes (stereotypical attributions of national character)" (Leersen 2016: 13), and it provides a theoretical framework for analyzing how literary texts produce oppositional images of Self and Other. Imagology does not just deconstruct a given national literature's discursive image of another nation, but it also questions the very idea of a national literature, by showing that the discursive production of a national Self is entirely dependent on the discursive production of an (international) Other and an outside – making nation building an essentially international enterprise (Leersen 2016: 17–22).

Our effort to promote global citizenship through a literary geographical instruction design will be theoretically informed by the theories mentioned above, in addition to theories of reading and learning, and theories of globalization. For instance, N. Katherine Hayles' theory of "intermediation" between humans and intelligent machines (2005: 33), and her notion of "synergies between close, hyper, and machine reading" (2012: 75), can help us theorize our students' knowledge production as they engage with digital maps and text corpora. Judith Langer's theory of stances of "envisionment building", offers tools for analyzing how students develop understanding in interaction with historical texts, and for identifying how interpretive engagement with literature can make students connect the texts-worlds that they envision with the real worlds that they inhabit (Langer 2011: 25). With Doreen Massey's notion of "a global sense of place", we will establish a vocabulary through which teachers and students can imagine places as essentially defined through "the social interactions that tie them together", through their outsides as well as their insides, through negotiation of conflicting identities (rather than a single identity), but at the same time through their very own (but constantly reproduced) uniqueness (Massey 1994: 155). Bringing Langer and Massey in dialogue, enables a line of literary educational thinking that we shall call *ImagiNation Building* – in which digital literary geographical engagement with literary history allows multi-ethnic student populations to obtain a "global sense" of the nation and its written cultural heritage.

Possible risks: It is a risk that much hinges on the technical issues of wp1. However, through our pilot study of the collected works of Knut Hamsun (Boasson and Johnsen 2020), we have become well prepared to tackle potential challenges. Statistical NER methods are highly successful with modern datasets, but challenges arise when the datasets are older (Won et al. 2018). Specifically, our NER will have to tackle OCR errors and changes in spelling conventions. We reduce these challenges by improving the OCR quality through a *re-OCR* of the 19th century collection, using the digitized images already available from the digital collection. This process has already begun at the National Library, and it will be finished before the project starts. Remaining OCR-errors are accommodated by training our NER with a "wild card search algorithm", so that it classifies misspellings (Loicdon) with its correct toponym (London). To reduce the challenge with toponym ambiguity (a toponym may be used to represent more than one place) we conduct a two-step cluster analysis for disambiguation. 1)

Semantic clustering that registers and compares toponyms that surround an ambiguous toponym in the corpus; 2) spatial clustering that constrain geographically the most likely location for the ambiguous toponym. A different challenge is the human factor of wp5. Working with pupils in classrooms is unpredictable. We will handle this by thoroughly planning the classroom research well in advance together with teachers. Also, the research design of the wp allows us to adjust our approaches along the way.

Ethical issues: Wp5 will be conducting interviews with and observation of pupils. This work will be registered for approval with the Norwegian Data Protection Services (NSD) and conducted according to guidelines from The National Committee for Research Ethics (NESH).

2. Impact

2.1 Potential impact of the proposed research

Literary history. We address the scientific challenge that the genre of national literary history is built on a biased protocol of 19th century nationalism that is no longer empirically or epistemologically credible. Instead of a national literary history – with its *definition* of a nation, *selection* of a canon, and *interpretation* (into a national narrative) – we present a literary geography of a nation in the making, a spatial analysis of how writers imagined and negotiated their local, regional and global surroundings. The scholarly output of wp2–4 (two PhD dissertations, one co-authored book, and a series of articles) will literally be mapping new historical ground, and thus significantly impact the scholarly field of Norwegian literary history. If our hypotheses are correct, we can no longer conceive of Norwegian literary history as written by Norwegians, for Norwegians, about a geographical area called Norway. The project thus has potential to offer a template of international relevance for how to spatially re-conceptualize national literary histories in the age of digital archives.

Digital Humanities. We address the issue that digitization of cultural archives forces us to question the representativeness of national literary canons, and we address the opportunity of having access to one of the world’s most comprehensive digitized national literary archives. Our written output will be the first to establish DH as a sustainable field of research in Norwegian literary studies. The text corpora that we create offer the first systematic arrangement of those 21 233 books that circulated in Norway between 1814–1905. As such, the corpus building of wp1 has potential to become the standard infrastructure for digital literary history in Norway in the future. Furthermore, the geoparsing conducted in wp1 has the potential to impact later scholarship across disciplines, as any scholar with an interest in Norwegian history (Human Geography, History, Religion, Criminology, archaeology, etc.) can use the data for spatial analysis.

Literary history education. We address the challenge that the traditional narratives of national literary history do not resonate with today’s multi-ethnic student populations. The output of wp5, offering a new and spatially oriented theory of literary history education, has the potential to rekindle the scholarly conversation about the role of literary history in national education programs. As the traditional idea of education as “Bildung” is under pressure all over Europe, a spatial didactics of literary history where students are empowered to actively and critically engage with how the literature of the passed mapped the becoming of our globalized world, has potential to become a beacon in the repurposing of literature as a community-making resource for the future. As wp5 will include our teacher education programs in our research, there is a great potential in the project to promote future citizens with a global, rather than a nationalistic, sense of the nation.

Societal challenges: If the above-mentioned scientific impacts are realized, *ImagiNation* will contribute to UN's sustainability goal of promoting quality education offering appreciation of diversity and a sense of global citizenship.

2.2 Measures for communication and exploitation

The target audience and users of our digital resources (curated corpora, geoparsed and GIS-ready data, and an educational digital map) are researchers and students in Norwegian literary history (or any discipline with an interest in Norwegian history); teachers and pupils in lower and upper secondary schools in subjects like Norwegian, geography, history, and social studies; and the general public. The PhD dissertations and the co-authored book of wp2-4 (MIT Press' Infrastructure series or another top tier publisher) target an international audience of scholars in DH, literary studies, history, geography, and infrastructure studies. The edited volume on literary historiographical didactics of wp5 (Universitetsforlaget) specifically targets teachers and teacher students in Norwegian. Our articles will be published in journals like *Cultural Analytics*, *New Literary History*, *International Journal of Geographical Information Science*, *Edda*. Our project blog will document the progress throughout, we will participate with a panel at the Digital Humanities Nordic conference in 2022, at the Society for the Advancement of Scandinavian Studies in 2023, and the Norwegian Teachers Congress in 2024. Our conference at the National Library will be a public event streamed online. Here, we will officially launch the educational digital map as a publicly available resource. Other important and potentially impactful engagement activities are those conducted with and by our students at NTNU's teacher education programs. Through research based in-depth classes, we will educate our students in digital literary geography, and they will use their master theses to explore the didactical classroom potential of their own and the project's basic research. Our final conference at NTNU will put key practitioners in the scholarly field in contact with invited teachers and students.

3. Implementation

3.1 Project manager and project group

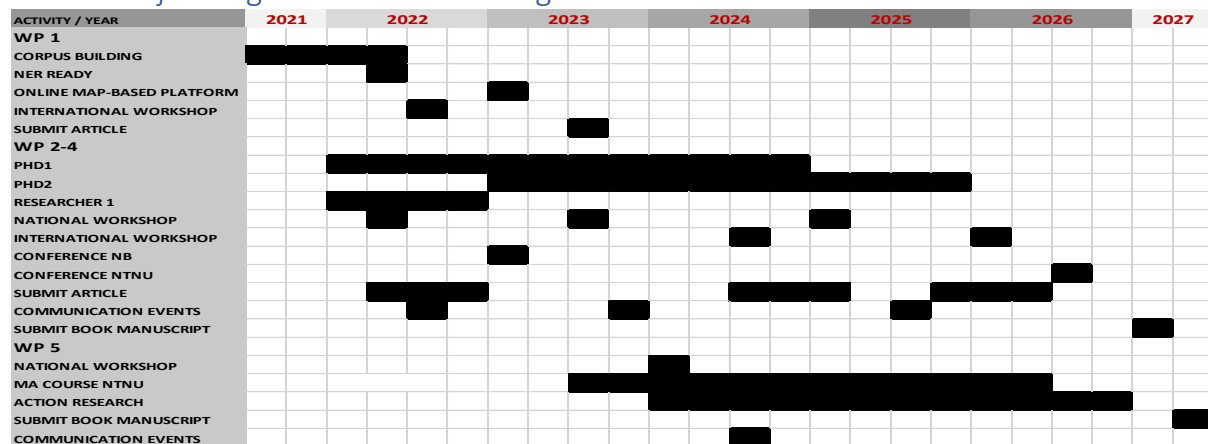
Project manager: Associate professor Anders Skare Malvik (NTNU) has worked extensively with relations between literature and technologies and has contributed to the field both internationally and nationally. He has project experience from the RCN-funded project, *Transcultural Aesthetics* (2008–2013); international editor experience from the book-project *Literature in Contemporary Media Culture* (Paulson and Malvik, 2016) and from co-editing the international journal *Edda* (2017–2019); leader experience as head of the section for Nordic Literature NTNU, and head of NTNU's Study Programme for Nordic and Comparative Literature. Since 2015, he has led a national research group that studies 19th century literature and technologies, and he has initiated seminars and courses that have put scholars and students in contact with international researchers in the fields of literary geography, Digital Humanities, infrastructure studies and media archaeology. Malvik has worked with NB's digitized archive for research and teaching since 2016, and he is head of NTNU's DH-Lab initiative which launched in January 2021.

National project group: *Lars Johnsen* is research librarian at the National Library of Norway (NB). He is an expert in computational linguistics and works with developing digital text-mining tools at NB. Associate professor *Frode Lerum Boasson* is an expert in late 19th century Norwegian literature. He has taught and published on digital humanities since 2016. Boasson is a co-developer of NTNU DH-Lab. Professor *Knut Ove Eliassen* currently works with literary geographical questions as project leader of the research project *3R-Oceans* at NTNU. He has worked extensively with literature and technology and been seminal in the introduction of German media archaeology to Norwegian academia. *Tatjana Kielland Samoilow* is an expert in Norwegian 19th century literature at NTNU's Dept. of teacher

education, where she leads the research group “Childhood in Times of Crisis” and studies the application of critical theory in teacher education. Associate professor *Ingvild Hagen Kjørholt*, NTNU’s Dept. of teacher education, is an expert in literary cosmopolitanism. As head of research at Falstad museum and human rights center, and project leader of “The mediated memory-site”, she has worked extensively with national history and questions of citizenship. *Anders Christensen* is chief engineer at NTNU’s IT Development Section and an expert in big data management. *Jan Ketil Rød* is professor in geographic information science and systems (NTNU). Rød has long experience in interdisciplinary research and the adaptation of spatial methodologies to various disciplines, currently a leading expert in applying GIS to study effects of climate change.

International project group: *Patricia Murrieta-Flores* is co-director of the Digital Humanities Hub at Lancaster University. She is an internationally leading practitioner in the application of digital technologies such as GIS, NLP, and machine learning, to historical corpora. *Barbara Piatti* is an independent researcher based in Basel. She initiated the project “A Literary Atlas of Europe” (2006–) and is one of the pioneers of digital literary geography internationally. Piatti has published, and is cited, extensively in the field. Professor *Susan Zieger* is an expert in Victorian media studies and literature at University of California Riverside. Her current work on the cultural history of logistics will aid our efforts to understand the material conditions of possibility for the historical distribution of imagined geographies. *Gerhard Lauer* is professor of German literature and chair of digital humanities at the University of Basel’s Digital humanities lab. He is an expert in digital editing and corpus building. Lauer has published, and is cited, extensively in the field of digital literary history. Dr. *David Cooper* is senior lecturer and Co-Director of the Centre for Place Writing at Manchester Metropolitan University. He has published and taught extensively in the field of digital literary geography, including community outreach projects, and he has been involved in several international research projects in the field.

3.2 Project organization and management



Research infrastructure: The National Library’s digitized archive and its API allows researchers and students to access and explore the archive from our computers, using the Jupyter Notebook environment. NTNU’s university school system, is another important resource. It allows our researchers and teacher students to collaborate with teachers and students at Charlottenlund upper and lower secondary schools to explore the didactical potential of digital literary geography. The NTNU University Library will host our online map-based platform and provide a virtual and physical DH lab environment for our students and researchers.

Allocation of tasks: *Wp1:* Johnsen (wp leader) will organize the corpus building and the creation of our educational digital map. He will prepare an environment for corpus building in Jupyter Notebook, conduct a re-OCR of the 19th century archive, program and train the NER, and provide semantic

clustering for disambiguation of toponyms (geoparsing). Christensen will program a spatial clustering analysis for disambiguation of toponyms, and he will automate plotting of toponyms on digital maps. Rød will develop an online map-based platform for research and educational purposes. He will also provide methods for pattern recognition for wp2–4 and write one geographical article on GIS and cultural history. Murrieta-Flores will lecture our PhD and MA students in a national workshop, organize a seminar at Lancaster University's DH Hub, and provide methodological assistance to wp1.

Wp2: Boasson (wp leader) will build wp2's text corpora (1814–1850), supervise PhD1, write 3 articles and co-author our book on literary geography. Cooper will host a project workshop at Manchester Metropolitan University and lecture our PhD and MA students in a national workshop.

Wp3: Eliassen (wp leader) will build wp3's text corpora (1850–1880), write 3 articles and co-author our book on literary geography. Researcher 1 will write 3 articles. Zieger will provide theoretical and methodological assistance, and she will hold a keynote address at our international conference.

Wp4: Malvik (wp leader) will build wp4's text corpora (1880–1905), supervise PhD2, write 3 articles and co-author our book on literary geography. Lauer will provide theoretical and methodological assistance, and he will organize an international project workshop at the University of Basel's DH lab.

Wp5: Samoilow (wp leader) will organize the collaboration with NTNU's partnership schools and prepare the wp's action research design. Samoilow and Kjørholt will teach MA students in digital literary geography and supervise their engagement with students in the classroom. They will co-write the wp's book. Piatti will provide theoretical and methodological assistance, and she will lecture our PhD and MA students in a national workshop.

Organization and management structure: The project leader will be assisted by a core group comprised by the wp leaders, researcher 1 and PhD students. The Norwegian members of each wp form the national research group, summoned in annual workshops in addition to regular meetings and reading groups at NTNU. Our international project group will be summoned to our international workshops. They shall also function as an advisory board in matters of methodology, theory and strategy.

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