How to combine close and distant reading within the history of science and ideas

Two examples from ongoing research

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Abstract

This text gives two examples of how research within the history of science and ideas can make use of digital methods through a combination of close and distant reading. The first case maps all churches and prayer chapels in the Diocese of Luleå to answer the question if a Bible belt exists in Norrland; what it (if there is one) looks like, what its characteristics are, and how it has evolved over time. The spatio-temporal visualization both clarifies patterns of religious fervor and reveals "white spots", creating questions for further research. In the second case distributional concept analysis is performed using Sketch Engine on the corpus enTenTen20, consisting of 38 billion words gathered in 2020 from the Anglophone Internet. Lists are assembled over which words are most often used together (co-locates) with creativity. Then, the research process is outlined, where use of such distant reading tools encourages returns to close readings of other materials (for instance speeches by American presidents) in an iterative process. The cases illustrate the benefits of moving between "distant" levels where digital methods show large patterns, and more specific, detailed, "close" levels, with focus on particular points of interest. We also show how this oscillation between large-scale computer aided methods, and small-scale interpretations generate new questions. Finally, we discuss our experiences of multidisciplinary approaches to digital history, and describe setbacks and unexpected wins.

Keywords: mixed methods, digital textual analysis, spatio-temporal map visualization, close reading, distant reading

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Introduction

It is not yet common, within the history of science and ideas community in Sweden, to use the kind of digital methods which are associated with the field referred to as Digital Humanities.[1] In this article we want to lower the barriers of entry to this field for newcomers by describing two examples of how we conduct such research. The aim is to give a sense of how useful these kinds of techniques can be to historians of ideas by giving candid, behind-the-scenes access to ongoing research. Thus, we describe our work in progress to showcase both the promises and the pitfalls of using these digital methods.

By picking one case each from two of the most well-established subfields of Digital Humanities – computer-aided textual analysis and spatio-temporal data visualization – we hope to give as wide of an overview of digital methods as possible, while simultaneously giving practical insight into the nitty-gritty, hands-on and often messy practice of working with them.

Furthermore, based on our experience, we advocate a pragmatic version of a mixed methods approach.[2] To show why we think this is a helpful way of working, we describe how our respective research practices – despite their differences – share common traits: in these two cases, both of us continually move between quantitative, computer-aided readings of huge datasets, and qualitative, hermeneutic, more traditional close readings of particular cases (individual texts or map locations) within the larger pattern.[3]

To persistently move between overarching, "distant" levels, where digital methods show broader patterns in databases, and specific, detailed, "close" levels, with focus on a single source, has been a useful approach for both of us. This pragmatic switch between different methods and levels is at the core of the approach we propose, and helps ensure that the work is directed by our research questions rather than by the methods themselves.

In order to illustrate and substantiate our argument, we will describe how we make decisions and solve problems in the midst of the research cases we are currently working on – investigating the patterns and distribution of religious activity in Norrland between approximately 1400 and 2010 (spatio-temporal data visualization), and the use of the concept of creativity in the 2020s (textual analysis).

The first case, Stefan Gelfgren's, is a digital, interactive map of churches, chapels and prayer houses in the Diocese of Luleå, displaying changes over hundreds of years. The database which the map relies upon is built from four inventories of religious buildings in the diocese of Luleå, produced with different goals in mind by two museums (Skellefteå museum, and Norrbottens Museum), one state authority (the County administrative

board of Västerbotten), and the Church of Sweden (more below). Currently, the project comprises of 1,141 data points, and its goal is to include every Christian church, chapel and prayer house in this region. The total sum of places is unknown at the moment, but given that the different inventories were made with the aim to map all places it can be assumed that they are at least close to completion.[4] The map is meant to help answer the question of whether a Bible belt exists in the north of Sweden; where it is located (if there is one), what its characteristics are, and how it has evolved over time.[5] The spatio-temporal data visualization can present general patterns of religious fervor, reveal "white spots" where no religious organizations have been active, and highlight possible areas of conflicting interests between different religious actors. In this way, the map-visualization both provides answers and generates questions for further research.

Furthermore, rich archival material exists in regard to most of the places/buildings in, for instance, church archives or archives of popular movements archives. These sources can be relevant for a "thicker description" (to paraphrase Clifford Geertz) of each building, organization, and congregation (for a qualitative close reading).[6]

Annelie Drakman's case is an investigation into how the concept of creativity is used in the English-speaking world today (meaning approximately 2012–2022). It exemplifies how mixed methods research is conducted in practice through switches between distant and close reading, just like Gelfgren's. The first method, distant reading, is performed through computer-aided conceptual analysis of an Anglophone corpus of 36 billion words, gathered from the Internet in 2020. The program *Sketch Engine* is used to generate lists of which words are most commonly used together with the search word "creativity" in this corpus. This is followed by an outline of how the process of analyzing such word lists is combined with close readings of specific texts: analysis of how the concept is used in printed books, and in speeches and tweets by American presidents. This overview of an ongoing work process is then used to discuss the strengths of the process of moving back and forth from general patterns to specific utterances, and to show how such pragmatic switching of methods can lead to a deeper understanding of the use of the concept "creativity" during the last ten years.

Spatio-temporal data visualizations as historical method

Spatio-temporal data visualization is not new *per se*. Chronologies of time and geography have long been used to present and interpret data in time and space.[7] In the 1980s, an increasing awareness of the importance of

geography and space for interpreting human culture and conditions arose, often called the "spatial turn", which meant that these aspects were no longer seen as "a backdrop against which life unfolds sequentially".[8]

Contemporaneously with this theoretical shift, technological developments in the 1990s – especially the emergence of Geographical Information Systems (GIS) – meant that new tools and methods for representing and analyzing data spatially and temporally became available. This changed several fields and disciplines.[9] Consequently, geographers James Ash, Rob Kitchin and Agnieszka Leszczynski claim that digital content and platforms are changing what constitutes geography, both by shifting what counts as evidence and by provoking new questions — a line of reasoning which also applies to the humanities, including the historical sciences.[10]

In general, digital technology has increased the scale of research since the amount of data which can be visualized has expanded. Furthermore, different kinds of data can now be combined and filtered through a single platform. Thus, we can now use data visualization not only as an end product, to merely present conclusions about data analyzed elsewhere, but as tools to work with during the whole research process: to formulate research questions, compile data, interpret and finally display the result. In Johanna Drucker's words, they present new ways of thinking.[11] The discussion about digital spatio-temporal data visualization also relates to what is referred to as "spatial history". In 2010, Richard White at the Spatial History Lab, Stanford University, claimed that there is more to digitization within the historical disciplines than reproduction and presentation. Visualization and spatial history are not meant to communicate what has been discovered in other ways, he states, but is rather a means of doing research: "it generates questions that might otherwise go unasked, it reveals historical relations that might otherwise go unnoticed" in order to undermine or substantiate what we already think about the past.[12]

One of the most important advantages of digital spatio-temporal data visualization is that it gives the researcher the opportunity to bring together multimodal materials from different sources. It also aids in combining perspectives from different disciplines and thus also encourages interdisciplinarity. Therefore, a key difference between traditional, analogous map visualizations and digital ones can be described by the "deep map" concept, meaning a map consisting of several layers of information on top of each other, combining different perspectives and information.[13] A geographical place can thus be described by Wikipedia entries, photographs, music, statistics on demographic conditions, etcetera. By connecting data in time and space – and consequently coordinating and filtering

data – new patterns in time and space can emerge, as will be discussed in the example below.[14]

My (Gelfgren) interest in spatio-temporal data visualization of churches and prayer houses in the diocese of Luleå, is related to my previous work with similar questions. In a few previous articles I have studied regional religious characteristics and discussed the religious geography of parts of Sweden, with a focus on the northern part of Sweden and the possibility of a so-called Bible belt in the north of Sweden. [15]

However, about a decade ago, I became aware that the County administrative board of Västerbotten had conducted an inventory of all free church and inner mission prayer houses (in order to preserve a, for the region, typical prayer house). Intrigued, I investigated further, and found three more inventories of churches and prayer houses: the Skellefteå museum made an inventory in the 1970s of prayer houses in the municipality of Skellefteå; Norrbottens museum made an inventory of prayer houses in the early 2000s, and the Church of Sweden had a list of all their own churches.

My first challenge was to harmonize all this data since the inventories were made with different purposes and in different formats. For instance, the Skellefteå museum inventory consisted of scanned, handwritten PDF documents; the one from the Norrbotten museum inventory consisted of approximately 400 Word documents with questions and answers; the inventory from the Church of Sweden was a list in Word format; and the one from the County administrative board of Västerbotten consisted of an Excel sheet.

Beyond these dissimilarities in format, the information in each case differed widely. Since my goal was to study the changing geographical distribution of religious buildings over time, it was essential to clarify which building belonged to which denomination, as well as its approximate location and year of establishment. This information had to be manually transferred to my own database – basically an Excel sheet with columns for location, religious affiliation and year of establishment.

One problem is that it is hard to assess whether the different inventories are complete. Presumably, buildings could be missing for multiple reasons; they might have been demolished, changed their use and character, or simply just overlooked. Quality checking the data is a time-consuming process, but will be done more thoroughly in the future of this project. However, as a pilot project, and a proof of concept, the level of data quality presented here is sufficient. While the accuracy for each point of entry could possibly be enhanced, what matters most is that the patterns on a general level are clearly discernable.

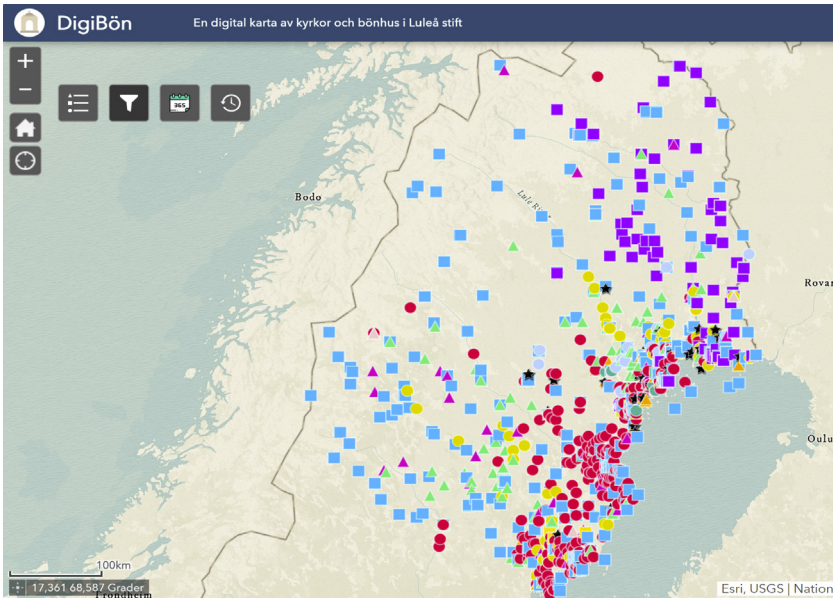

Fig. 1. The 1141 churches and prayer houses in the Diocese of Luleå, approximately 1400–2010. Each symbol represents a different church/denomination: where the major ones are blue for the Church of Sweden, red for EFS (the Inner mission), purple for the Laestadian movement, green for the Pentecostal movement, orange for the Baptist movement, and yellow for the Covenant church.

The map can, with the aid of a time slider, show the situation of any given time, as well as, through an animation, the process of establishments of chapels and prayer houses. Currently, the map can only show the accumulation of the buildings since there is no end date for each data point. The map can also be scaled, both in geography and in content. This means that it is possible to add more points in other places across the whole map, exceeding the borders of both the Diocese of Luleå and Sweden. It is also possible to add other forms of content – such as pictures, text, audiovisuals, and hyperlinks.

As previously stated, the *DigiBön* map in its current state, shown above in image form (the actual map being interactive, showing change over time) is based upon an Excel file, which contains data about church/denomination, map coordinates, and year of establishment. This information is then visualized through the GIS software *ArcGIS* (developed and maintained by the American company *Esri*). The map interface is developed in *ArcGIS*. The GIS competence necessary to create the map was provided through the Digital Humanities lab *Humlab* at Umeå University.[16]

Data issues – new contextual understandings

The fact that the inventories which underlie the Excel sheet are so dissimilar was a problem. For example, some inventories mainly focused on the cultural and historical value of each building, and thus included extensive descriptions of the quality and representativity of interior and exterior details, but provided only vague information about location and year of construction. The inventory from Skellefteå Museum, being based on handwritten responses to mailed enquiries about ownership and activities, was especially vague and incomplete regarding information on establishment dates and geographical location. In many instances, it was difficult to decide which religious affiliation a building had using only the inventory. The affiliation could change over time and sometimes overlapped, since churches/prayer houses could be used by several religious affiliations simultaneously.

To counter these potential errors, and to accumulate more complete data, constructing the database requires substantial manual labor. This included cross-referencing the inventories with other sources. For instance, I have searched Google Earth and Google Street View in order to find the buildings, have made use of websites produced by local laymen historians, have checked maps of land ownership, and so on. Such supplementary material (especially browsing other maps and moving through the landscape in Google Street View) has given a richer sense of the larger context. Reading through village histories provided insight into the local context of the different churches and prayer houses by showing how different revivalist congregations were part of the local community, and how the buildings were used in the everyday life of the villagers.

All this qualitative, interpretative work gave new insights into the history of the local congregations, and created new research questions. Not just inquiries related to the larger patterns of the religious geography and the search of potential Bible belts, but others as well. For example: what was the role of the church or the prayer house in the local community? How important was its theological affiliation for the persons who participated in its ongoing activities? How can we understand the role of religion in relation to the secular in local settings?

As historians, we know that there are potential pitfalls of turning historical processes into a digital database, apart from the risk of potentially missing relevant data. In this particular case data is based upon fixed categories such as organizational affiliation, years, and geographical coordinates, but the need to define a fixed year, place or denomination can obscure that the historical reality is far more complex than it is possible to capture in this kind of visualization.[17]

In reality, some prayer houses did not have a single owner or a precise year of establishment. Some buildings are said to have been built by "the men" in the village as a shared space for everyone in the village, often because there was a need for both a school and a place for religious meetings (and other meetings). In such cases, we might have one year for the construction of a building, but the year of the start of the congregation is missing. In other cases, a religious organization erected a building for themselves but shared or rented out parts of it for some days of the week to a school or other organizations. Some buildings had been moved, sold, demolished and rebuilt, and so on.

Again, it has been necessary for me to move back and forth through different sources. In many cases, the inventories included bits and pieces of information, but quite often this information was rather imprecise. Therefore, some decisions had to be made to fit the purpose of the map: to show larger patterns and tendencies. To know an exact location, for instance, is not always necessary – in a small village it's enough to be able to place the building within the village. When it comes to the year of establishment, I decided that if the sources provide a timespan, I will set the date as the first year of the time span in my database (for example 1923–28 was set to 1923, and the 1930's is set to 1930). In some cases, where the origins of a building was uncertain, I set the date of construction not as the year when it was built, but as the year when a religious organization first owned it. I also decided that in cases where it was not possible to find a year, I put 1900, which is somewhere in the middle of an anticipated timespan. All this does indeed mean that what looks certain in the visualization is founded upon different design decisions. But as long as the viewer is aware of those constraints, this is not a problem for the overall picture.

However, when searching for the quantifiable details needed for the database, other potentially and qualitatively fascinating issues caught my eye as I moved from distant to close reading of data. Especially the inventory from Skellefteå museum was of interest – it consists of compiled lists of buildings, but also the actual inquiries, and answers to them, sent out by the museum. It includes questions regarding activities throughout the years, descriptions of the buildings, its ownership history, and more. The answers are available in scanned PDF-documents of handwritten text, one per prayer house. Information from some of the congregations is scarce, while other respondents have really used the opportunity to describe the history of the prayer house. In some cases, there is also information concerning ownership, the interior and exterior design and function, the relation between the school and the congregation, descriptions of prominent persons and their position in the congregation and in relation to the

local context, and much more. Hence, the need to read the detailed descriptions in search for year, affiliation, and place in the documents (to ensure the quality of the distant, quantitative readings), gives further understanding of the local context, raising new research questions and adding to the contextual knowledge.

Supporting a distant to close reading, and back again

Above, I have discussed how my work with compiling my dataset required close reading of the original sources to find the information needed. The move between close and distant reading does not stop there. The end product, the *DigiBön*-map, supports a similar move between large patterns and smaller details – again encouraging a mixed methods approach. By focusing on the large patterns, it is possible to see the outline of a possible Bible belt stretching the coast of the Bothnian Bay and further north along the Swedish-Finnish border, with an offshoot in an east-west direction into the County of Västerbotten. It is also possible to see some characteristics of the Bible belt – where the inner mission, free churches and Laestadian movements are the different dominant actors in the area, each one dominant in different areas within the larger Bible belt.

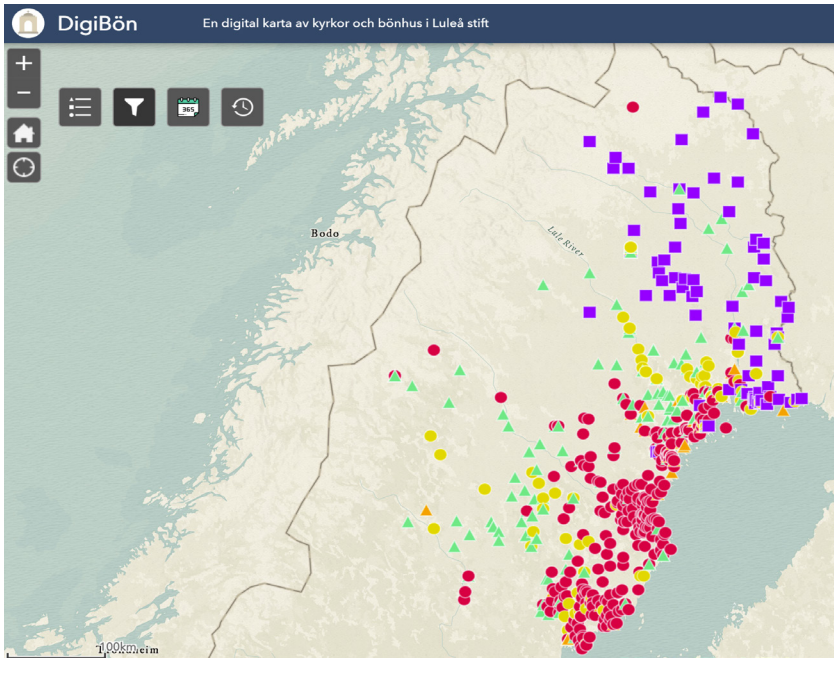

Fig. 2. The Bible belt: Red for the inner mission (EFS), purple for the Laestadian movement, green for the Pentecostal movement, yellow for the Covenant church, and orange for the Baptist movement.

Not only the Bible belt in itself is of interest. What the map also shows is the absence of religious movements in certain areas. Of course, one reason for this finding might be the fact that the northern part of Sweden is sparsely populated. That, however, does not account for all the lack of religious activity (meaning that maps of population density and religious activity do not overlap completely). Therefore, it is relevant to search for answers as to why some areas are less religious, at least as is manifested through prayer houses and churches. Are there, for example, other actors which counteracted the prevalence of these buildings? Some places, on the other hand, have a higher degree of religious organization, with several different prayer houses and churches at roughly the same spot. Why is that – and how did the different organizations interact, and how did their conflicts and congruences affect local life? There are also examples, identifiable in the qualitative material, of places and specific prayer houses where there seem to have been no conflicting lines between the different denominations – the inner mission, the Baptists and the Covenant church co-existed and shared resources. Thus, the map also visualizes intensity and the absence of religious activity, both in the whole area and locally.

Overall, the construction of the dataset for the *DigiBön*-map, a seemingly straightforward process, shows the messiness of the religious history of the northern part of Sweden (a finding probably also true for other areas). As a church historian, it is easy to think about religious history as a process taking place in interactions between discernable actors and categories, but that is probably just a construction. Within Religious Studies, the subfield of lived religion was established in the 1990s, highlighting the need to study religion and its everyday practices among "ordinary people" instead of studying theology, dogmas, and institutional expressions of religion.[18] In this field, it is emphasized that theology and dogmas are of less importance in everyday life since people tend to pick and mix their own religiosity across dogmatic limits, which led to religious studies being combined with for example ethnographic methods. The *DigiBön*-map points in a similar direction. At this stage there are no answers, but the map indicates new fields of research. To understand these patterns and what seems to be inconsistencies, the local, richer material is needed – thus switching from distant reading to close reading, and back again.

To show how this point is valid even while doing a very different kind of research, the article will now move on to our second case, which charts the process of combining computer-aided textual analysis of billions of words with close readings of, among other texts, single tweets.

Investigating "creativity" by close and distant reading

This is a brief account of some of my (author Drakman) ongoing attempts at analyzing how the concept "creativity" is used in twenty-first century Anglophone culture, by switching between distant and close reading methods, and between quantitative and qualitative analysis of word use.

For a few years now, I've been seeking to understand how creativity affects twenty-first century ideas about knowledge creation. In dictionaries, this concept is usually defined as "making a new and useful thing or idea", and its synonyms are said to be words like innovation, invention and originality.[19] Some questions I want to investigate are: how does creativity relate to concepts like innovation, invention and originality in everyday language? What about its relationship to concepts such as imagination, revolution and genius? Which changes does this concept enable, and which continuities does it support? In what contexts is this word used, and which groups do not speak about creativity? Why do claims to oppose creativity appear almost nonsensical?[20] In short, I want to understand why creativity has become such a popular concept, and what kind of work it performs in the everyday life of millions of people.

Initially, my interest in the concept of creativity emerged from the observation that this word is used seemingly everywhere, both on- and offline. Tens of thousands of articles, hundreds of books and dozens of journals both within academia and within popular culture are devoted to it.[21] To the cultural historian Raymond Williams, outlining the meaning of "creative" in his famous *Keywords,* such ubiquity was problematic. He argued that the terms creative/creativity – originally meant to convey high, serious original invention – had become conventional enough to be applicable to any activity. This, he claimed, turned them into empty words, confusing and misleading.[22]And if the ubiquity of the terms was problematic in 1976, when Williams was writing, the problem has been exacerbated ever since. In the corpus based on scanned English-speaking books which Google Ngrams analyzes, the frequency of the word "creative" increased 170 percent between 1976 and 2019, and the frequency of "creativity" increased 250 percent over the same period.[23]

The range of applicability of the terms also remains wide. Creativity is that rare nominalism (or "zombie noun", an abstract noun made from a verb, often ending in -ity) used both in bureaucratic reports and on the street. It bridges several previously uncrossable chasms, like the one between arts and sciences, by remaining helpfully vague on the amount of originality required for any novelty to be labeled creative. And it is true that creativity can be used to describe almost any human activity. For

instance, in its public outreach work from the 1990s onwards, the Nobel Foundation uses creativity as the pin which ties together such diverse fields as physics, chemistry, medicine, literature, peace and economy.[24]

But although I agree with Williams' observations about how the terms are used, I disagree with his negative assessment. I see the flexibility of creative/creativity as their most interesting trait, and precisely what I want to understand better. Which new connections do these flexible terms make possible? Simultaneously, however, their widespread use makes analyzing them difficult, as the sheer magnitude of relevant empirical material exceeds the human scale. Historians of ideas have often studied huge, amorphous study objects by closely investigating especially influential texts, arguing by implication that those texts illustrate the culture at large. In this case, that could mean close readings of landmark texts in the history of the concept, such as J.P. Guildford's speech *Creativity* given to the *American Psychological Association* in 1950, commonly said to initiate studies of creativity within American cognitive psychology, or Richard Florida's book *The rise of the creative class* from 2002, said to ignite interest in creative social groups among political, economic circles.[25]

But only investigating influential texts would necessitate ignoring the discoveries made within the history of science and knowledge during the last several decades, regarding the circulation of knowledge. As has been convincingly shown, ideas are not just spread unchanged in a linear way from center to periphery, or from influential texts into the receptive minds of passive readers. Rather, concepts are constantly being reshaped in a myriad of locations, and different concepts co-evolve together.[26]

And this is precisely what I want to understand: the messiness and stretchiness of the concept. How creativity can be used so broadly, about so many different kinds of people and activities, not how creativity is defined in a specific text. Although close reading of specific texts remains a crucial part of my investigation, it is not enough. Instead, I would like an overview of how the term is being used by millions of people in different locations.

To amass such an overview often seems like an impossibly large task. To begin somewhere, I started haphazardly gathering examples of how the word creativity is used on the English-speaking Internet, mostly by taking screen dumps of paragraphs where the word occurred whenever I ran into them. This method has created large collection of examples, which I organize in Scrivener.[27]After sorting them into themes, I would say that the word creativity is mainly used in the following contexts: education, science popularization, advertising and discussions about productivity.

These fields are not exactly those I expected. Previous studies of creative/creativity have focused on the words being used in three specific milieus:

artistic circles from early nineteenth century Romanticism, American psychology from the 1950s, and economic and political circles since the 1990s.[28] What had happened to bring the words into new contexts in the 2010s and 2020s? I still wanted to get a better overview of how the terms are used in everyday language today, so I decided to turn to distant reading methods.

Turning to distant reading

In Cambridge and elsewhere, historians like Peter de Bolla are developing computer aided conceptual analysis. This means analyzing concepts partly by amassing lists showing which other words are used close to them in a specific text corpus.[29] This method of analyzing word meaning through co-location is often described with the computer linguist John Firth's classic quip: "You shall know a word by the company it keeps."[30]

Initially, I planned to compare word use within two corpora gathered from science communication and education (the two largest fields in my collection), using the program AntConc.[31] But perhaps my collection is skewed? My ad hoc online collecting is probably affected by what I've searched for in the past – computer enhanced confirmation bias. To test my own assumptions, I instead decided to use a pre-assembled corpus, rather than starting from a corpus based on my own, possibly flawed assumptions. This way, I hoped to test whether my view of how the word creativity is used corresponds to actual trends.

I turned to *Sketch Engine*, a tool for analyzing huge text corpora, including those gathered from the Anglophone Internet in the last five years, which is what I am most interested in.[32] Inside this program, I picked the biggest corpus available: *English Web 2020* (enTenTen20), consisting of 36 billion words in English gathered in 2020 from Wikipedia, blogs, online magazines and journals, etcetera. I began by searching for which words are most commonly used together with "creativity", getting the result shown in Fig. 3.

The words most frequently used before and after "creativity" in the enTenTen20 corpus (the first and second columns in Fig. 3) are "imagination", "innovation", "artistic", "thinking", "curiosity", followed by words with similar connotations, as seen in the figure.[33] What does that mean? From my years of doing close reading of books about creativity, of analyzing the examples I collected online, and from what I've learned about the concept's history, I've come to see it as straddling two clusters of meaning. The first cluster presents creativity as stemming from individuals' imagination, connecting it to artistic novelty. Here, creativity is often said to be recreational (fun, relaxing), and a way of exploring one's authentic self.

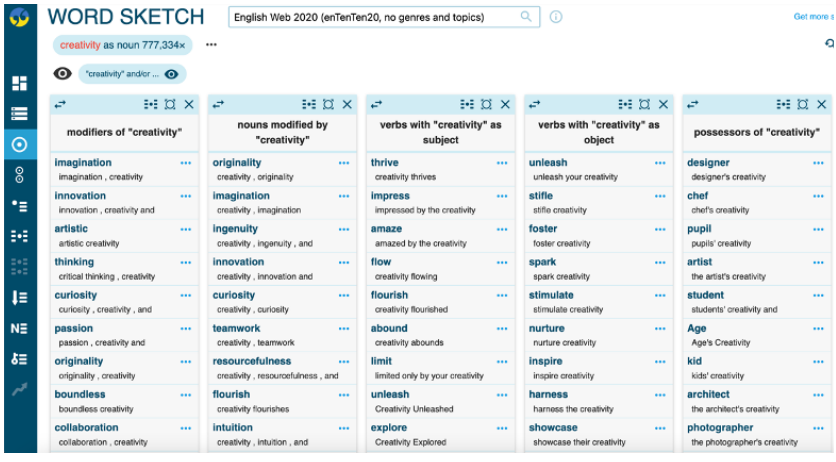

Fig. 3. Word Sketch of "Creativity" in *Sketch Engine*. Search performed March 23, 2022.

This cluster of meaning is connected to nineteenth century origins of the word "creative" within the artistic sphere, and the centrality of "creativity" to American humanistic psychology in the 1960s.

In the second cluster of meaning, creativity is presented as related to productivity, as a means of reaching goals of economic growth, being the fountainhead of innovation and entrepreneurship. This cluster is connected to the political, economic interest in the term in the early 2000s, exemplified by Richard Florida's book *The rise of the creative class*.

In the two first lists, there are traces of both the first ("imagination", "artistic", "flourish", "intuition") and second clusters ("innovation", "ingenuity", "teamwork", "resourcefulness"). "Thinking" and "curiosity" indicates a third cluster, presenting creativity as a mental trait. This makes sense considering the concepts' history as a study object within cognitive psychology by J. P. Guilford, Ellis Paul Torrance and others from the 1950s onwards.

Sketch Engine also charts which verbs are used with "creativity", either immediately following it (listing what creativity is said to do) in column 3 or immediately preceding it (listing what is done to creativity) in column 4. In column 3, a first cluster of words outlines the effects which can be achieved through creativity. Creativity is said to "impress", "amaze" and "inspire", yielding a rich bounty to whoever wields it. The words "thrive" and "flourish" indicate that creativity is something separate from the individuals making use of it, that it has an existence on its own. A second cluster of words indicate open, undirected searching: it is said to "abound", "flow", "unleash" and "explore". In column 4, it becomes clear that the

metaphors used with this concept present it as something which already exists in the world – it does not need to be created, assembled, built, brought to life. Instead, it should be taken care of. Words like "nurture", "encourage" and "foster" and to some extent "stimulate" describe it as something vulnerable which needs tenderness. Words like "spark" and "unleash", on the other hand, present creativity like a strong natural force, similar to an animal unleashed or a fire sparked. All we have to do is not "stifle" it. However, there are still hints of its connections to the productivity sphere through the words "harness" and "showcase". Creativity, then, is a force which needs to be "nurtured", so we can "harness" its power in order to present or "showcase" its yields to others in order to "amaze" and "inspire" them.

Another list (not pictured) shows who is most often said to possess "creativity": "designer", "chef", "pupil", "artist", "student", "kid", "architect" and "photographer". Thus, creativity is presented as closely correlated to the artistic world ("designer", "artist", "architect", "photographer"), but, importantly, it is also presented as an imminent, undeveloped potential existing in broad, inclusive categories of people like "student" and "kid". Through these groups, creativity is connected to yet unrealized accomplishments in the future, potentially making it related to the concept of hope.

Sketch Engine can also compare two words, for instance to show which other words are used with (co-occurs with) one but not the other. As an example, "innovation", one of "creativity's" most common synonyms, is never said to be "unleashed" or "nurtured", verbs often used with creativity, while creativity is never said to be "driven" or "accelerated", verbs often used with innovation. Innovation, then, is described using verbs related to operating man-made creations: animals aren't accelerated or driven, but machines or cars are. While metaphors about creativity present it as a natural force, then, innovation is described as purposely designed. Creativity is also used with "sacred" 336 times, while innovation is never said to be sacred. Instead, words associated uniquely to innovation, not to creativity, are "disruptive" and "incremental". This was surprising to me. Why are the bigrams (word pairs) "incremental creativity" and "disruptive creativity" never used in this corpus? The term "creative destruction", coined by Joseph Schumpeter in 1942, has apparently not had a big influence.[34] Comparing "creativity" and "expertise", I find that the term expertise is often used with the adjective "in-house" (presumably meaning that a company does not need external consultants but should rely on their own, in-house expertise), but never creativity.[35] Why is creativity never discussed as an "in-house" asset? Innumerable questions, then, can be raised by distant reading.

Back to close reading

Distant reading gives a fascinating, unfamiliar perspective, and certainly helps me think in new ways, by presenting words torn from their original context (the circumstance in which it was written, in a specific medium, intended for a certain audience, etcetera). But I am getting frustrated by trying to understand words as free-flowing entities, where meaning is statistically determined through locations and distances from other words. I decide to switch back to close reading, to somewhat regain my historical footing.

Sketch Engine provides lists of "key words in context", paragraphs where the keyword is used (similar to my screen dumps). But going through such paragraphs one after the other means jumping wildly between contexts. I briefly consider doing analogue close reading by picking up one of the twenty-first century books already considered classics in the creativity field – for instance Richard Florida's *The rise of the creative class* or Mihály Csíkszentmihályi's *Creativity. The psychology of discovery and invention* – but I decide not to, since I still want to retain some of the overview I get from reading online.[36]

Instead, I investigate an online collection of carefully curated sources, a database where the collection of a specific kind of sources is the whole point. Since creativity as a concept was primarily developed in the United States (the noun "creativity" having been coined there in 1926, and expanded within American psychology and management theory), and since the political sphere is one of the most central fields for the concept's recent development, I chose *The American Presidency Project*, collecting materials from all 46 American presidents.[37]

Being interested in the term's contemporary usage, I search for texts where the word "creativity" is used, and begin reading the most recent text available: a written version of the speech "Remarkes before business roundtable's CEO quarterly meeting", given by president Joseph Biden in March 2022. Here, Biden complimented the organization by reminding them that in 2019, they released the following statement: "America deserves an economy that allows each person to succeed through hard work and creativity, and to lead a life of meaning and dignity." This, Biden stated, "wasn't a do-gooder statement; it was a capitalist statement. We're all capitalists in this room."[38] Thus, both Biden and presumably the Business Roundtable CEOs connect being a capitalist to hard work and creativity. Creativity is presented as relating to economic productivity rather than to self-discovery or artistic imagination. Does Biden, being a politician, use creativity in only this economic sense? The next example quickly disproves this suggestion. Only 20 days before the speech about capitalists, the Biden administration released the following statement: "Reading

ignites imagination, insight, and inspiration. It nourishes a child's creativity and curiosity, and inspires a passion for lifelong learning."[39] Here, creativity is displayed as something awakened by learning, and used with traits such as curiosity, imagination, insight, inspiration and passion. Thus, creativity is displayed as having intrinsic value to the child, being only implicitly economically valuable. This stretchiness of the word, which separates it from similar words like innovation and invention (rarely used about children or together with words like passion and imagination), is definitely part of its power.

The American Presidency Project database also facilitates quantitative comparisons, pushing me back into using distant reading. For instance, president Donald Trump only uses the word "creativity" a single time in his 57,000 tweets (while tweeting "great" 1,262 times).[40] Also, in his official output, including press releases, speeches and so on, he uses "creativity" less than half as frequently as president Barack Obama or Biden.[41] One potential further avenue of exploration would be to examine whether this pattern is true for the Republican party in general (instinctively, I find this improbable, because of their history of embracing entrepreneurial culture, productivity and innovation. Also, as shown above, the word can easily be combined with seeing oneself as a capitalist). If not, does this mean that creativity is understood as a concept related to an urban, highly educated elite contrasting with the electoral base of Trump?[42] More questions than answers, again, remain.

To conclude this brief sketch of my research process: my *ad hoc* gathering of examples was a way to get started working on a project which often seemed impossibly large. By unsystematically collecting whatever I happened to run into, I became convinced that the contemporary use of the concept of creativity was widespread, complex, and worth pursuing further. But soon, the risks of this method became apparent. To combat bias – both my own confirmation bias, and the kind often inherent in casual web searches due to machine learning, filtering answers based on what the user has searched for previously – I turned to quantitative, distant reading methods. I hope that analyzing a pre-assembled corpus will give a more neutral overview and new angles to view my questions from. This, in its turn, pointed me in new directions which I would not been aware of had I only relied on the analogue methods normally used within the history of science and ideas, such as doing close readings of canonical texts. These new directions in their turn encouraged close reading of texts from the American political sphere, aimed at achieving a deeper understanding of how the concept is being used. The point is that these two methods complement and support each other, by deepening and broadening my view of the concept "creativity".

As this is an ongoing project, my description necessarily must end without a satisfying conclusion. Even so, I hope that this text has given some new ideas into how close and distant reading can be combined, both fruitfully and frustratingly.

Conclusion

The point of this text has been to give an honest view of research in the making, by showing how we combine close and distant reading. This is done to illustrate the advantages of a mixed methods approach – interweaving the interpreting of quantitative and qualitative data, switching between them pragmatically.[43]

Our cases are very different. They are based upon different source materials and different methods, and while Drakman's case mainly focuses on a specific point in time, Gelfgren's map charts changes over hundreds of years in time and space. However, both cases have significant similarities as well, especially our positive experiences of moving between distant and close reading – between the pattern and the particular – as a method to deepen the understanding of the phenomena we study. As our understanding of our respective study objects grows, for instance when we identify large patterns through distant reading of quantitative data, inconsistencies and complexities become pressing and new issues are raised, which necessitates a return to the details to find answers. Close readings of specific texts or interpretation of specific datapoints on the map then raise questions only answerable on a macro scale, encouraging distant reading analysis. And so the research process continues.

We both find this approach helpful in order to account for the messiness of reality. By emphasizing our constant moves back and forth, and by openly showing how we combine different sources and methods, we want to encourage others to try using methods developed within the Digital Humanities. The methods and approaches we propose are not new, but we argue that by making use of digital tools, this can be done at a much larger scale than ever before, with less effort. Furthermore, this oscillation between on the one hand distant, large-scale, computer aided methods, and on the other close readings and interpretations, generates new and interesting historical questions in an iterative process.

We see three main advantages with this approach. First, computer aided methods make it possible for a single researcher to investigate a much larger number of sources than only those deemed to have been most influential. In his famous article "The Slaughterhouse of Literature", Franco Moretti problematized the tendency among literary scholars to focus only on canonical texts through close reading (a practice he polemically labeled

"secularized theology"), as this means that scholars devoted their lives to analyzing only a fraction of all written texts – 0,5%, in his estimation – while ignoring everything else.[44] In the same manner, within the history of science and ideas, distant reading tools make it easier to go beyond "Great men" and elite institutions, instead analyzing sources stemming from non-canonized texts, mundane events and forgotten knowledge makers. This way, we will gain a fuller picture of historical change, and how it happens at a myriad of places and levels simultaneously.[45] Similarly, the map visualization here described reveals larger patterns, as well as providing points of entries to examine the local life and context of the religious communities. This raises questions and adds nuances and complexity to the understanding of the role of religion in society and the role of the different religious institutions. It is in line with Richards White's notion of finding and revealing historical relations that otherwise will remain undiscovered.[46]

Second, switching between close and distant reading facilitates the discovery of absences. In our respective cases, we have identified areas where new prayer houses were not built, and a president who uses the word creativity surprisingly rarely. Such absences would have been very difficult to detect using only close reading methods, but they are important findings, as they delineate the extent of the studied phenomena. These absences, then, indicate the need for comparisons on the close reading level, to disentangle why the phenomena was widespread in some contexts and not others.

And third, larger patterns of change and continuity, hidden from the point of view of a single data point or text – what Ted Underwood has likened to the curvature of the Earth, invisible to observers standing on its surface – are much easier to identify through distant reading.[47] For instance, within the historiography of creativity, the interest in the concept is often said to wane in the 1970s.[48] Google Ngrams, however, gives a different picture, presenting the frequency of the use of this word as steadily rising without noticeable dips. When it comes to the churches and prayer houses, we can see how the intensity of establishing new buildings varies between areas and over time.

Of course, this approach is not without its difficulties, disadvantages or setbacks, which have already been discussed in relation to each case. Until now, apart from a few exceptions (many present in this special issue of *Lychnos*, and the projects *ActDisease* and *International Ideas at UNESCO* come to mind), distant reading methods have not been embraced within the history of science and ideas as strongly as within other fields, for instance in literary studies. Perhaps that is due to this method being incongruent with the most basic assumptions upon which our field is based?

Distant reading methods disjoint paragraphs, sentences and words from their context within a specific text, authorship, and context of creation. Moretti, while coining the term "distant reading", emphasized that this kind of reading means that "the text itself disappears" – and of course, the original context disappears too.[49] Distant reading is like making a scrapbook with snippets from different books to use as source material. Isn't that the opposite of what historians of ideas do? Since the 1960's, proponents of the Cambridge School have encouraged us to investigate "ideas in context", manifested through the book series with the same name.[50] Does it make sense on any level, apart from the linguistic, to study ideas or even words in newly created – digitally re-assembled – contexts? We argue that it does. For us, the point of distant, computer-aided reading is to reach a different kind of understanding compared to traditional methods.

The main reason we advocate for combining distant and close reading methods is that this way of investigating often makes our study objects foreign to us, sometimes even nonsensical or outright weird. We see this computer-generated weirdness as a great advantage. Looking at our study objects from angles not commonly used within the history of science and ideas (Word lists? Patterns of buildings?) often throws us out of the box which we unknowingly have erected around what we try to understand. Inevitably, much historical research, like all other human pursuits, is guided by path dependency. Study objects are understood according to what we already know about the world. But such preconceived notions limit our horizons of expectations and determine what we notice about them and what about them that we neglect.

By using new and sometimes uncomfortable methods, we try to see our study object in unfamiliar, strange ways. We are attempting to become surprised (if lucky, even baffled!). Hopefully, we will be confronted with a completely different manner of conceptualizing our study object, far removed from how we previously have understood it. That's why we encourage all readers of this text to try mixing close and distant reading, and to embrace the unpredictability of a computer-generated perspective. Who knows which strange aspects of your study object might become apparent to you if you look at it through the reading glasses of a computer?

Notes

1. There is an extensive discussion on the meaning and definitions of Digital Humanities which we will not go into here. We will use the term Digital Humanities in this text, although we argue that it is more fruitful to speak about humanities in a digital age – meaning that all researchers within the humanities ought to critically reflect upon the digital, whether this refers to study objects, tools or methods. For

further discussions on the Digital Humanities and its relation to different fields and disciplines, and examples of how different digitally aided methods are used, see for example Matthew K. Gold and Lauren F. Klein (eds.): *Debates in the digital humanities 2016* (Minneapolis, 2016); Eileen Gardiner and Ronald G. Musto: *The digital humanities. A primer for students and scholars* (New York, 2015); Kristen Schuster and Stuart Dunn (eds.) *Routledge international handbook of research methods in digital humanities* (Oxon & New York, 2021).

2. Mixed methods research is a methodology often used within the social sciences which combines elements of quantitative research and qualitative research, meaning the collection of both open and closed-ended data in response to research questions. We do not follow a traditional mixed method methodology here (for instance by deciding on a convergent, explanatory or exploratory approach ahead of time), but use the term more loosely to mean combining quantitative and qualitative methods to search for clues rather than to prove an argument. See for instance T.C. Guetterman, W.A. Babchuk, M.C. Howell Smith, J. Stevens: "Contemporary approaches to mixed methods–grounded theory research. A field-based analysis" in *Journal of mixed methods research* 13:2 (2019), 179–195; John Creswell & Vicki Plano Cark: *Designing and conducting mixed methods research* (Los Angeles, 2011); Sharlene Nagy Hesse-Biber & R. Burke Johnson (eds.): *The Oxford handbook of multimethod and mixed methods research inquiry* (New York, 2015).

3. See for instance R. Burke Johnson, Anthony J. Onwuegbuzie, & Lisa A. Turner: "Toward a definition of mixed methods research" in *Journal of mixed methods research* 1:2 (2007), 112–133; Victoria D. Alexander, Hillary Thomas, Ann Cronin, Jane Fielding, & Jo Moran-Ellis: "Mixed methods" in Nigel Gilbert and Paul Stoneman (eds.): *Researching social life* (London, 2015), 119–138.

4. In this article, we use the words "church" for the buildings of the Church of Sweden, and "prayer house" for the buildings of the confessional inner mission and the free church movements. All churches and denominations do however mix the use of the concepts "church", "chapel", and "prayer house". For example, the Church of Sweden (the former state church) uses both the words church and chapel to describe their buildings, depending on their ecclesiastical status, but both church and chapel are also used by some free churches, and prayer houses are used by some denominations.

5. Stefan Gelfgren: "Mapping conservative religion. A Bible belt in northern Sweden" in Stefan Gelfgren & Daniel Lindmark (eds.): *Conservative religion and mainstream culture. Opposition, negotiation, and adaptation* (New York, 2021), 17–35.

6. Clifford Geertz: "Thick description. Toward an interpretive theory of culture" in *The interpretation of cultures. Selected essays* (New York, 1973), 3–30.

7. Susan Schreibman, Ray Siemens, and John Unsworth (eds.): *Companion to digital humanities* (Oxford, 2004); Elton Barker, Christopher Bissell, Lorna Hardwick, Allan Jones, Mia Ridge, & John Wolffe: "Digital technologies. Help or hindrance for the humanities?" in *Arts and humanities in higher education* 11:1–2 (2012), 185–200.

8. Barney Warf & Santa Arias: "Introduction: the reinsertion of space into the social sciences and humanities" in Barney Warf & Santa Arias (eds.): *The spatial turn. Interdisciplinary perspectives* (Oxon & New York, 2009), 4.

9. See for example Anna Foka, Coppélie Cocq, Phillip I. Buckland, and Stefan Gelfgren: "Mapping socio-ecological landscapes: Geovisualization as method" in Kristen Schuster and Stuart Dunn (eds.) *Routledge international handbook of research methods in*

digital humanities (Oxon & New York, 2021), 203–217; Barney Warf & Santa Arias (eds.) *The spatial turn. Interdisciplinary perspectives* (Routledge, Oxon & New York); William A. Kretzschmar & Petrulevich, Alexandra: "GIS for language study" in Kristen Schuster and Stuart Dunn (eds.): *Routledge international handbook of research methods in digital humanities* (Oxon & New York, 2021), 218-236; Wright, Gwendolyn: "Cultural history. Europeans, Americans, and the meanings of space", *Journal of the society of architectural historians* 64:4 (2005), 436–40.

10. James Ash, Rob Kitchin & Agnieszka Leszczynski: *Introducing digital geographies* in James Ash, Rob Kitchin, and Agnieszka Leszczynski (red): *Digital geographies* (London, 2018), 2.

11. Johanna Drucker: "Is there a 'digital' art history?" in *Visual resources. An international journal of documentation* 29:1–2 (2013), 7.

12. Richard White: *What is spatial history?* (Accessed April 27, 2022). https://web.stanford.edu/group/spatialhistory/media/images/publication/what%20is%20spatial%20history%20pub%20020110.pdf (2010), paragraph 36.

13. William Least Heat-Moon: *PrairyErth. (A deep map)* (Boston, 1991).

14. This description of the potential and usefulness of deep maps is nothing that "materializes" from thin air. The possibility of building a useful database relies upon the researcher's ability to know what to search for, and the ability to know what kind of questions that seek an answer, and what kind of answers he/she wants to find in relation to the dataset. If the dataset is big enough one can always find correlations and patterns, but to make something out of these is a matter of historical scholarship.

15. Gelfgren: "*Mapping conservative religion*", 17–35; Idem: "Väckelsen och skapandet av det västerbottniska" in *Provins* 27:1 (2008), 33–39; Idem: "Umeås inomkyrkliga särart?" in *Thule. Kungliga Skytteanska Samfundets årsbok 2017* (2017), 171–189. For a discussion of Bible belts see for example Clifford J. Clarke: "The Bible belt thesis. An empirical test of the hypothesis of clergy overrepresentation, 1890–1930" in *Journal for the scientific study of religion* 29:2 (1990): 210–225; Charles A. Heatwole: "The Bible belt. A problem in regional definition" in *Journal of geography* 77: 2 (1978), 50–55.

16. With special thanks to system developers Cenk Demiroglu and Kajsa Palm.

17. There is an extensive discussion on critical visualizations, including whether it is possible and desirable to include and visualize the fuzziness of the data. But in this case, it was never an option, as the aim was for a simple and clean map.

18. See for example Nancy T. Ammerman: *Everyday religion. Observing modern religious lives* (Oxford, 2007); Robert Orsi: *The Madonna of 115th street. Faith and community in Italian Harlem, 1880–1950* (New Haven & London, 2002).

19. Definition from James Kaufman & Robert Sternberg: "Preface" in James Kaufman and Robert Sternberg (eds.): *The Cambridge handbook of creativity* (Cambridge, 2019) , xiii–xiv. Synonyms from *Merriam Webster's online dictionary*, https://www.merriam-webster.com/dictionary/creative#synonyms. Accessed April 14, 2022.

20. There are critics of creativity of course, but they all acknowledge it as something inherently positive, only currently misused. See Andreas Reckwitz: *The invention of creativity. Modern society and the culture of the new* (Cambridge, 2017), ix; Oli Mould: *Against creativity* (London, 2018); Paul Feyerabend: "Creativity: A dangerous myth", *Critical Inquiry*, 13:4 (1987), 700–711.

21. Kaufman & Sternberg, "Preface", xiii–xiv. Examples of journals about creativity include *Psychology of aesthetics, creativity, and the arts; Creativity research journal. Journal of creative behavior; Empirical studies of the arts. Imagination, creativity, and person-*

ality; Thinking skills and creativity. International journal of creativity and problem solving; Innovation and creativity management.

22. Raymond Williams: *Keywords. A vocabulary of culture and society* (London, 1988 [1976]), "Creative", 82–84.

23. Creative: 0,00312564403/ 0,0018408361= 1.69794803025; Creativity: 0,00135 90980/0,0005241166=2.59312145427.

24. Interview with Svante Lindquist, founder of the Nobel Prize Museum, November 29, 2021 by Annelie Drakman.

25. Richard Florida: *The rise of the creative class. And how it's transforming work, leisure, community and everyday life* (New York, 2002); J. P Guilford: "Creativity", in *American psychologist, 5*:9, (1950), 444–454.

26. There is a huge research field investigating the circulation of knowledge, sparked by Jim Secord's 2004 text: Jim Secord: "Knowledge in Transit" in *Isis*, 95:4 (2004), 654–672.

27. Scrivener is a word processor which also organizes research material, including images.

28. Reckwitz: *The invention of creativity*; Władysław Tatarkiewicz: *A history of six ideas* (Dordrecht, 1980).

29. Peter de Bolla, Ewan Jones et al.: "The idea of liberty, 1600–1800. A distributional concept analysis" in *Journal of the History of Ideas* 81:3 (2020); Idem: *The architecture of concepts. The historical formation of human rights* (New York, 2013); Peter de Bolla, et al., "Distributional concept analysis. A computational model for history of concepts" i, *Contributions to the history of concepts (Berghahn Books)* 14(1) (2019), 66–92.

30. John R. Firth: *Papers in linguistics 1934–1951* (London, 1957), 11.

31. AntConc is a commonly used software programs for digital text analysis.

32. www.sketchengine.eu.

33. Words which are frequently used but carry little meaning, such as "and", "or", "if", have, as customary, been added to a "stop word" list and are not included in this search.

34. Joseph Schumpeter: *Capitalism, socialism and democracy* (New York, 1942). The bigram "creative destruction" does occur 6601 times in this corpus, but apparently that specific term is the main extent to which creativity and destruction is connected there.

35. "In-house expertise" gives 4345 hits, "in-house creativity" 0.

36. Florida: *The rise of the creative class*; Mihály Csíkszentmihályi: *Creativity. The psychology of discovery and invention* (New York, 2013).

37. *American Presidency Project*, https://www.presidency.ucsb.edu/.

38. https://www.presidency.ucsb.edu/documents/remarks-before-business-roundtables-ceo-quarterly-meeting Accessed March 24, 2022. In August 2022, this document has been removed from this database, but can instead be accessed through the White House website: https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/03/21/remarks-by-president-biden-before-business-roundtables-ceo-quarterly-meeting/. Accessed August 24, 2022.

39. "Proclamation 10346—Read Across America Day, 2022", sent from the office of president Joseph Biden on March 01, 2022. https://www.federalregister.gov/documents/2022/03/04/2022-04776/read-across-america-day-2022 Accessed March 24, 2022.

40. Donald Trump tweeted from @realDonaldTrump between 2009 and January

2021, and had approximately 89 million followers when he was permanently banned from Twitter.

41. Barack Obama uses the word "creativity" 233 times in his full output, while Donald Trump uses it 45 times. Obama was president for twice as long as Trump, resulting in a corpus 50% larger, but it's still clear Trump uses the word far less often than Obama: 45 times is 19% of 233, where we might expect 50%. Joseph Biden has already used the word 23 times, about as often as Obama.

42. That interpretation would be supported by Michael Sander, who used this database in his *The Tyranny of Merit* to show how being "smart" became more important within American political language during the twenty-first century. Michael Sandel: *The tyranny of merit. What's become of the common good?* (New York, 2020), 92–95.

43. John Creswell & Vicki Plano Clark: *Designing and conducting mixed methods research* (Los Angeles, 2011).

44. Franco Moretti: "The slaughterhouse of literature" in *Modern language quarterly*, 61 (2000), 207–222, 208.

45. This kind of approach is often lauded within the growing field of the history of knowledge. See for instance Lorraine Daston: "The history of science and the history of knowledge" in *KNOW. A journal on the formation of knowledge* 1:1 (2017), 131–154; Johan Östling et al. (eds.): *Circulation of knowledge. Explorations in the history of knowledge* (Lund, 2018); Johan Östling: "Circulation, arenas, and the quest for public knowledge: historiographical currents and analytical frameworks" in *History and theory* 59:4 (2020), 111–126.

46. White: *What is spatial history?*

47. Ted Underwood: *Distant horizons. Digital evidence and literary change* (Chicago, 2019), ix.

48. Reckwitz: *The invention of creativity.*

49. Franco Moretti, "Conjectures on world literature", *New Left Review*, 1 (2000), 54–68, 57.

50. *Ideas in Context*, a Cambridge University press book series, a book series that discuss the emergence of intellectual traditions and related new disciplines". See https://www.cambridge.org/core/series/ideas-in-context/7E30BA052B5A1F0AF3C67156FEA725BE# Accessed August 24, 2022.

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