

The relational hashtag patterns of Scandinavian instapoetry:  
An exploratory metadata analysis of the poetry phenomenon,  
focusing on community practices and thematical patterns  
in the instapoetry ecology  
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## Abstract

This paper uses visual network analysis (VNA) to do an exploratory data analysis of instapoetry, focusing on the use and co-occurrences of hashtags connected to Scandinavian instapoetry. The goal was to reveal and explore some of the networked patterns and processes connected to the production and distribution of instapoetry, by using digital methods. Through descriptive measurements of metadata of instapoetry and a visual network analysis, this paper has been able to identify characterizations of such patterns. Findings reveal that the Scandinavian instapoetry community is small and Norwegian dominant, with an established use of semantically close words related to poetry being used as tags to organize and make the poetry findable. In addition, the hashtags also reveal larger popular themes and topics. Reoccurring themes are emotions, interpersonal relations, and mental health. While they at one scale state something about the content of the poems, some of these tags bring instapoetry into other communities and interest spheres on Instagram, with prominent examples being interest spaces of specific mental illnesses, but also, by way of one high-visibility instapoet, into the interest sphere of nature photography and Norwegian tourism promotion.

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## Introduction

Instapoetry over the last 10 years has grown into a worldwide social media phenomenon, with Scandinavia no exception. This is particularly true in Norway where the most famous instapoet, Trygve Skaug, has over 200,000 followers on Instagram as of spring 2022. Instapoetry serves as an example of one of the many ways millions of people today “use digital tools and platforms to create and share sophisticated cultural artifacts” [1]. A search for the hashtag #instapoetry on Instagram returns five million posts in spring 2022. Likewise, a query for the Scandinavian equivalent, #instapoesi, returns over 120,000 posts in spring 2022, a

large increase from 30,000 results returned in summer 2019.

Academic research on instapoetry so far has focused on the close reading of selected poetry, with different features of it discussed critically. Examples include instapoetry as self-help poetry (Pâquet, 2019), as an expression connected to black feminism (Matthews, 2019), or the new style of *nosthetics* (Grubnic, 2020). What they have in common is that they all look critically at *visible* instapoetry. Visible, in this case, is defined as that which has gained attention through engagement. In other words, visible poetry belongs to a few poets successfully utilizing processes for gaining fame and visibility in the overall social media entertainment ecosystem (Soelseth, 2022).

This paper is an attempt to step around the platformed logic so dominant in contributing to what we choose to engage with instapoetry, where the algorithmic result of visibility plays a much bigger part in the success of a selected few (highly visible users), over the multitude of others. While the successful can tell us something about social media logic over what is emphasized or not [2], it leaves other parts in the dark. All the variations of what falls under the umbrella term “instapoetry” are only visible from other scales and entry points.

An attempt at a broad and exploratory approach was done in the English edited instapoetry collection *Instagram Poetry for Every Day*, from the National Poetry Library in the U.K. This collection grew out of the first instapoetry exhibition, and the result of an open call for people to submit their poetry to a hashtag on Instagram, with the call receiving over 1,000 submissions. The collection categorized instapoetry into ten different overarching prominent themes and topics identified by the editors; aspiration, creativity, identity, humor, love, mental health, nature, society, spirituality, and wordplay (Atkinson and McCabe, 2020). However, none has so far attempted to understand the phenomenon by doing a reading and analysis of metadata connected to the published instapoetry using digital methods. As so little has been done to examine the instapoetry corpus at large, an exploratory investigation into the phenomenon is needed, and is something a visual network analysis (VNA) can serve as a productive tool for (Venturini, *et al.*, 2021). Similar research using VNA has provided fruitful results in using co-occurrence network analysis to examine hashtag patterns in relations to the content and form of publishing (Ichau, *et al.*, 2019; Venturini, *et al.*, 2021; Wang, *et al.*, 2016).

The visual analysis is a qualitative analysis of the visual representation of the co-occurrence network, where characteristics are attributed visually, and not through measurements [3]. This means that the article set out to engage with the specificity of nuance found in qualitative analysis and hermeneutic probabilistic analysis and interpretation. To assist in the reading of the visual network, the exploratory analysis also contains a brief descriptive quantitative analysis of a bigger dataset of metadata from instapoetry posts. The data was collected from the Instagram interface by scraping publicly available data from public posts with the Scandinavian hashtag *#instapoesi* [4].

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## Theoretical and contextual background

Patterns and structures in media are especially important when investigating an ecology, where ecologies can be seen as “dynamic systems in which any one part is always multiply connected, acting by virtue of these connections” [5]. To study media ecologies is therefore to study the connections between actors and processes in a media system — such as Instagram — at various scales, with special interest in the patterns they create and what these patterns can tell us about the ecology they make up and of which they are a part. A scale is therefore a way to approach such complex assemblages as ecologies [6]. Using a scale, it is possible to grasp a specific type of relations manifesting itself from that specific vantage point [7]. In this article, the scale of metadata is applied as the specific vantage point from which to see (Scandinavian) instapoetry on Instagram.

Metadata made in social networks are entangled with the ecology that they map [8], and sociotechnical practices and processes underlying the data must be considered [9]. To make sense of patterns it is crucial to understand what the network is made up of. Social media data, such as hashtags, has production, maintenance, and meaning patterns, [10], and they are sociotechnical formations, serving not only as criteria for corpus selection but also displaying the complexity of platformed engagement (Omena, *et al.*, 2020). Having a proper contextual understanding will ensure that we understand data and processes that are producing data, which also affect meaning. The theoretical and contextual background presented next will therefore provide a context of socio-technical processes behind hashtags, the main data components of visual network analysis, and a constitutive element part of Instagram.

### ***Instagram ecology***

Instagram is a social media platform that, by definition, is networked and can be approached as an ecology or ecosystem. Individuals share content on Instagram, content that is oriented towards self-expression and entertainment (Alhabash and Ma, 2017; Lee, *et al.*, 2015). Users upload photos, images, or videos. While it is tempting to argue that Instagram is a platform for sharing moments instantaneously, some research into social media use has shown that production is not immediate, but rather planned and composed, where aesthetic and communicative ideals override instinctive postings [11], leaving “instant” to describe the way in which users consume and experience content.

Part of this experience is through, and with the aid of, hashtags. Hashtags are part of the system of production, distribution, and consumption existing on, and as part, of Instagram. For instance, Instagram’s infrastructure cannot function without metadata — such as the hashtag — and would look radically different without its networked structure created around hashtags. Hashtags make up a constitutive part of Instagram ecology and the general vernacular of the platform.

### ***Instagram vernacular***

Instagram has its own distinct “platform vernacular” [12]. It is a combination of stabilized styles, grammars, and logics, which makes up practices, content, and cultures on the platform [13]. This vernacular encompasses the particular aesthetics and affordances of the platform and is therefore shaped by the material-discursive entity of the platform, through the entanglement of material architecture, and mediated practices and communicative habits of users [14]. Manovich similarly noted the cultural “language” of a platform, containing conventions and techniques that define form and content [15]. The platform vernacular, or “language”, concerns both content (what is captured and shared) and form (how it is capture and shared) [16]. The social tagging system of posts are a result of such vernacular behaviors. Specific hashtag practices can be viewed as taking part and making up more specific vernaculars of communities or ambient affiliations.

### ***Hashtags on Instagram***

Hashtags establish and expand the networked structure of Instagram acting as logistic media, organizing and describing content, and working as a folksonomy (Highfield and Leaver, 2015). Adding a hashtag makes a post searchable, by making the post relevant to a specific known theme or topic decided by the user [17]. Hashtags thus describe and provide information about content and composition and, as metadata, facilitate retrieval of content by making it searchable and serve as indexes or bookmarks [18].

At the same time, hashtags also express specific vernaculars, and produce as well as are produced by users in so-called “ambient” affiliations/communities. Understanding the use of hashtags beyond increasing findability adds a necessary context to interpreting visual networks of hashtags. Looking at the hashtags’ entanglement in the platform vernacular means being attentive to how both conventions for hashtag use, as well as the meanings ascribed to different forms of hashtags, are produced. In the following sections, I will present the logic behind using a hashtag as a criterion for corpus selection and how to understand hashtags as part of a platform vernacular.

*Hashtags as “a way in”*

Hashtags are a relevant entry point for researching phenomena present on or through Instagram (Highfield and Leaver, 2015; Zappavigna, 2011). In combination with its material abilities to sort and facilitate retrieval of content, a shared hashtag — or multiple shared hashtags — indicates a virtual community of interested listeners, who use it, follows it, or search for posts [19]. These communities are usually made up of a few high-visibility users among a number of ordinary and casual users (Omena, *et al.*, 2020).

A hashtag as proxy for a community has perhaps become even more important on Instagram following the interface change in December 2017, allowing users to follow a hashtag in the same way that they follow users. As “[t]he lack of a built-in regram function, or similar public sharing tool [20], limits the potential for boosting content visibility” [21], hashtags have become the *main* way to increase likelihood of a given post being found on Instagram, as well as reaching audiences, increasing the possibility of gaining likes and followers [22]. It is possible to state that the hashtag *#instapoesi* works as a proxy for instapoetry practice in Scandinavia.

*Enhancing visibility and traceability*

Combining community specific tags with other tags established in other communities can contribute to a further flow and distribution of content. Strategic combinations of hashtags have been identified as a strategy to enhance visibility and to reach different social circles (Wang, *et al.*, 2016) and access various communities of audiences [23]. These types of hashtags usually relate to the content of a post, such as describing the object, event, or atmosphere, or assigning a post to “belonging” to a certain type of category of posts [24]. At the same time, they also contribute to the findability of a post. These types of hashtags often make hashtag chains containing multiple words in the same semantic field, or various morphological forms of the same word [25].

Strategic use of hashtags can also work in combination with other uses of hashtags, usage not related to the findability of content. Strategic use is a type of acquired hashtag literacy related to the vernacular. Tags that are too specific might not be discoverable, and at the same time tags that are too general could be too broad to return useful results for someone searching for content [26]. However, it could also be a sign of the user not being aware of “how to effectively target their message to the appropriate community of followers” [27].

*Emphasizing and contextualizing*

Bruns and Burgess also note that an alternative explanation of very generic hashtags is “as a simple means of emphasis” [28], or communication of non-verbal cues and extra-textual meaning the same way emojis do [29]. This type of use can be seen as emphasizing, for instance, a theme or topic of something in an image, such as a written poem, at the same time giving a frame of interpretation for a post itself. These tags relate to user’s emotions, mood, or context for a post. They do not (and are not) meant to increase findability, but instead add extra verbal information to content, as a form of meta-commentary or intimate expression [30].

McCosker and Gerrard’s (2020) study on the “community” around the *#depressed* hashtag provided indications of this phenomenon. McCosker and Gerrard’s (2020) research also supported that not every hashtag had a virtual community around it, noting how the *#depressed* “community” was fragmented and diverse, but it nevertheless provided a frame of interpretation to posts with this tag.

*Multiple meanings of hashtags*

The meaning of hashtags are always in a constant negotiation and are an effect of users’ changing use of hashtags themselves [31]. Thus it is often unclear what they mean [32], as well understanding their function.

The demarcation between hashtags used to increase findability and hashtags used for other purposes might

be muddy. Zappavigna noted that a distinction between whether something was intended to be marked as searchable or not by the use of hashtags would likely break down [33]. It is for this reason that this paper does not try to apply a strict categorization of hashtags in an analysis of the hashtag co-occurrence network, echoing Zappavigna's understanding of hashtags as something which can "only be partially described through discrete categories" [34]. Instead, these different descriptions serve as examples of the broad function of tags as more than just regular metadata, but *metadata expanded*. An emphasis is put on how patterns of use can demarcate different sub-vernaculars which in turn can indicate different communities or hashtag practices of specific clusters of users. As well as broadly treating the semantic meaning of hashtags as words to indicate something of content, whether it is to categorize or give more context. The assumption is therefore that content in some way relates to the words chosen as hashtags. To summarize, if this is what we can know about hashtags on Instagram, then *how can we understand the topology of the map that illustrates the hashtag co-occurrence network?*



## Methodology

In this study, metadata connected to Instagram posts using *#instapoesi* was collected and repurposed. Following a media ecological perspective, re-purposing metadata can be seen as a way of re-producing elements that are produced in an ecosystem. This means generating representations of patterns they are part of producing, even if these patterns were never complete renditions, and always the result of interpretations.

Further on, two different techniques were employed to carry out exploratory analysis. First, a descriptive quantitative reading of the complete dataset was used, and second, and most central, a visual network analysis of hashtag co-occurrences from a curated sample of the dataset was generated. The methodological processes involved going from a phenomenon to data (by repurposing metadata) to display. The visual network was therefore not a presentation (statement), but a representation, made visually from data by using algorithms for display.

The exploratory analysis takes inspiration from the three layer (3L) approach to hashtag engagement outlined by Omena, *et al.* (2020), and is engaging mostly with the second layer, that of defining particular hashtag activity [35], asking the question of how the co-occurrences of hashtags can indicate different hashtagging practices and be an indication of specific issue spaces (here: popular themes and topics of instapoetry).

### *Process of data collection and sample selection for VNA*

In Scandinavian instapoetry, the hashtag *#instapoesi* [36] indicates a stabilized hashtag, with around 35,000 posts at the time of data collection. The data used for this study were collected from Instagram by using the *instagram-scraper* (version 1.6.1) Python program to extract data of posts with the hashtag *#instapoesi* from Instagram's Web interface. All public posts with the hashtag were scraped for the following: User ID [37], timestamp, URL to the original post, number of likes, number of comments, other hashtags, captions, and the images themselves [38].

The query was for all posts up until the day of collection (5 June 2019). The dataset was then pre-processed by removing the last published posts, to allow all posts in the dataset to have had a certain amount of published time. Further, an initial exploration of the earliest uses of the hashtag was completed to find a time of stabilization, as an initial starting point from where the hashtag became a constitutive element of instapoetry in Scandinavia. While the initial set had a range of posts from January 2012 to June 2019, the final data set contained 30,951 posts from 1,367 users for the timeframe of 1 January 2015 to 20 April 2019. For this dataset a descriptive quantitative analysis were carried out.

The data sample for the hashtag co-occurrence network was chosen based on engagement and patterns of



use from the complete dataset, with the intent of capturing a non-exhaustive sample of the more active instapoetry-dedicated accounts. The same sort of selection, based on engagement, can be found in other studies, such as a study on cross-platform visual vernaculars, where Niederer (2018) chose to focus on most engaged with content, arguing that dominant patterns demonstrate the practices and formats of platforms [39]. Venturini, *et al.* also highlighted how the ideal was not exhaustive, because it produced more noise than signal [40]. The sample still encompassed more than a few high-visibility users.

### ***Visual network analysis***

The central technique for analysis in this study was visual network analysis (VNA), where the objective was to “turn relation structures into visual patterns” (Venturini, *et al.*, 2021), based on the assumption that “space allows us to see patterns between elements normally separated by time” [41]. The spatialization was done by use of the computational analysis program Gephi [42], after exporting hashtag data from the dataset connected to the 2,000 most liked posts (by 164 unique users).

The visualized network display was analyzed according to principles outlined by Venturini, *et al.* (2014), and further guidelines for interpretation of visual features through a formal analysis of a force-directed layout (Venturini, *et al.*, 2021). The layout is constituted by nodes which are “(1) positioned according to their connectivity; (2) sized proportionally to their importance; and (3) colored or shaped by their category” [43].

The *Noverlap* algorithm was used to ensure that as many of the tags as possible were visible. The *Forced Atlas 2* algorithm was applied to plot and visually show the distance between hashtags in relation to how often they appeared together and how often a hashtag itself was used. Size of nodes were adjusted to how many edges they were connected to, as well as the importance of other nodes that they were connected to through edges, using the *Eigenvector* algorithm. A modularity-based community detection algorithm was used to identify possible clusters of different collectives, complementing the density of the network. Different clusters were given different colors.

Last, for interpretive purposes, a degree range filter was applied. The degree range filter was set to 60 degrees for its final visualized output. Here, the intent was to retain the most dominant patterns and make them more visible by removing unnecessary “noise”. “Noise” consisted of tags appearing only twice or less and lacking multiple edges. Such tweaking is key to making relational structures visible [44]. However, the existence of that type of “noise” was also an important finding which will be referred to in the discussion, following the section on findings below.



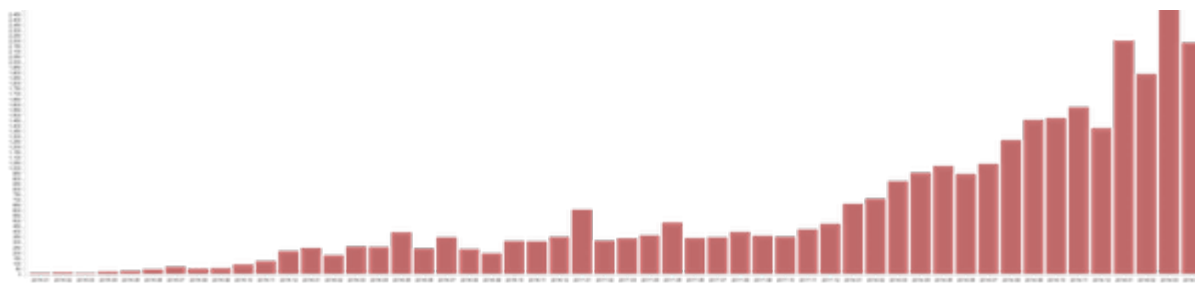
## **Findings**

To aid the visual analysis of the hashtag co-occurrence network, an initial descriptive quantitative analysis was done using the Python program *Jupyter Notebook* and the *Pandas* library, providing the analysis with aggregated patterns. This analysis also served as an argument for sample size selection for hashtag co-occurrence analysis.

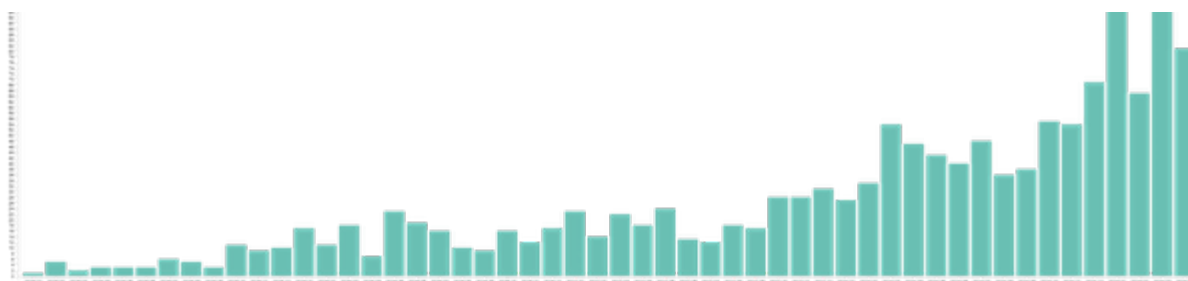
### ***Descriptive patterns of #instapoesi data***

#### *Growth of users and content over time*

First, posts ( $n = 30,951$ ) were mapped chronologically by timestamp. [Figure 1](#) shows number of posts by month from January 2015 until April 2019. [Figure 2](#) illustrates the number of new unique users ( $n = 1,367$ ) using the hashtag each month, during the same timeframe.



**Figure 1:** Number of posts with the hashtag *#instapoesi* by month, January 2015–April 2019.



**Figure 2:** Number of unique users using the hashtag for the first time each month, January 2015–April 2019.

An increasing amount of Scandinavian instapoetry is published on Instagram, by an increasing number of users. There is a clear growth of unique posts for each month, with 2018 showing an escalating growth, and further spurts in 2019. The peak of number of posts appeared in March 2019 with 2,492 posts. The same growth pattern can be found for the number of unique users. March 2018 was the first time that over 50 unique users started using the hashtag. Almost 800 of the total 1,367 users began using the hashtag from March 2018 and onwards, showing an increase in use.

The similar growth rate between the number of entries and the number of first-time hashtag users could be seen as a representation of interest in publishing instapoetry on Instagram in Scandinavia. However, when comparing the number of users to the total number of registered Instagram users in Scandinavia (around 12 million in Q3 of 2019 [45]); there was a very small portion of Scandinavian Instagram users publicly using the *#instapoesi* hashtag [46].

#### *Few dedicated users*

Out of the 30,951 posts distributed between the 1,367 users posting, 465 users posted only once with the hashtag, and 925 users posted 10 times or less. The highest number of posts by single users were 763, 665, and 477 posts. The variation between median (four posts) and mean (22 posts) also indicates an overweight of users on the lower end of the scale. Zooming in on selected users with few posts also found that these users did not have accounts dedicated to only posting instapoetry.

Regarding likes of the posts, very few posts had many likes, with 1,719 posts from 147 users having more than 100 likes, and 24 posts from five users having more than 1,000 likes, with the highest amount of likes for a post being 2,464 likes. Twenty of the top liked 24 posts were from one single user. This means that the Scandinavian instapoetry community shows the typical make-up of a virtual community, with a few high-visibility users among a group of less known but dedicated posters as well as casual users (Omena, *et al.*, 2020).

A cross-referencing of number of posts with time spent posting revealed that there was a variation among users in how often they used the hashtag irrelevant of when they started publishing for the first time.

### *Hashtag chains of #instapoesi*

The data set consists of 24,072 unique hashtags, with most of them being used twice or less ( $n = 18,546$ ). This indicates a great variation of tags, and few specific tags being used often. Posts contained any number of hashtags between 1 and 34 (median 11, mean 12). Typically, users could be divided into those using *#instapoesi*, or *#instapoesi* plus one or two other hashtags, and users using longer hashtag chains consisting of 10–20 hashtags. The dataset contained 18,568 unique hashtag chains, but most with only small variations among them. The variations of these chains contained words that seemed to describe or contextualize poems in these posts.

The most popular hashtag chain was: “*#instapoesi #words #poesi #lyrikk #instadikt #renpoesi #norsklyrikk #poetry #dikt #ord #norskedikt #instalyrikk #norskpoesi #poem*” (14 hashtags) used in 494 posts by three unique users, closely followed by the much shorter “*#instapoesi #poesi #dikt*” by 23 unique users (396 posts). However, of these 23 users, only three users accounted for the majority ( $n = 368$ ) of the posts with this chain. The same findings were also found with other well-used hashtag chains. The most used chains were set chains reused by specific users.

Common for all chains in the dataset was that they all contained morphological and semantically related words to poetry and writing. As stated earlier, a combination of hashtags can demarcate a network or community (Geboers and Van De Wiele, 2020), with different hashtagging practices (Neumayer, *et al.*, 2021), and possible commitment to different issue spaces (Omena, *et al.*, 2020). These tags described the poetry space, where tags described content and were used for indexing.

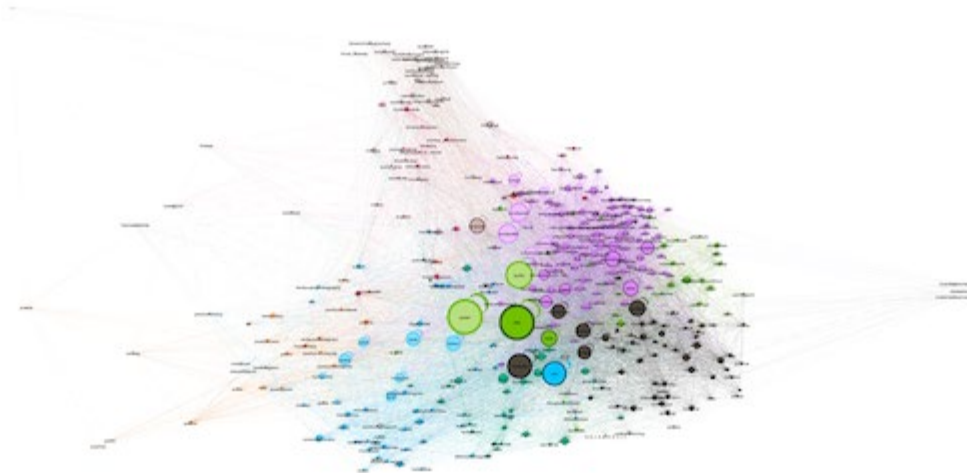
Based on these findings, a sample of the 2,000 most liked posts for network visualization provided adequate representation of the group of dedicated users in terms of number of posts, as well as posts from across the timeline of the dataset, while at the same time avoiding only looking at hashtag use of a few highly visible users.

### *Hashtag co-occurrence visual network analysis*

This analysis is a situated qualitative visual analysis based on what was known of the functions of hashtags on Instagram and of the descriptive quantitative patterns of the dataset. The network consisted of relational structures visualized as patterns. In the visualized network, every hashtag is a node, and every co-occurrence is an edge. The sample created a network consisting of 3,503 nodes (tags) and 65,826 edges (co-occurrences).

The visualization of the data sample showed an initial pattern of a plentitude of nodes (tags) and edges (co-occurrences). [Figure 3](#) illustrates the visualized network after different algorithms mentioned earlier were applied, and “noise” was filtered.





**Figure 3:** Hashtag co-occurrence network of *#instapoesi*.

Note: Larger version of Figure 3 available [here](#).

### *The network at large*

In VNA, what matters is the relative position of nodes and what forms clusters and sub-clusters, and the separation between these. For example, large empty spaces between two clusters denote an absence of connection [47]. In the network in [Figure 3](#), hashtag clusters can be seen dragging the center into either sub-cultures of the community, or possibly other communities on Instagram. Chain variations, resulting from the inclusion of different tags not related to morphological and semantically related words of poetry and writing, are creating different clusters.

The network visually resembles a triangle, being stretched in each corner, with the largest nodes more or less centered in the network. One interpretation is that Scandinavian instapoetry consists of general hashtags demarcating the instapoetry community. The placement of the largest nodes implies that, in addition to *#instapoesi*, there are also other regular co-occurring hashtags. These hashtags are semantically close to the term instapoetry, such as *#poesi*, *#lyrikk*, *#dikt*, *#instadikt*, *#mikropoesi*, and *#ord*, also in various morphological forms, such as *#dikt* and *#dikter*. *#dikt* was used as a tag for 1,298 of the 2,000 posts, with 98 of 164 users applying this tag.

Smaller yet central nodes not semantically related to poetry were *#livet* [life] (625 posts, 39 users), *#følelser* [emotions] (316 posts, 16 users), and *#tanker* [thoughts] (438 posts, 25 users) indicating broadly shared topics, and will be addressed later in this section.

### Community clusters

Modularity is a measure of network structure where strongly interconnected nodes are assigned to the same cluster, even if they do not necessarily signify a distinct user community. The network modularity of 0,484 indicates that it is a mid-modularity network of less defined communities, but where some clusters were significantly disparate, while sharing a substantial number of nodes in common.

The community [48] detection algorithm segments clustered into different colors. However, Venturini, *et al.* warned in using this algorithm that “community-detection algorithms tend to generate clear-cut and (generally) non-overlapping partitions” [49]. To ensure critical scrutiny of this type of visualization, it is important to respect the inherent ambiguity of the phenomenon that they represent [50]. Following in this line, their inter-connectedness demonstrated how they visually merged into each other, leaving an absence of clear-cut clusters. While the algorithm forces to pick one color for a hashtag, its placement in the larger network worked against this initial colorization. Position was therefore more important than coloring.

In the spaces in a network, one can find bridges, nodes or clusters which can be located outside the clusters that they connect. Bridges can also be located in other clusters if they are more connected to them than other clusters [51]. The centralized nodes with different colors therefore highlight the cluster that they act for as the main bridge for, however small differences might be.

Further variations in overlapping were also present. While purple, light green, and dark brown nodes were shown as overlapping and sharing multiple tags, the red, light brown and orange clusters appeared more distinctively separate. While red, light brown, and orange shared many edges with the main, largest nodes, they shared fewer edges with other clusters, and each other. Their neighbors were further apart compared to the violet cluster. Multiple close neighbors signified density. Density, as opposed to centrality, signaled how often tags appeared together in relation to each other. The closer two nodes were, the more neighbors they had in common.

Large nodes with a less globally centered position were *#psykiskhelse*, *#mentalhelse* [both translated: mental health], *#norskedikt*, and *#norskpoesi* [Norwegian poetry] in the purple cluster, *#kjærlighet* [love] in the dark brown cluster, and *#renpoesi* [a specific community-hashtag on Norwegian Instagram] in the light brown cluster. While *#renpoesi*, *#norskpoesi*, and *#norskedikt* acted as bridges between the red and light brown sub-clusters and the main cluster, *#psykiskhelse* was particularly central in the purple sub-cluster of the main cluster, acting as an anchor. The semantically close tag *#mentalhelse* was drawn somewhat towards the light green sub-cluster along with smaller nodes related to the same topic, such as *#trist* [sad], *#depresjon* [depression], and *#sykdom* [illness].

It was difficult to define nodes in locally central positions of different sub-clusters, as the nodes in general had many edges connected to them, indicating a less polarized affiliation of distinctively different clusters, and rather an ambient affiliation through the central bridges (or tags). This was also supported by the mid-range modularity of the network and low density. Still, they made it easier to describe different parts of the network, and the analysis will continue with focusing on different clusters or rather clusters of clusters.

### *Poetry, mental health, emotions, and interpersonal relations*

Because of their overlapping and similar density, clusters colored purple, light green, and dark brown will be called the main cluster (MC) for the rest of this analysis. This is also what could be determined to be the core hashtags of the larger instapoetry community.

The purple sub-cluster, unlike the other clusters, had a plethora of hashtags, showing high density. In this cluster, there were also hashtags related to mental health, including the more prominent *#mentalhelse* [mental health], but also smaller ones such as *#depresjon* [depression]. The purple cluster also had hashtags related to emotions, relations, and the everyday, such as *#familie* [family], *#vennskap* [friendship], and *#kjæreste* [significant other]. Another prominent type of hashtag in this cluster was multiple hashtags related to writing in Norwegian, both semantically close words and morphological variations of words related to writing. Examples are *#norsklyrikk* [Norwegian poetry], *#diktpånorsk* [Norwegian poems], and *#skrivesamfunn* [writers' society], in addition to the already mentioned larger bridges of *#renpoesi*, *#norskpoesi*, and *#norskedikt*.

The dark brown sub-cluster contained the same type of tags as the purple sub-cluster, but here more tags were related to emotions and relations and fewer tags were related to writing. Tags such as *#forelsket* [in love], *#lengsel* [longing], *#deg* [you], *#sårbar* [vulnerable], *#nærhet* [closeness], as well as the larger node

*#kjærlighet* [love], all revealed very contextualizing tags giving away emotions and relational circumstances for a published instapoem, or possible topic or theme. In the sample, the tag *#forelsket* was used by six users, while overall in the dataset this hashtag was used by 26 users.

The smaller green sub-cluster illustrated a use of words related to mental illness that were more specific, compared to the other two. Hashtags such as *#terapi* [therapy], *#utmattningssyndrom* [chronic fatigue], *#adhd*, and *#bipolar* were part of this sub-cluster. However, only two users were behind the hashtag *#adhd*. In the complete dataset, this was eight users, with similar numbers corresponding to other tags in the cluster. The clustering of these hashtags seemed to be a case of sharing multiple specific tags related to specific mental issues, however, there were few users for each specific illness.

### *English, Danish, and Swedish in the outskirts*

The hashtags in smaller clusters of orange, light blue, and sea green fortified that the MC is Norwegian dominant, because they are mainly dragging Norwegian instapoetry into other national spheres, as well as international ones. Generic Scandinavian words such as *#poesi*, *#poet*, and words written the same in Norwegian and Swedish such as *#dikter* and *#instadikt*, bridged the main cluster with some smaller and less dense clusters at the bottom and bottom left of the network. These clusters were made up of mostly English tags (orange), Swedish tags (light blue), and Danish tags (sea green). These clusters all featured a much smaller size, in terms of density, number of nodes, and node size. The same type of words as in the main cluster appeared here. The clusters all had structural spaces between them and the big main cluster, even if the Danish cluster was closer to the MC. However, this could also simply be because Danish and Norwegian share more words in common and, thus, have more co-occurring tags in common.

Zooming in on selected posts showed that Norwegian users in the original data set also used Danish tags, for example using both the Norwegian and Danish word for poem (*#dikt*, *#digt*). Zooming in on those with English tags (orange) in the dataset showed that they were used when the language used in a poem was English. In addition to using Scandinavian and Norwegian tags to gain findability among Scandinavian users, users were also making their English content accessible to the larger international phenomenon of instapoetry. Last, the same type of words found in the rest of the network were also present in English, such as *#words* and *#poetrycommunity*, but also *#mentalhealth* and *#love*.

### *One woman led the #visitnorway cluster*

The last major clusters identified by the algorithm were the red cluster and light brown clusters at the top of the network. These are particularly interesting because they contained a collection of well-used hashtags with high density, but which rarely appeared with other hashtags in the network. There was a large structural space between this cluster and the MC. These clusters consisted of tags such as *#Norway2day*, *#mittnorge* [My Norway], *#visitnorway*, *#turjenter* [girls hiking], *#visitnordfjord*, and *#sognogfjordane* [A county in Norway]. However, these were all hashtags used by one specific user (except for one post) both in the sample and the whole dataset. They appeared as separate clusters in the network because they were used often by this user, but as part of different variations of two main hashtag chains connected to this user. This Norwegian user seemed to diverge from the more common thematic patterns of hashtags used in the rest of the network. Likewise, her content was an intersection of nature photography, Norwegian tourism promotion, and poetry, sometimes by her and sometimes by other recognized poets, such as Norwegian poet Tor Ulven. She was also one of the few users having posts with over 1,000 likes.



## **Discussion**

The objective of this study was to explore what visualizations of co-occurrences of hashtags in connection to Scandinavian instapoetry can reveal about the phenomenon through a formal qualitative visual network

analysis, identifying relational structures. In this section, findings are discussed by applying a contextual analysis in order to understand hashtags and hashtag use on Instagram, but also using descriptive aggregated patterns from the metadata dataset. This discussion will focus on patterns of use connected to the production, maintenance, and meaning of hashtags, with a particular attention to patterns of findability, content, and context description. Which tags appear together and what do these tags emphasize?

First, I will discuss posting patterns, then the dominance of Norwegian, before turning to topics and themes of instapoetry that seem to be dominant, both by most users (mental health and emotions) and by one single highly visible user (nature and Norwegian tourism photography) and what it means for the dissemination and use of poetry on the platform.

### ***Posting patterns***

The dataset revealed that the number of users posting instapoetry was rather modest compared to the overall number of Scandinavian Instagram users. The fact that 925 of the 1,367 users in the dataset had posted 10 or fewer posts, and the median and mean of number of posts was low (4 and 22) indicated a virtual community of many regular users. Those with a relative higher number of posts and engagement (likes) were users with accounts dedicated to posting instapoetry and promoting themselves as poets. Of these, however, only very few could be called high-visibility users.

If an instapoet is to be understood as someone with an account dedicated to posting instapoetry over time, there were actually very few of these users, or poets, and even fewer with some sort of platformed success. For such a widely discussed phenomenon, the production of instapoetry remained, at its core, a small sphere of the Scandinavian part of Instagram, in terms of the production of content.

### ***A Norwegian Instapoetry hashtag vernacular***

While the initial choice of hashtag as the entry point into Scandinavian instapoetry was chosen on what seemed to be the term used for this phenomenon in all Scandinavian countries, the hashtag network revealed a dominance of central and large specific Norwegian tags (such as *#norskedikt* and *#renpoesi*) and fewer, and less-used, Swedish and Danish tags. Nodes stretching away from the Norwegian center and into Denmark, Sweden, and the international sphere (through English tags) made up the blue and dark green clusters. While they were all semantically close to Norwegian tags, they were spatially far away, smaller, and fewer.

This does not mean that instapoetry is not “big” in Sweden and Denmark, but that *#instapoesi*, despite being the general term in Scandinavia, might have closer relations to specifically Norwegian writers on Instagram. *#instapoesi* is therefore a more geographically situated hashtag. The tradition for writing in one’s own native language, as opposed to using English, is possibly stronger in Norway. Another reason could also simply be that instapoetry as a phenomenon is larger in Norway. Here, missing contextual research regarding instapoetry in Scandinavia means that it is not possible to argue for the best way to interpret this result. While the purpose to say something about instapoetry in Scandinavia was part of this study, perhaps we can speak with more confidence about instapoetry in Norway rather than the rest of Scandinavia.

Visual network analysis was an attempt at going beyond the logic of the platform. However, the visualization still presented a subset of the larger dataset, consisting of the hashtags belonging to the most liked posts, overlapping with a small group of dedicated users. What it therefore illustrated was patterns of themes and topics popular on Instagram among dedicated users, where popularity was determined by engagement. Certain poetry engaged, and what engaged was also encouraged.

The complete dataset was not co-extensive with the complete production of instapoetry in Scandinavia. It was narrower (missing out on some users publishing instapoetry) and broader (the hashtag was used for other purposes as well). It was used for other purposes when it was employed, for example, to advertise a printed poetry collection. It missed some users publishing instapoetry by not collecting posts from closed

accounts, posts that were deleted, posts where the hashtag had been removed, and posts that did not employ the hashtag at all. The famous Norwegian instapoet Trygve Skaug did not appear in this dataset because he does not use the hashtag, nor hashtags in general, with exceptions being his own name and specially crafted hashtags used in promotional content. The practice of hashtagging can be seen as a divergent practice for poets who worked more in consolidating their fan base than exploiting the networked capabilities of hashtagging on Instagram. The data represents efforts by many trying to establish an audience or fan base rather than consolidating it. Hashtag relations however demonstrate some interesting patterns.

The large and centrally located tags in the network indicated a shared lexicon of tags used when posting instapoetry, in line with Veszelszki (2016) on how chains are usually made of words in the same semantic field. This was also strengthened by specific well-used hashtag chains, and small variations to these chains. These hashtags demarcated the Norwegian instapoetry network. The chain variations consisted of a set of words in the same semantic field, and with morphological variations, used to increase findability.

This pattern indicated a desire to be noticed, for content to be discovered, and to be followed. However, one can wonder how much more visible — or findable — poetry might be. As Zappavigna (2018) indicated, tags chosen from one perspective might from another perspective — the perspective of the user as a searcher — be less likely to be chosen as search words because of their broadness. The choice of broad words categorizing posts to congealed the flow of instapoetry into other spheres of Instagram. This was particularly true for those users who employed chains with only poetry-related words. This meant that the use of such tag chains did not necessarily improve overall findability of content, even if they were chosen with a desire to increase findability. But this could also be explained by users not being aware of how to effectively target their messages, as they perhaps were not well-versed in that part of Instagram vernacular.

On the other hand, it might be that the users were trying to direct the flow of their content into an idea of a listening poetry community on Instagram. As Zappavigna and many others argued, often-used tags also indicates a shared community (Brett and Maslen, 2021; Geboers and Van De Wiele, 2020; Omena, *et al.*, 2020; Wang, *et al.*, 2016; Zappavigna, 2011). This was also echoed by the prominence of such tags as *#skrivesamfunn*, *#renpoesi*, and *#poetrycommunity*, found in the MC, which all in some way implied a community of some sort.

Density could also be explained by what these data represent, as the tags were derived from posts, where many of the posts had the same users. This may mean that were not only deriving their size and density from different users using the same tags, but also from being used repeatedly by unique users. A larger hashtag was *#forelsket*, which was used often, but by few users (six in the network, 26 in complete dataset). However, the regular use of specific tags also influenced other users to use these specific hashtags.

Even if the community detection algorithm was used, the clusters defined by the algorithm had vague outlines. While the cluster-making algorithms enforced order, attention to how something was visualized worked against the idea of a clear-cut order. The visual ambiguity mirrored overlapping and entangled practices of the larger Norwegian instapoetry community. With overlap of clusters and spatially close nodes, there were no defined nodes with central positions which could visually indicate sub-communities or separated communities, with a possible exemption of the *#visitnorway* cluster.

While descriptive indexical tags were at the core of the community, the network also stretched into different corners, which could be defined as different sub-clusters. Tags related to emotions, relations, and mental health made up the dark brown part of the triangle but were also found in the dense center of the network and the MC in general. The dense violet sub-cluster was filled with such tags, revealing interpersonal relations and emotions such as joy, sadness, being depressed, longing for something or someone, being in a relationship, and being in love. The violet cluster was closer to the larger centralized tags, stretching less away from the center, and being much larger in number of tags than other clusters. This indicated a sense of shared topics for the MC, as well as the network in general, as these topics were also found as more specific words in most of the sub-clusters.



## *Topics and themes of Norwegian instapoetry*

### Emotions and interpersonal relations

Found all over the network were hashtags featuring the subjective experience of emotions, relations, and everyday life. Following Bruns and Burgess (2015), many tags acted as simple means of contextual emphasis, or meta-commentary, as this was part of the platform vernacular. This way, it was possible to treat them as indications of broader themes and topics of content in instapoems. Tags related to mental health (*#psykiskhelse*, *#mentalhelse*), emotions (*#følelser*, *#kjærlighet*), interpersonal relations (*#family*), and everyday life (*#livet*, *#tanker*), acted on one scale as contextualizing tags, saying something about the content of the content (the instapoem).

An example of this use of tagging was found in the dark brown cluster. This cluster had more words related to emotions than words related to writing and poetry, indicating an indexing practice focused more on content of the poem (theme) than content of the post (poem). The great overlap and density of violet and dark brown clusters meant that these were not necessarily separated clusters, even if the color-coding by the algorithm might show otherwise. These clusters should rather be seen as the core of instapoetry. From the large and centralized tags shared by many users, and the wider and dense collection of words related to emotions, relations, and everyday life, it is possible to conclude that general, large thematic patterns of these poems concern these topics.

These themes were also present as two of the core themes in the poetry collection *Instagram poetry for every day*. Based on this, it is possible to conclude that instapoets were following the poetic traditions of inviting readers into their personal space (mental health) and of making sense of universal human emotions. The richness of users' inner life could also be found in the multitude and density of smaller tags in the network, including tags removed from visualization for being "noise".

Comparing these themes with the themes identified in English instapoetry collected by the National Poetry Library, there were some notable differences. While the topics and themes of the poetry collection both involved the description of the poetic output ("creativity") and of form; "wordplay", the remaining eight themes related specifically to themes and topics of the poems. Lacking in the Norwegian instapoetry sphere were themes of identity, society, aspiration, humor, and spirituality.

This is somewhat different from the connection instapoetry has been said to have with themes of identity and society in other parts of the world, such as a connection to Black feminism (Matthews, 2019). This does not mean that these themes were not present at all in Norwegian instapoetry, but rather that they could not be found explicitly expressed in the hashtags belonging to dedicated users and the most interactive with posts. There were no larger visible patterns of these themes.

The reason for emotions and mental health being prominent could also be supported by research into what people post on Instagram, that is, what they share. Tagging content is both about sharing and communicating social experiences (Highfield and Leaver, 2015) and Instagram is a social media for self-expression. While love, emotions, and interpersonal relations are not unusual topics for poetry at large and through time, the choice of medium and sharing of such content reflects on how users utilize poetry and a social media platform like Instagram. The use of mental health tags and various related emotion tags supports the connections of instapoetry to self-help poetry, as investigated by âquet (2019). This was also strengthened by the use of tags for specific mental illnesses, a sub-cluster of the MC.

### Mental health

The dominance of tags such as *#mentalhelse* [mental health] and *#psykiskhelse* in the network revealed the production of instapoetry as being closely tied with personal self-expression. These tags also made up a smaller semantic category of related tags in the network.

The more specific tags related to mental health, such as *#bipolar* and *#adhd*, were found in the light green

cluster of the MC. While it in one way was easy to categorize *#bipolar* and *#adhd* as contextual tags in relation to poetry, it was also at the same time possible that these tags denoted a different community. There was a certain subset of the network more concentrated on poetry in relation to mental illness or poetry writing as a practice by those with these illnesses. However, this practice was not shared by many users. Zooming in on the two (eight in dataset) users that made up the use of the hashtags in this network, it demonstrated that ordinary users, with poetry accounts, used poetry as a catharsis for dealing with mental illness. This part of the network therefore consisted of a sub-network specifically bringing attention to certain mental health issues through poetry, as well as bringing poetry into a larger mental health ecology on Instagram by using general and specific hashtags in connection with mental health.

While the tags were not unique, they shifted from being thematic and contextual in the instapoetry ecology to serving as organizing tags for other virtual communities, such as those dealing with bipolarity. This is an example of how poetry, through hashtags, exists in multiple communities at once, by their networked structure and the materiality of the hashtag.

... and a dash of nature

In the instapoetry poetry collection nature was one of the core themes. Atkinson and McCabe (2020) noted that some instapoets “often merge two forms that have historically been used to capture the nature landscape: poetry itself, and photography” [52]. Surprisingly enough nature was not a common theme among Norwegian instapoets, but the theme created a specific cluster in the network by one woman and highly visible user. Her use of hashtags brought instapoetry into the ecology of Norwegian nature photography on Instagram, in many ways diverging from the more general hashtag patterns and practices located on the rest of the network. The user *@solfure* became a bridge between poetic ecology on Instagram and nature photography ecology on Instagram. Many of the hashtags were very specific, such as *#Norway2Day* and *#VisitNordfjord*, connecting it to hashtags promoting tourism through photography. This could also explain the high number of likes, compared with other users in the dataset, as she was successfully bringing (insta)poetry into larger and more popular spheres of Instagram.

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## Conclusion

How do we understand the topological map of co-occurrences of hashtags and what can that tell us of the phenomenon of instapoetry in Scandinavia, and Norway in particular? This research has been specifically interested in making visible certain networked patterns and processes of instapoetry. It has been able to identify characteristics of these patterns through an analysis of instapoetry metadata, with a specific emphasis on hashtags.


Patterns and processes of an ecology could never justifiably be made visible. Every attempt creates simplified versions, biased by ways of being represented from different scales, by going through different entry points. However, critical use of digital methods can help us generate manifest representations, always affected by the socio-material foundations of the methods and data themselves. These representations can nevertheless help us analyze and interpret certain patterns and processes in an ecology.

Exploratory studies like this paper serve a further purpose in aiding informed decisions about where to go next and what to explore further (Birkholz and Budke, 2021). Digital methods such as VNA help identify features and reveal prevalent patterns, making, in this case, structures of the instapoetry ecosystem visible.

Metadata collected in this study made it possible to make the phenomenon more tangible in terms of posts and users. The phenomenon of instapoetry in Norway has been growing since 2015, with a spurt of users and poems from 2018 and onwards. However, despite this growth, it is still relatively small, with a select few avid posters having dedicated accounts to publishing instapoetry.

The topological map revealed patterns of production, maintenance, and meaning of poetry connected to hashtags while conducting a formal analysis of a force-directed layout. The use of Gephi for creating this visual network revealed specific latent relational structures of the instapoetry ecosystem, by turning the structures into visual patterns (Venturini, *et al.*, 2021). This structure of hashtag practices gave a glimpse of the interconnections of instapoetry with other ecosystems in the larger ecosystem of social media entertainment (Cunningham and Craig, 2021). At the same time, the structure also revealed the larger thematic patterns of instapoetry.

While not every hashtag has a virtual community around it (McCosker and Gerrard, 2020), the *#instapoesi* hashtag has a Norwegian community with an collection of poetry-related index words as the main tags. These tags were first and foremost for increasing findability, through organizing and describing content of a post. However, even if there was a wish to be seen beyond one's own followers, it could be questioned if these strategies managed to take advantage of hashtags as searchable metadata. Dominant use of semantically close groups of words collected rather than spread the distribution of posts into different networks. However, the use of such hashtags also presupposed a perceived interested community, and it could very well be here and not to the rest of Scandinavian Instagram that these users were directing the initial flow of content.

Some hashtags also serve as topical cursors for the content of poems. Here, the larger thematic patterns identified were closely tied with the individual self-expressive nature of posting on Instagram, with the core themes being mental health, emotions, and interpersonal relationships. Using the specific hashtags for different mental illnesses meant that the poetry also flowed into wider interest communities in connection with these hashtags. Likewise, the use of specific hashtags connected to nature photography and Norwegian tourism promotion brought poetry to those communities, but were dependent on one highly visible user diverging from hashtag patterns shared by the rest of the community, showing that not every instapoet was the same. 

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## Notes

[1](#) Manovich, 2017, p. 4.

[2](#) Omena, *et al.*, 2020, p. 4.

[3](#) Birkholz and Budke, 2021, p. 208.

[4](#) Scraping was done prior to the last attempt of Instagram to clamp down on this procedure. This is also the reason that the data set does not extend beyond summer 2019.

[5](#) Fuller, 2005, p. 5.

[6](#) Taffel, 2019, p. 82.

[7](#) Taffel, 2019, p. 14.

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8. Taffel, 2019, p. 101.
9. Neumayer, *et al.*, 2021, p. 4.
10. Earl, 2018, p. 491.
11. Jungselius, 2019; Serafinelli, 2018, p. 87.
12. Gibbs, *et al.*, 2015, p. 257.
13. *Ibid.*
14. Gibbs, *et al.*, 2015, p. 258.
15. Manovich, 2017, p. 18.
16. Ichau, *et al.*, 2019, p. 2.
17. Bruns and Burgess, 2015, p. 15.
18. Bruns and Burgess, 2015, p. 15; Giannoulakis and Tsapatsoulis, 2016; Jungselius, *et al.*, 2014; Rambukkana, 2015, p. 2.
19. Geboers and Van De Wiele, 2020; Neumayer, *et al.*, 2021, p. 6; Zappavigna, 2011, p. 791.
20. With the possible exception, in more recent times, of re-posting something to your instastory.
21. Leaver, *et al.*, 2020, p. 98.
22. Bruns and Burgess, 2015; Jungselius, *et al.*, 2014, p. 19; Thomas, 2020, p. 120; Zappavigna, 2011, p. 800.
23. Brett and Maslen, 2021, p. 4.
24. An example would be #foodporn, a hashtag for everything related to good food.
25. Veszelszki, 2016, pp. 2–3.
26. Zappavigna, 2018, p. 48B.
27. Bruns and Burgess, 2015, p. 19.
28. Bruns and Burgess, 2015, p. 21.
29. Bruns and Burgess, 2015, p. 20; Rambukkana, 2015, p. 2.
30. Brett and Maslen, 2021, p. 8; Daer, *et al.*, 2015; Veszelszki, 2016, p. 2.
31. Birkbak and Munk, 2017, p. 114.
32. Puschmann and Burgess, 2014, p. 1,702.
33. Zappavigna, 2018, p. 28.
34. Zappavigna, 2018, p. 69.

35. Omena, *et al.*, 2020, p. 5.

36. “*Instapoesi*” is the Scandinavian word for instapoetry.

37. Not to be confused with username. While usernames fall under the General Data Protection Regulation, user IDs are unique numbers for each user and it needs to go through re-connection phase to be connected with the username of the user.

38. The collection of metadata was completed to be used in a bigger project than the scope of this article.

39. Niederer, 2018, p. 21.

40. Venturini, *et al.*, 2018, p. 4,210.

41. Manovich, 2011, p. 19.

42. Gephi is network exploration and mapping software, where layout algorithms spatialize the graphical representation of a network.

43. Venturini, *et al.*, 2021, p. 3.

44. Venturini, *et al.*, 2021, p. 5.

45. Based on numbers from the *AudienceProject*, listing 57 percent of Norwegians, 57 percent of Swedes, and 40 percent of Danes using Instagram in Q3 of 2019 (AudienceProject, 2019).

46. A longer discussion of what the correct number to use here is outside the scope of this paper. This is for instance not a number for active posters posting a certain number of posts during a month, or other more nuanced approaches to finding an accurate number of active Instagram users.

47. Venturini, *et al.*, 2014, p. 4.

48. While the name contains the word “community”, the algorithm does not define the type of communities described in the theoretical section of this paper.

49. Venturini, *et al.*, 2021, p. 9.

50. *Ibid.*

51. Venturini, *et al.*, 2014, p. 10.

52. Atkinson and McCabe, 2020, p. 81.

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