CA Journal of Cultural Analytics

Oiva, Mila, et al. "Soviet View of the World. Exploring Long-Term Visual Patterns in 'Novosti Dnia' Newsreel Journal (1945-1992)." *Journal of Cultural Analytics*, vol. 9, no. 4, July 2024, https://doi.org/10.22148/001c.118495.

ARTICLE

Soviet View of the World. Exploring Long-Term Visual Patterns in "Novosti dnia" Newsreel Journal (1945-1992)

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Keywords: visual discourse analysis, Soviet history, audiovisual materials, Convolutional Neural Networks, long-term patterns, historical data, ResNet50, visual culture, propaganda

https://doi.org/10.22148/001c.118495

Journal of Cultural Analytics

Vol. 9, Issue 4, 2024

Newsreels, short documentary news films, were an influential channel of mass communication and propaganda in the Soviet Union. They served as an important means of visualizing the world for audiences in the way the Soviet authorities wanted it to be depicted. Studies in Soviet visual culture have recognized both continuities of repeating patterns and changes in the post-World War II period. This understanding is based primarily on temporally limited source selections, while a more systematic study of the developments in Soviet visual culture over a longer period is pending. In this article, we reveal long-term continuities, subtle changes, and sudden shifts in the official visual discourse in the Soviet newsreel series 'Novosti dnia' (News of the Day) 1945 to 1992. We study visual patterns in approximately 1,700 digitized newsreel issues, each about ten minutes long, using multidimensional vector embeddings. These embeddings, produced from the central frames of 205,678 shots, help visually evaluate the footage and assess visual similarities based on ResNet50 feature vectors. For this, we use the *Collection Space Navigator* tool. The article demonstrates how multidimensional vector embeddings can be used to study the internal time of the films, and the external time of the years running by.

Introduction

The Soviet leadership took the role of moving images in mass media seriously. From the inception of the Soviet state, leaders recognized the importance of cinema in promoting the Soviet cause and propagating desired worldviews, thereby supervising newsreel production stringently (Heftberger 2; Kowalsky 7; Clarke and Seksenbayeva 265–66). Simultaneously it was important for them to ensure that the contemporary world was depicted in news media in ways that supported their policies (McNair 1, 23, 29–30). Newsreels, the eight to twelve-minute news films shown in cinemas before the main feature, were produced in the Soviet Union from 1918 until the 1990s, typically in weekly series. Given that Soviet citizens were among the world's top cinema-goers (Roth-Ey 2) the audience for Soviet newsreels effectively encompassed the majority of the urban population. The production of Soviet films, news, and newsreels was organized hierarchically, based on the production location and the size of the audience reached (Roth-Ey; McNair). Among the various newsreel series released in the Soviet Union,

the 'Novosti Dnia' (News of the Day) series was the most important. It was produced at the Central Documentary Film Studios in Moscow from 1944 to 1992. Alongside television news introduced later, the 'Novosti dnia' newsreel series is regarded as one of the most central official representations of the contemporary world in audiovisual format in the post World War II Soviet Union. Due to its highly curated content and the minimal chance of accidental on-screen appearances, the series and its changes reflect the official Soviet worldview.

Earlier research has indicated that Soviet newsreels served inspirational, pedagogical, and ideological purposes (Kowalsky 8). They portrayed hero workers in factories and kolkhozes, construction sites, parades, sports, cultural events, and battles against 'capitalist imperialism' abroad (Karavaev 19–28; Clarke and Seksenbayeva 267–69; Veldi et al. 7–8; Kowalsky 8, 10). The characteristics developed after the October Revolution shaped Soviet non-fiction film in subsequent years (MacKay et al. 119). Dmitrii Karavaev has demonstrated how the portrayal of the historical memory of the October Revolution in Soviet newsreels from 1922 to 1957 evolved over time (Karavaev 19–28). However, apart from Karavaev's research, few studies have explored longitudinal characteristics and trends in the Soviet worldview.

Simultaneously, scholarship on broader Soviet culture has identified both immutable characteristics and subtle changes in the post-World War II era. Alexei Yurchak describes late Soviet culture, spanning from the mid-1950s to the mid-1980s, as characterized by constative and performative aspects of acts and speech. During this period, the form of ideological representations, evident in posters, monuments, urban visual propaganda, and newsreels, became immutable, highly standardized, and predictable (Yurchak 14, 22–25, 37, 47, 57–59).

While Yurchak emphasizes the unchanging and ritualized nature of official late Soviet-era culture, other scholars have observed subtle shifts in Soviet visual culture, particularly during the late 1950s and early 1960s. Ekaterina Vikulina notes that Soviet visual culture became increasingly varied in the late 1950s due to a growing influx of Western popular culture. Concurrently, staged photography gave way to more spontaneous images, and photojournalism began to emerge alongside artistic photography (Vikulina 430–32). Visual media also diversified as the number and variety of illustrated magazines expanded dramatically starting in the mid-1950s, and cinemas began screening more foreign films from Eastern and Western Europe, the US, and India (Vikulina 434–35; Roth-Ey 74, 89–91). This diversification influenced, for example, Soviet feature film, where bodily expressions became more relaxed, particularly in depictions of young people (Bulgakowa).

Although the emphasis of the earlier studies may vary, they are not necessarily contradictory. In any culture, it is possible to observe both simultaneous continuities and changes over time. The studies mentioned above indicate

that the late 1950s were an important period of change, but there is less knowledge about potential changes in other periods. To better understand the prevailing characteristics and temporal dynamics of Soviet visual propaganda, we should shift our focus from analyzing selected short-term samples to conducting a systematic study over longer time spans.

The aim of this article is to study the long-term developments in the official Soviet visual representation of the world and its changes by examining groups of similar images in the 'Novosti dnia' newsreel series. Although previous research has demonstrated both continuities and changes in late Soviet visual culture, a more systematic long-term analysis is still lacking. To address this gap, this study investigates the prevailing ways in which the contemporary world was depicted in the 'Novosti dnia' newsreel series, screened from 1945 to 1992, and examines whether and how these depictions changed over time. Using a combination of quantitative and qualitative methods, including convolutional neural networks (CNNs) on central frames of each shot, this research aims to explore, identify and explain temporal patterns.

Earlier research has employed CNNs to search for similar images and identify specific groups within large historical image collections (Wevers; Lee et al.; Arnold and Tilton, "Distant Viewing Toolkit for the Analysis of Visual Culture" 206–207). While most studies examine image collections comprehensively, there are also instances where vector embeddings have been used to investigate temporal patterns. For example, Wevers and Smits have demonstrated that CNNs can facilitate the examination of temporal trends and historical transitions within image cultures (Wevers and Smits 198–200). This article builds upon the findings of previous studies and advances the analysis of temporal patterns identified through multidimensional vector embeddings, exploring developments both internally within the films and externally across different years.

While we acknowledge that multimodality is a crucial feature of audiovisual materials (Oiva et al.), focusing on a single modality also offers its benefits. By isolating the images from movement, the spoken descriptions in the voice-over, and the mood-enhancing music, we can concentrate on the visual characteristics of Soviet culture. The findings of the study reveal both pronounced continuities and subtle changes in the official Soviet visual discourse as presented in 'Novosti dnia'. In the following subsection, we discuss the methodological approach of this paper in greater detail, and then proceed to analyze the results.

Methodological Background

The focus of this article is on the visual images of the newsreels, and the dominant visual discourses that emerge from the data. We define visual discourses as cultural constructions that aim to shape the social, cultural, and spatial realities of a specific society or group. Here, intertextuality is crucial

because the overarching imagery can only be captured through a group of images, and the images can only be understood in relation to one another. For the discourse analysis of images it is essential to examine the kinds of groups that the images form, the repeating and dominant features they exhibit, and what is notably absent. In the analysis of visual cultures, journalistic images such as newsreel frames are particularly interesting because they are often treated as 'visual evidence', even though they are usually carefully selected representations (Vahtikari et al. 232–34, 246; Rose 186–93, 220–26).

To capture patterns in a large quantity of image data, it is advisable to use quantitative methods alongside qualitative analysis (Chávez Heras, *Cinema and Machine Vision* 5, 11–12). Computational studies of the visual content of audiovisual data are generally based on either manual or computational label annotation of pre-set categories or stylistic characteristics such as objects, individuals, or camera angles. This approach is central to the *distant viewing* methodology, developed by Taylor Arnold and Lauren Tilton (Arnold and Tilton, *Distant Viewing* 23, 34, 36–37; Arnold and Tilton, "Distant Viewing Toolkit for the Analysis of Visual Culture" i5). The results of these annotations typically produce lists of textual keywords (listing objects visible in the film, film language) or single numerical values such as shot lengths. Analysis of the film usually involves sorting, clustering, and statistical analysis of these labels (Carrive et al.; Heftberger 29–38; Burges et al.; Williams and Bell; Hielscher; Cooper et al.; Bakels et al.; Burghardt et al.; Arnold and Tilton, "Distant Viewing Toolkit for the Analysis of Visual Culture"; Masson et al.). The rationale for textual labeling of visual contents often stems from the necessity to transform images into analysable entities and to bridge the semantic gap between the images and human understanding of them (Cooper et al.; Bakels et al.). Additionally, the widespread use of textual labels in library catalogs and the predominance of textual analysis in Digital Humanities research may also influence this practice.

TRANSLATION LOSS, PARTIAL VIEW, AND EMPHASIS ON DEDUCTION

Initiating a study by detecting known features using textual labels is ineffective when the goal is to characterize prevailing visual discourses and analyze their temporal patterns. For our research question, such an approach would have three major shortcomings that would significantly reduce its research potential: it would result in translation loss, would provide only a partial view of the data, and would place undue emphasis on deduction. The first issue, translation loss, stems from the challenge of fully describing an image textually, as interpretations depend on the specific interests of the human annotator or the training set used for machine annotators. Translating an image into textual categories often overlooks many image features and omits subtle nuances and transmissions between different categories (Arnold

and Tilton, *Distant Viewing* 38; Masson et al.). As such, computer-assisted humanities research has faced criticism for employing overly simplified keyword sets and distorting human culture into vague categories since the 1960s (Olesen and Kisjes; Da). Instead, we should strive to develop methods for analyzing cultural materials such as images in ways that capture all nuances and avoid significant data loss during translation.

The translation loss would lead to the second problem: annotation provides only a partial view of the data. When annotating images, researchers predefine what they find interesting and worthy of note in the dataset, often based on a brief review of the data or knowledge from previous scholarship. At worst, such an approach would lead researchers to impose pre-set categories on data without confirming whether these categories truly exist or are predominant. Additionally, machine learning models, which are most commonly used to label historical material, are almost exclusively trained on contemporary datasets so far. As a result, they often fail to recognize historical objects or individuals that have long been forgotten. While focusing on annotation allows for targeted examination of specific topics, it does not offer a comprehensive view of the entire corpus or identify prevailing, yet unexpected, features.

A partial view on the data would further lead to the third and most fundamental problem with the annotation approach. It compels scholars to select at a very early stage of their study what to focus on and what to annotate, rather than allowing them to first explore what emerges from the data. As such, the study of topics would be based on prior assumptions, while inhibiting the exploration needed to uncover previously unidentified patterns or new categories. Concentrating on fostering a deductive rather than an inductive approach, in the worst case, researchers may end up studying what they already know, instead of discovering new ways to perceive and conceptualize the data.

OUR APPROACH

To mitigate issues such as translation loss, partial view, and deduction we employ a combination of quantitative pre-organization and human interpretation of the data to identify and understand groups of images that are visually similar (Arnold and Tilton, *Distant Viewing* 181). Although this approach still incorporates elements of the previously described problems, it reduces these issues by delaying categorization until the researcher has had an opportunity to review the entire dataset.

In our study, we initially processed the data of 1,747 Novosti dnia newsreel issues spanning the years 1944 to 1992 using an automatic shot detection algorithm (Castellano) to segment the newsreels into 205,678 footage shots. This algorithm, which employs a rolling comparison of pixel content in consecutive frames, identifies new shots when a specified threshold is

exceeded. We adjusted the threshold value for some newsreels that had poor digitization quality and substantial contrast fluctuations. To evaluate the algorithm's accuracy, we manually examined a random sample of 58 newsreel videos, which revealed an average accuracy of 90.5%, with individual video accuracies ranging from 70% to 98%. By setting a relatively low threshold, we ensured the detection of most shots while accepting a higher number of duplicates.

From each detected shot segment, we selected the middle frame to represent its footage with a single image. Choosing the middle frame helped overcome some of the inaccuracies in shot boundary detection at the beginning and end of each segment. We then encoded the frames using a pre-trained ResNet50 model (He et al.), a CNN trained on the ImageNet dataset (Deng et al.), into 2048-dimensional feature vectors. For dimensionality reduction, we employed Uniform Manifold Approximation and Projection (UMAP) (McInnes et al.) to transform these multidimensional image embeddings into 2-dimensional projections suitable for visual interpretation. There are known issues with dimensionality reductions (Shinn; Chari and Pachter; Wattenberg et al.), which only provide a limited view of the complex array of similarities. In the subsequent analysis of the image contents, we report on the findings derived from the UMAP projections, which utilized a correlation metric, included the 15 nearest neighbors, and had a 0.18 minimum distance.

For the analysis of the resulting images, we utilized the Collection Space Navigator (CSN), a customizable open-source tool that provides an interactive graphical interface for exploration of visual data in the multidimensional embedding space (Ohm et al.). The CSN provides additional features such as metadata filtering, search queries and category colors to enhance navigating the extensive visual information. Advanced Dimensionality Reduction algorithms, such as UMAP, are usually non-deterministic, which means that the resulting projections are not "the" but "a view" of the data. Therefore, the CSN provides different kinds of distant views of the dataset that help the user analyze the data from a variety of interpretations.

After the preparatory steps, a team member trained in Soviet cultural history explored the data using the CSN's functionality, which allows examination of different projections. The team member selected the UMAP projection for closer visual inspection because it was most relevant to the research question at hand. The CSN provided a simultaneous view of all frames, organized according to their similarity as determined by the selected projection. From this overview, the scholar identified clusters of images and conducted a qualitative analysis using the CSN's filtering and zooming functionalities.

IMPLICATIONS OF OUR APPROACH

The combination of using convolutional neural networks (CNNs) and qualitative approaches facilitated the grouping of frames in a manner that not only led to new findings but also resonated with the context of Soviet visual culture. The various projections provided by ResNet50 offered insights into the different ways the frames were similar to each other. By allowing a human observer to select the projection for closer analysis and to identify image clusters based on their knowledge of Soviet cultural history, we ensured that the final phase of the analysis was grounded in existing scholarly literature. Consequently, the validity of our final findings is based not solely on numerical analysis but also on prior studies and understanding of Soviet visual culture. Our methodological choice to rely on subjective yet informed human selection and categorization, rather than an algorithmic approach, stems from the assumption that there is no single correct way to categorize images; rather, the appropriateness of categorization depends on the chosen perspective.

Our approach has several important implications for the study. First, it enables the analysis to begin inductively, and delays human interpretation until after the images have been categorized based on their visual features. This strategy not only confirms and delves deeper into visual patterns identified by earlier scholarship but also uncovers new, previously unrecognized yet potentially significant visual patterns (Olesen and Kisjes 83–84). Although using multidimensional vector embeddings can be viewed as another method of categorizing images, and these are influenced by the underlying training data (Arnold and Tilton, *Distant Viewing* 182) this approach of disregarding label predictions initially allows for the grouping of images based on their technical features, thereby delaying the assignment of meanings.

Secondly, converting images into vector representations partially addresses the issues of translation loss and partial view by focusing on sensory features of images that are incompletely captured by verbal descriptions (Masson et al.). The digitization of audiovisual material transforms it from physical film materials to numeric data. While digitization and vector transformations inevitably involve some data loss, they facilitate a different type of examination through the 'estrangement' of the data (Mittell; Chávez Heras, "Creanalytics").

Thirdly, using vector representations shifts the focus to *how* images are portrayed and putting *what* is portrayed to a secondary position. As Eva Hielscher has noted, the manner in which objects are depicted may be more significant for meaning making than the frequency of their appearance (Hielscher). Therefore, it is not only important to identify the objects but also to examine how they are portrayed. Employing multidimensional embeddings to approach image objects through visual family resemblance

allows for initial clustering based on the ways objects are depicted, followed by an exploration of what has been shown repeatedly in a similar manner. This method can help identify clusters of congruent ways of depicting similar objects, which are likely considered meaningful by the authors if they appear frequently (Karjus et al.). If similar objects are depicted in the same way repeatedly and over a long period, we can assume that there is a meaning attached to them that the film-makers intended to convey.

Fourthly, the numerical nature of the vector representations enables the recognition of overlapping and multimodal similarities, as well as subtle continuities, rather than merely categorizing them into crude baskets of textual labels. In our research process, we qualitatively identify fuzzy cluster areas of similar images instead of algorithmically assigning each frame a specific cluster ID. This approach upholds the notion that similarities are continuous rather than categorical, and that a frame can simultaneously belong to several categories. It also acknowledges the possibility of identifying an infinite number of layers of sub-clusters, but limits the analysis to a level of abstraction that is appropriate for the research question. Our method aligns with the insights from earlier studies in cultural data analytics, which have emphasized the importance of recognizing subtle continuities in cultural data (Arnold and Tilton, *Distant Viewing* 44, 181; Manovich 10, 164).

Finally, reproducibility in our study implies that other scholars analyzing the same material would readily recognize our findings. However, our results are not exhaustive; other researchers may identify additional clusters, sub-clusters, and patterns within the data.

Visual Temporal Patterns in Novosti Dnia

Watching numerous issues of the 'Novosti dnia' newsreel gives the impression of sameness, with recurring annual celebrations of the New Year, Women's Day, First of May, and October Revolution, alongside representations of industrial and scientific progress and abundant harvests, consistently heralding the Soviet country's march toward a bright future until the mid-1980s. By stripping the data of sound and movement, and focusing on the still images of each shot, we are able to highlight significant characteristics of visual tropes and relate these to the broader visual culture in the Soviet Union.

An overview of the UMAP projection of the frames reveals distinctive condensations, peninsulas, and even islands of images that share similar visual components (for more on interpreting a UMAP projection see Arnold and Tilton, *Distant Viewing* 188, 204). The emphasis on visual similarity focuses on *how* the objects and the environments are depicted, based on a variety of dimensions, incorporating a range of dimensions from dark to light, granular to robust, and various lines or forms. This approach does not categorize images based on *what* is depicted, since the same objects can appear

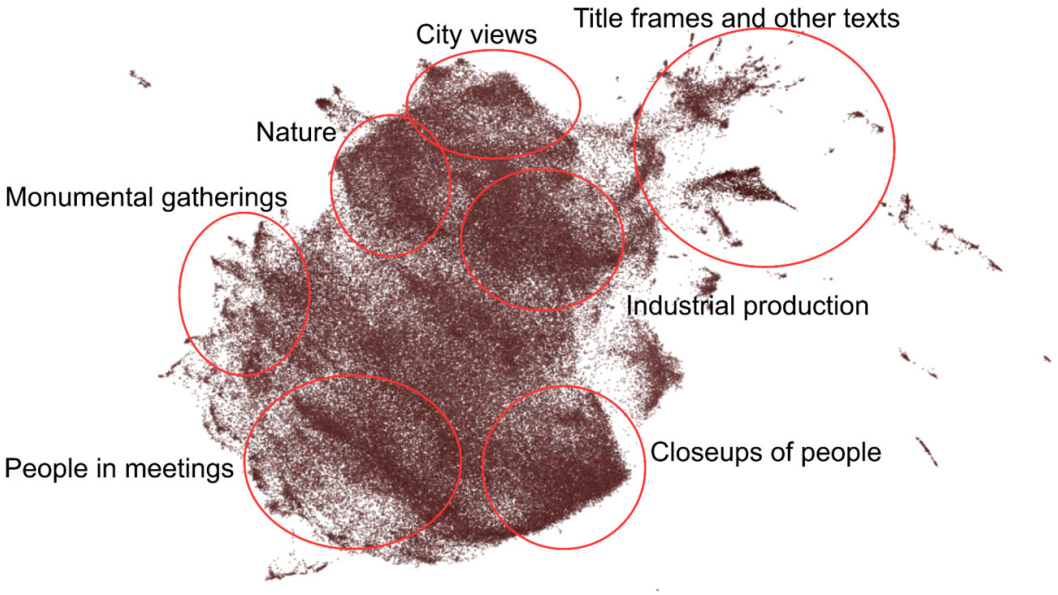

Figure 1. A UMAP projection of ResNet50 embeddings of all extracted frames per shot reveals seven prominent image clusters. These clusters are circled in the figure and have been named by the authors as 'Nature'; 'Monumental gatherings'; 'People in meetings'; 'Closeups of people'; 'Industrial production'; 'Title frames and other texts'; and 'City views'.

differently. For example, human figures may be portrayed with close-ups, in motion, sitting in rows in meeting rooms, or marching in large crowds during a parade, each resulting in visually distinct frames.

A closer examination of the UMAP projection reveals generic clusters within the 'Novosti dnia' newsreel series that can be categorized as 'Nature', 'Monumental gatherings', 'People in meetings', 'Closeups of people', 'Industrial production', 'Title frames and other texts', and 'City views', as we have also noted elsewhere (Oiva et al.) (Figure 1).

To determine whether the impression of sameness observed when watching the newsreels persists when focusing solely on the images and incorporating a quantitative approach, we will first analyze the temporal composition of the data. Subsequently, we will explore what the internal and external times of the newsreels reveal about the dynamics. For the remainder of the paper, we will examine the temporal sequences of specific image groups in the data more closely.

Temporal Composition of the Data

The temporal composition of the data, also analyzed using the CSN, reveals variation in the production and preservation of newsreels in the Soviet Union, along with crucial omissions of data (Figure 2). The initial and final periods of newsreel production are distinct from the main body of data, each in its unique way. The number of issues produced annually from 1945 to 1986 generally fluctuated between 52 and 48, roughly corresponding to one

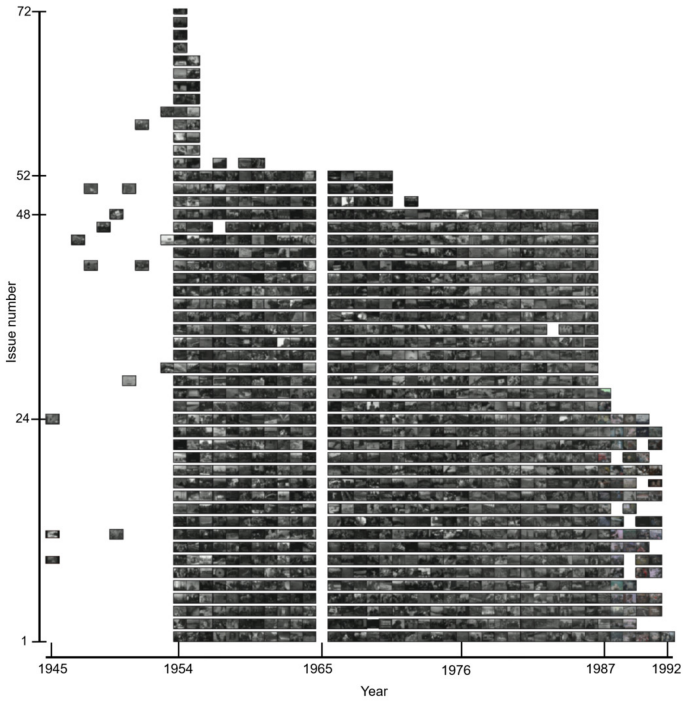

Figure 2. Distribution of the '*Novosti dnia*' newsreel series issue numbers from 1945 to 1992. Each frame represents a single issue number. Notably, the issues from 1965 are absent from the dataset. Additionally, the film material appears also noticeably darker from mid-1960 to 1976, which could be attributed to the use of different film materials or digitization methods. Color footage was introduced in mid-1987. The visualization was produced using the Collection Space Navigator tool.

issue per week, with occasional breaks during holiday seasons. In the early 1950s there was a peak in production, reaching up to 72 issues per year. By 1987 the annual output had halved, and towards the end of the period, the frequency of double issues increased, further reducing the publication rate of the newsreels. We will explore the details of the final period later in this article and now turn to the specifics of the beginning of 'Novosti dnia' newsreel production.

Initially, from 1945 to 1953, the issue numbers of the data suggest that newsreel production likely reached at least 45 issues per year, although several issues are missing. This absence is probably due to the confiscation of materials featuring depictions of Stalin after his death in March 1953. During the Stalinist era, from the late 1920s until 1953, newsreels frequently depicted Stalin, including his portraits and slogans praising him (Karavaev 25). Following Stalin's death, many films were 'de-Stalinized' by removing footage that referenced Stalin, particularly during the 1950s and the 1970s (Heftberger 275–82; MacKay). The scant number of frames featuring Stalin in our dataset suggests that the missing footage was likely removed as part of the de-Stalinization of archives, resulting in gaps in our dataset.

Another peculiarity of the early 'Novosti dnia' production is the apparent peak in newsreel production around 1954. Although it is not possible to determine the exact number of issues produced from 1945 to 1953 based on the available data, this peak corresponds with the surge in overall Soviet film

production in the mid-1950s. At that time, the Soviet Ministry of Culture shifted its film production policy from focusing on grand masterpieces to promoting a greater number and variety of films, which resulted in a significant increase in feature film productions compared to the drastically low numbers of the early 1950s (Gilburd, *To See Paris and Die* 191; Roth-Ey 29). It appears that newsreel production numbers remained stable during the early 1950s, while feature films experienced production cuts. Although definitive conclusions cannot be drawn from the available data, it is plausible that the tightening grip of Stalinism in its final years impacted feature film production more than newsreel propaganda. In April 1956, the Central Documentary Film Studios, which produced the 'Novosti dnia' newsreel series, reported to the Soviet Ministry of Culture that the volume of documentary films and newsreel issues produced in 1955 and the first quarter of 1956 exceeded the annual plans by 148%. The report highlighted that the studio produced films reflecting the "historical decisions of the 20th Party Congress, citizens' efforts to fulfill the goals of the ongoing 6-year plan, and the expanding foreign relations of the Soviet Union" (*Report 1956*).

According to the available dataset, it appears that neither Stalin's death nor the subsequent peak in production led to visual differences in newsreel images. The different projections of the embeddings indicate that the frames from before and after 1953 are visually similar. However, this broad overview of the data, might be misleading. It is conceivable that the data removed contained dissimilar frames, but the remaining dataset was curated to meet the standards of the post-Stalinist period. Upon closer examination, we can identify frames that depict the reopening of the country to foreign relations and the increased production of consumer goods, policies that were implemented after Stalin's death (Kozlov 3; Kozlov and Gilburd 27, 32–33, 45; Gilburd, "The Revival of Soviet Internationalism in the Mid to Late 1950s" 364–68, 376; Crowley and Reid 10; Zakharova 100, 109). For viewers at the time, the significant reduction of references to Stalin and the introduction of new themes would have represented a noticeable shift. Nevertheless, these themes are visually presented in a manner that aligns them with the extant footage from the Stalinist period.

Changes in the Internal and External Time of the Newsreels

The temporality of a newsreel series can be explored by also focusing on both the internal and external time of the newsreels (Chávez Heras et al.). The *internal time* of the 'Novosti dnia' followed a specific logic, similar to that observed in Bulgarian newsreels, for instance (Pozharliev and Gallo González 99–100). This series maintained a hierarchy of news stories: the opening stories typically addressed matters of great political importance, the middle segments covered socially relevant issues such as industrial production and agriculture, and the series concluded with stories dedicated to culture, sports,

and other 'lighter' topics. In the *external time* sequence of a newsreel series, months and years succeed one another, allowing subtle political and cultural shifts to become gradually apparent as time progresses.

Visualizing the internal and external temporalities of the newsreels highlights customary storylines within the internal time, along with their external continuities and changes. Figure 3 illustrates the internal temporal distribution of newsreel frames, categorizing them as starting shots (shots 1-29), mid shots (30-60), and the end shots (61-248). Most newsreels lasted 8-10 minutes and contained 90-140 shots. It is rare for a newsreel issue to contain up to 248 shots. The external timeline is segmented according to significant periods in Soviet political history: 1945-1954 (late Stalinism and its immediate aftermath), 1955-1964 (Khrushcev's rise and reign), 1966-1984 (Brezhnev's reign and the era of stagnation) and 1985-1992 (the *perestroika* period and the dissolution of the Soviet Union). This segmentation results in an uneven distribution of years, which nonetheless facilitates the exploration of potential differences between the eras.

Temporal division following the leadership periods makes sense because the newsreel contents were aligned with the shifting policies. In the Soviet Union, the acceptability of the contents of newsreels and documentary films was verified at several stages of production. The authorities not only controlled what was shown in the newsreels, but also how it was presented. The directors had to adhere strictly to the instructions coming from above, and newsreels highlighted and amplified the decisions made by the authorities (Clarke and Seksenbayeva 269). The Main Editorial Board of the Central Documentary Film Studios evaluated the most recent newsreel issues and decided who was responsible for which tasks in the forthcoming weeks in its weekly meetings. Their criteria for a successful newsreel issue were that it should be engaging and supportive of the policy goals of the Central Committee of the Soviet Union. They also focused on the depiction of cultural events that were otherwise inaccessible to those living outside the capital, thereby extending their reach. Before production began, the Editorial Board planned how best to promote the policies of the Communist Party (*Protocols 1955-1957*).

Figure 3 illustrates that storylines typically followed a pattern where the newsreels began with title frames, followed by 'City views' indicating the location of the opening news story, and depictions of 'People in meetings'. Temporal differences in the opening shots are evident: starting from the mid-1950s, there is a clear emphasis on frames depicting (mostly men wearing black suits in) meetings. Interestingly, during the Khrushchev period, there appear to be two distinct types of meetings (see A in Fig. 3), with the upper type displaying leaders in more dynamic compositions. The trope of 'Dynamic Leaders' was less emphasized from 1965 to 1984, but the 'People in meetings' cluster extends further to the left and images depicting 'Meeting

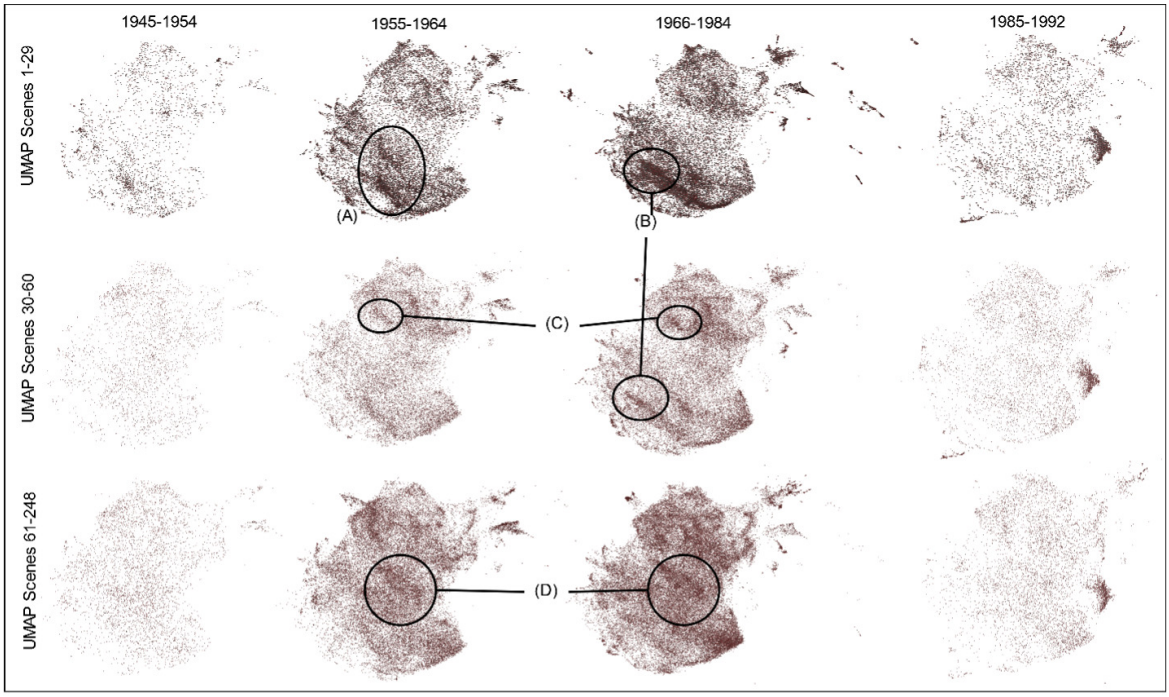

Figure 3. A UMAP projection of Novosti dnia newsreel series in internal and external temporal sequences, shown through filtering of the same projection. Starting scenes (scenes 1-29), mid scenes (30-60), and end scenes (61-248) in vertical axis. The time baskets of 1945-1954, 1955-1964, 1966-1984, and 1985-1992 in horizontal axis. (A) shows the two types of 'People in Meetings' clusters appearing in 1955-1964; (B) indicates the extension of the cluster to cover images on the 'Meeting Table' cluster; (C) shows the 'Agriculture' cluster; (D) points out the cluster for leisure time activities. Year 1965 is missing from the data.

Tables' begin to appear (see B in Fig. 3). These images are portrayed not only in the opening but also in the middle of the newsreels. The *perestroika* period and the dissolution of the Soviet Union from 1985 to 1992 also start with title frames, city views, and depictions of people in meetings; however, this period is marked as a distinctly different era.

The middle segments of the newsreels (shots 30-60) consistently highlighted 'Industrial Production' and 'Nature' from their inception in 1945 until to the mid-1980s. Within the 'Nature' cluster, depictions of 'Agriculture' can be identified (see C in Fig. 3). The newsreels concluded with depictions of cultural events such as dance and circus performances, sports events, and fashion shows. These images frequently featured close-ups of the audience enjoying the shows and applauding.

The Kremlin

Moving on to a closer analysis of the temporal developments of interesting clusters emerging from the data, we will first examine one of the most temporally stable clusters. The Moscow Kremlin, the old fortification located at the heart of the city and used as the headquarters of the Soviet leadership, was continuously depicted in the newsreels. Often the first news stories featured important meetings with domestic organizations or foreign delegations in Moscow, with the initial shot showcasing the venue of the

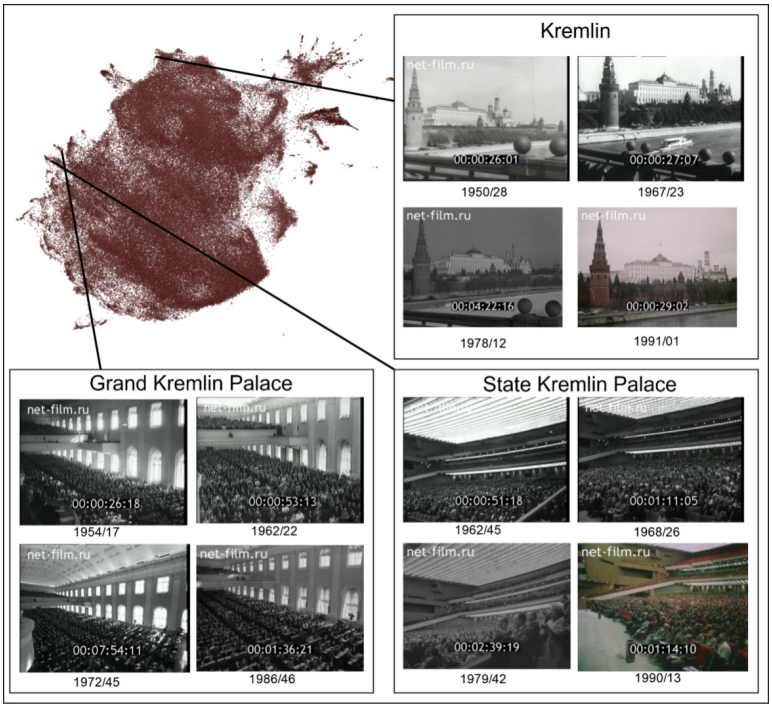

Figure 4. The Moscow Kremlin related 'peninsulas': a Kremlin tower and the Grand Kremlin Palace seen from a bridge crossing the Moskva river, meetings at the Great Kremlin Palace, and at the State Kremlin Palace, repeating from the 1950s until the mid-1980s, and in the case of the outdoors Kremlin views and meetings in the State Kremlin Palace until the 1990s.

meeting, the Kremlin. As Figure 4 illustrates, shots depicting the Kremlin from outside, and gatherings inside the grandiose meeting halls of the Grand Kremlin Palace and the State Kremlin Palace, create distinctive 'peninsulas' in the UMAP projection. These 'peninsulas', identified qualitatively as distinctive elements on the edges of the 'mainland' of the UMAP projection, belong to the larger clusters of 'City views' and 'Monumental gatherings' shown in Figure 1. The positioning of the 'peninsulas' on the edges of the 'mainland' indicates that the projection recognizes them as distinct, yet partially connected entities. Our qualitative observations also confirm that these image sets were recognizable to human observers as signifying images. These frames represent a particularly stable continuity from the early 1950s—or the early 1960s in the case of the State Kremlin Palace, which opened in 1961—through the 1990s. We will discuss the changes observed in the late 1980s later in the article.

Shooting the footage from the same location—either from a bridge crossing the Moskva River, or a particularly advantageous spot in the meeting hall—results in frames that are very similar to each other, and tend to repeat year after year across several decades. The combination of the frequent hosting of important events at these venues and a convenient filming location began to establish a kind of iconicity around the images. When hearing about a meeting held in the Kremlin, the newsreel audiences could easily visualize

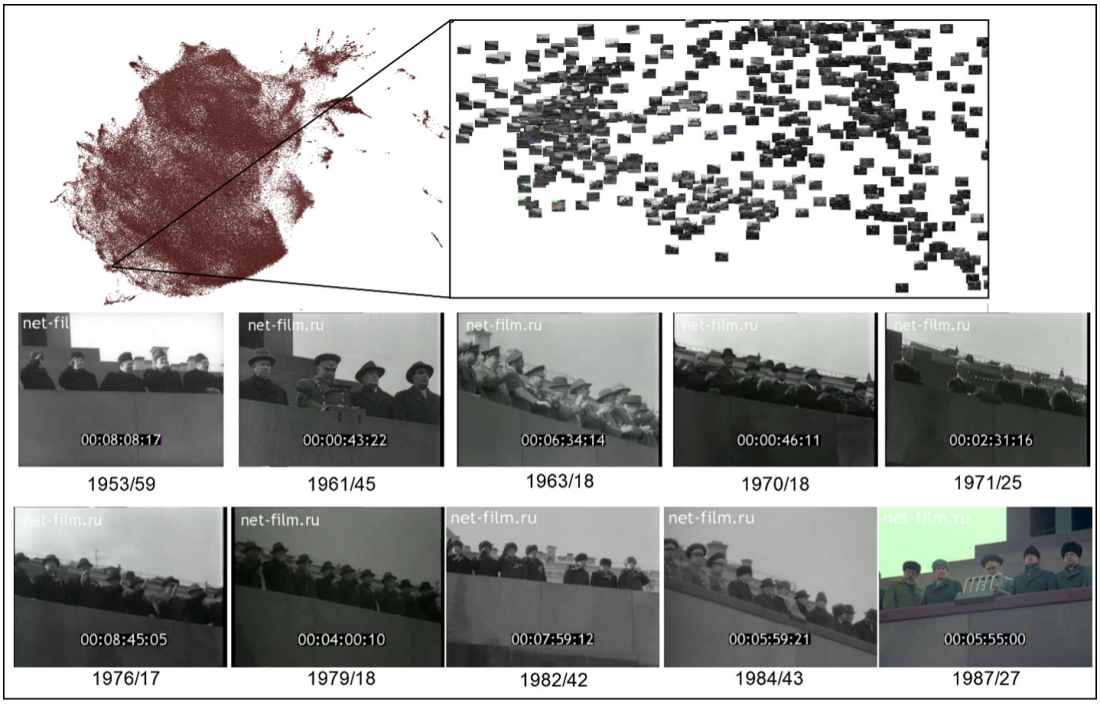

Figure 5. Soviet leaders receiving a parade on the Lenin Mausoleum from 1953 until 1987.

these images in their minds. Simultaneously, the frequently recurring, recognizable locations of power reinforced the viewers' perception of the stability of the Soviet power.

The Mausoleum

Another 'peninsula' of frames recurring over a long temporal stretch features depictions of the Soviet leadership standing on the Lenin Mausoleum in Red Square (Fig 5). These images capture the leadership reviewing a parade, often during the October Revolution or the May Day celebrations. They also form part of the gallery of Soviet iconography that was publicly displayed to Soviet citizens and distributed in the foreign press. In his study on the depictions of the October Revolution in Soviet newsreels from 1922 to 1957, Dmitry Karavaev demonstrates that showcasing these festivities in newsreels served as a reminder to audiences of the revolution's ideals and conveyed that the leadership staunchly supported these ideals (Karavaev 19).

It presents an interesting contrast that the form of these images—men standing in line on top of a former leader's tomb—remains unchanged for decades, while the individuals and styles of hats vary. This juxtaposition creates a strong symbolic sense of continuity and masks the reality of changing leaders, or even the power struggles behind the scenes, which sometimes lead to individuals being erased from historical records (Karavaev 28). This phenomenon aligns with observations made by Yurchak, who notes that Soviet ideology was often represented through ritualized practices (Yurchak 14). Similarly, Knut Hickethier identified standardized forms of images reoccurring in the West German newsreels in the post World War II

period. He argues that the use of standardized imagery helped the audiences immediately recognize the content's context. Additionally, situations were often depicted in a regimented manner: political greeting rituals, contract signings, meetings, and event openings were frequently portrayed in a similar fashion (Hickethier 49). All this contributed to the repetitiveness of the visual appearance, echoing the 'pathos formulas', coined by Aby Warburg, which refer to a sequence of similar visual configurations passed down through history (Hickethier 50; Impett and Moretti 1, 5; Warburg). In the case of newsreels, as Hickethier points out, footage was usually not chosen by paying explicit attention to 'pathos formulas', but rather because they were selected from the studios' footage libraries with little reflection, and following the editors' embedded pictorial knowledge. Therefore, it can be claimed that the repeating images reflected the cultural consensus of the time (Hickethier 50). In the case of Soviet leaders, however, using old footage of leaders became problematic when they became politically controversial and could no longer be depicted on the podium (Karavaev 28).

Due to the absence of data from the late 1940s and the 1950s (Figure 2), it is impossible to verify how consistent the depictions of the leadership were before the mid-1950s. However, this type of frame became particularly prevalent during the height of the era of stagnation from the mid-1960s to the 1980s, and continued into the period of *perestroika* in the late 1980s. In contrast, right after Stalin's death and during the turbulent leadership period of the mid-1950s, we could identify only two frames of this kind (1953/59 in Fig. 5, and one from 1958).

Dynamic Leaders

In the opening shots from 1955 to 1964 there is a distinct cluster that later disappears, referred to as 'Dynamic Leaders' (see A in Fig. 3). As Figure 6 illustrates, this cluster predominantly features official delegations outdoors and was particularly prominent during the Khrushchev period. The common characteristics of these images include political leaders in dynamic positions, either walking or greeting each other, and soldiers standing in a row, creating a strong diagonal line.

It is noteworthy that the emphasis of this cluster is on the late 1950s and the early 1960s. Generally, the so-called Thaw period following Stalin's death has been considered a major turning point in Soviet history, both politically and culturally. Although many cultural changes began gradually earlier, the relaxation of political control—from mass terror to 'selective suppression'—and openness to cultural influences from abroad led to shifting ideas, artistic practices, and everyday material culture with a lasting impact on Soviet society (Kozlov 3; Kozlov and Gilburd 27, 32–33, 45; Gilburd, "The Revival of Soviet Internationalism in the Mid to Late 1950s" 364–68, 376). Denis Kozlov has noted that starting from the Thaw, Soviet cultural processes began to align with those in Western Europe (Kozlov 3). Similarly,

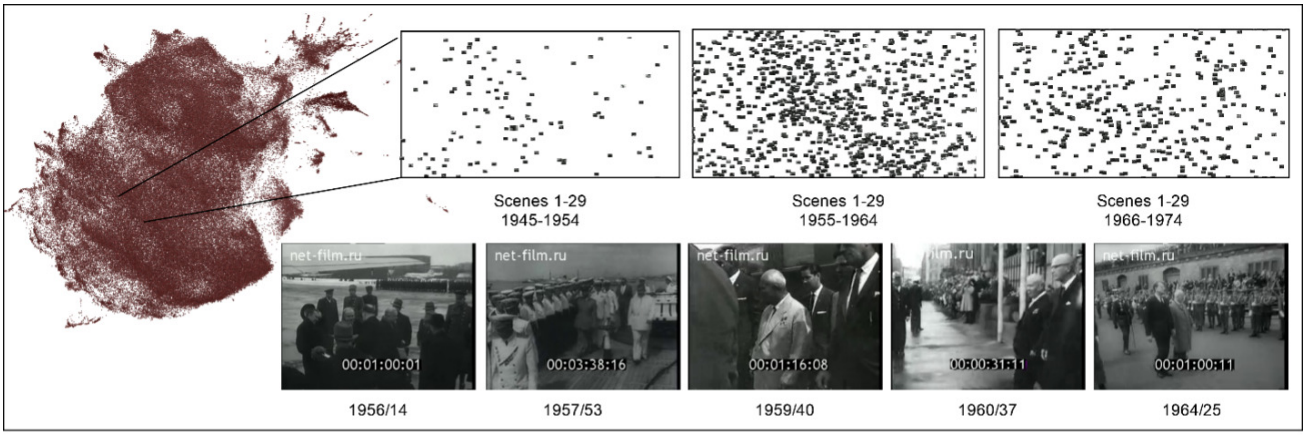

Figure 6. The 'Dynamic Leaders' cluster. The upper row shows that the cluster was prominent in the 1955-1964 starting scenes. The lower row depicts a series of political leaders outdoors meeting each other. The strong diagonal of soldiers standing on a row together with the moving postures of the leaders are common features to this cluster.

Eleonory Gilburd suggests that the Thaw period marked a democratization of previously privileged information about foreign cultures and provided access to more diverse information for a larger audience (Gilburd, "The Revival of Soviet Internationalism in the Mid to Late 1950s" 363). During this period, an increasing number of foreign films, especially from France and Italy, were screened in cinemas, bringing foreign cultures within reach of a vast majority of Soviet citizens, even those outside major cities. Postcards depicting foreign cinema stars could be purchased for a few kopecks at metro station kiosks, further democratizing access to foreign visual culture (Gilburd, *To See Paris and Die* 167, 179–80, 204; Oiva, Salmi, et al. 86–88). Documentaries, such as the film about French singer and film star Yves Montand's tour in the Soviet Union, were also utilized to extend foreign cultural access to broader segments of the population (Oiva, Salmi, et al.). In 1956, the Central Documentary Film Studios reported to the Soviet Ministry of Culture that the country's opening to foreign influences was evident in its expanding coverage on visiting delegations to and from the Soviet Union, the exchange of newsreel footage with foreign studios had increased, and a growing number of Soviet cinematographers were visiting foreign countries (*Report 1956*).

In her study on the depictions of the Soviet political leadership in the late 1950s and the early 1960s, Ekaterina Vikulina has demonstrated that the expansion of foreign influences and the political transition from Stalinism to the more relaxed Khrushchev period were reflected in more dynamic portrayals of leaders and the expression of emotions in print media (Vikulina 429–65). The static nature of Stalin's images symbolized the calmness and certitude of the leader, whereas during the Khrushchev period, leaders began to be depicted in motion: discussing issues, on the street, in a car, and expressing emotions, such as smiling (Vikulina 450–51).

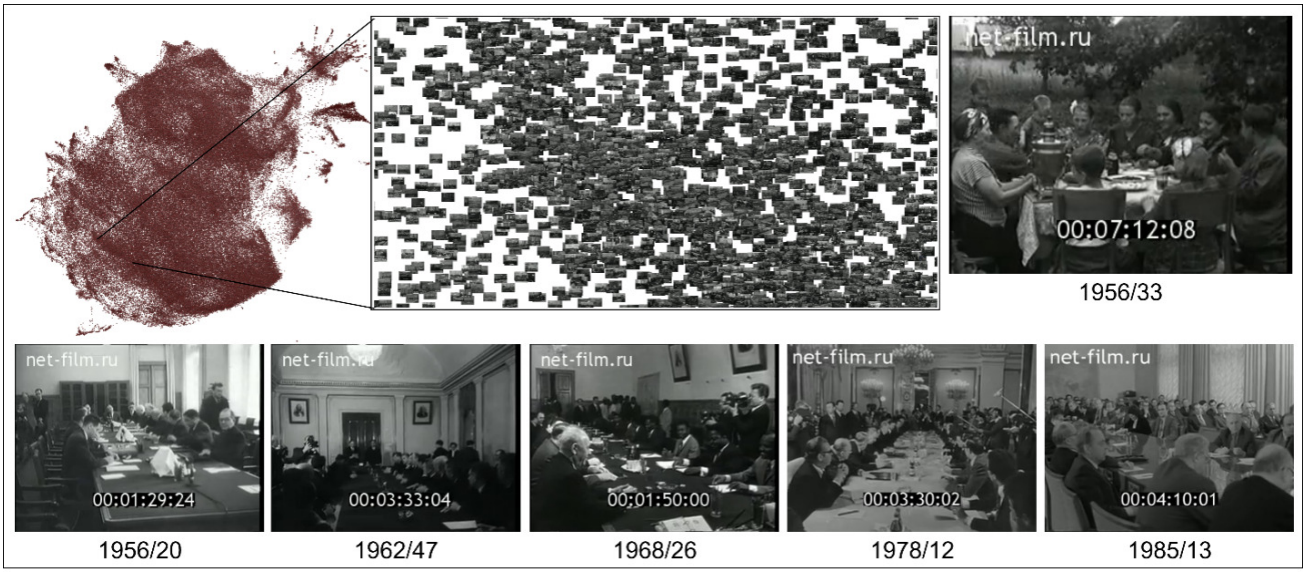

Figure 7. The 'Meeting Table' cluster. 1956/20: Soviet-French negotiations; 1962/47: Meeting of the Presidium of the Supreme Soviet of the Soviet Union; 1968/26: Visit of the President of Chad; 1978/12: Soviet-Morocco negotiations; 1985/13: Meeting of the Soviet leaders and the delegation of the Socialist International.

Our findings, based on a quantitative approach, confirm Vikulina's qualitative observations. Simultaneously, our data reveals that although the 'Dynamic Leaders' cluster did not disappear in later years, its significance clearly diminished during the Brezhnev era, which is widely regarded as a period of stagnation. It is also noteworthy that the political changes beginning in the mid-1980s were not depicted using images from this cluster.

The Meeting Table

One of the densest frame clusters, evident from at least the mid-1950s onwards, depicts—mostly men in black suits—sitting around a long table with papers scattered around (Figure 7). The 'Meeting Table' cluster includes footage of meetings with foreign delegations, the highest political bodies of the Soviet Union, or labor unions. This type of depiction underscores the act of negotiation—whether in the international arena or within society—where participants appear more equally represented than in podium-style meetings where speakers address an audience (see the meeting depictions in the 'Kremlin' clusters, Fig. 4). An equal meeting of representatives from different countries projects an image of the Soviet Union as an active participant in the international arena (Fig. 7, frames 1956/20, 1968/26, and 1978/12), emphasizing the message of Soviet goodwill in contrast to the 'colonizing imperialist countries.' Such 'democratic' images were also displayed in relation to domestic Communist Party or labor union meetings, when the objective was to convey that the entire country was united in achieving the goals set by the Communist Party (see, for example, 1962/47).

Due to the scarcity of data from the late 1940s and the early 1950s we cannot determine whether these types of frames were also shown earlier or if this was a new phenomenon. The Soviet Union's opening to the international

arena began in the mid-1950s (Kozlov 3; Kozlov and Gilburd 27, 32–33, 45; Gilburd, "The Revival of Soviet Internationalism in the Mid to Late 1950s" 364–68, 376), and it is likely that after Stalin's death, the emphasis in publicity shifted from dictating to negotiating with society. Additionally, in the late 1920s, the authorities prohibited newsreel studios from showing footage of "sensitive discussions and meetings" (Clarke and Seksenbayeva 267). It is therefore plausible that during the Stalinist era, newsreel studios did not independently include material on political meetings in their reels. The existing 'Meeting Table' cluster frames from 1945-1953, for example, depict people drinking tea, studying, or playing pool (see for example 1956/33), which represent socially different activities compared to negotiation.

During this period, the new way of showing 'more democratic' meetings is evident not only at the beginning of the newsreels, which showcase more important gatherings, but also in the middle of the sections, where domestic gatherings of various organizations are shown. Traditionally, the period from the mid-1960s to the mid-1980s, during which the cluster was prevalent (see B in Fig. 3), has been characterized as the era of 'stagnation'. It is well-known that the newsreels employed metaphorical images to represent seemingly concrete current events while simultaneously alluding to broader unifying symbols. These visual metaphors had a community-forming and culture-creating effect because they drew upon imagery that forms part of the foundational components of a cultural group or nation (Hickethier 51). The focus on images that suggest a more democratic approach to governance opens new avenues for interpreting this period. It raises the question of whether the 'Meeting Table' cluster was a method of narrating a story of 'societal agreement' or visualizing other more abstract themes and intended meanings.

It is noteworthy that these types of frames were often repeated, and continued for decades once they began. Unlike the 'Kremlin' frame clusters, the 'Meeting Table' cluster frames were shot in various locations. Despite the locational variety, the repeating visual features of a table—often a long one creating a strong perspective angle—around which people sat with their papers, have been captured by the embedding. Producing footage of a meeting indicates that the leaders considered public information about these meetings important. Allowing newsreel crews to shoot footage at a meeting was a deliberate choice by the leadership, while the repeating camera angle is likely due to practical reasons. Depicting people sitting around a long table from one end is the simplest way to capture all participants. Simultaneously, these repeating images formed a visual gallery depicting how Soviet foreign policy and societal functions were perceived by cinema-going audiences.

Closeups of People

Alongside the topics depicting the leadership in various ways, another recurring cluster is the 'Closeups of people' (see Fig. 1). It is one of the widest and densest UMAP clusters. It is interesting to note that the collective ideology was portrayed through a massive amount of closeups of individuals. They were used to illustrate the work done in factories, construction sites, and kolkhozes, as well as schools, and kindergartens (Fig. 8), but also to bring the news topics closer to the audiences so that they could relate to them. Based on the qualitative analysis of Estonian newsreels from 1951, Martti Veldi et al. emphasize that during the high Stalinist period, newsreels depicted working-class heroes, such as milkmaids, drivers, and mechanics, to instill pride in the ordinary citizens about their country (Veldi et al. 8).

The decades from the 1950s to the 1970s were the golden ages of movie going in the Soviet Union, in the Soviet Union, after which attendance stared to decrease. As TV access reached saturation in the USSR during the 1970s, the box-office figures declined drastically. People began watching movies on TV instead (Roth-Ey 121). The emergence of television had a significant impact on newsreel production and content globally (Fielding 992–94), and it appears that in the Soviet Union, newsreel producers also had to consider this new rival in audiovisual news production to a certain extent.

In the late 1950s, Soviet newsreels were criticized for being monotonous, and in 1959 the All-Union meeting of film directors and writers in Moscow urged directors to also include 'little people', such as hairdressers and newspaper sellers, in their newsreels to make the content more vivid. This approach was not new, as conveying Soviet propaganda by depicting heroic ordinary workers had been common since the 1930s (Fitzpatrick 73–74; MacKay 382). In Kazakhstan, the initiative was discussed in detail in film studios, art councils and the department of cinematography within the ministry responsible for culture, but the new directives were interpreted conservatively, and little changed in the newsreel content (Clarke and Seksenbayeva 271). Similarly, the need to renew newsreels in the late 1950s emerged in West Germany, where the advent of television news, advances in recording techniques, and a new generation of editors catalyzed the modernization of newsreels. Editors began to interview "people like you and me" on the streets and in supermarkets (Schwarz 76).

While discussions on new initiatives do not always lead to tangible results, adopting a semi-distant view of the 'Closeups of People' cluster suggests that in the case of 'Novosti dnia', the discussions may have influenced the inclusion of closeup shots in newsreels. Analyzing how the cluster evolved in three-year segments, we observe that closeups of individuals began to form a distinct cluster in the mid-1950s. This trend intensified starting in 1959 and continued until the mid-1980s (Fig. 9).

Figure 8. Frames from the 'Closeups of people' cluster, with frames of sub-clusters of 'Headwear', 'Helmets' and 'Drivers'.

Taking a closer look at the images reveals that, unlike the clusters depicting the 'Monumental Gatherings' and 'People in Meetings' (Fig. 1), this category includes a wider range of 'ordinary people' represented, encompassing women, children, and elderly people depicted in various circumstances (Fig. 8). Clearly, their 'ordinariness' was selective, as they portrayed the hard-working and progressive-minded, idealized version of an ordinary (mostly Soviet) citizen. This depiction excluded individuals who appeared deprived, poor, or disabled. It seems that this was a deliberate strategy until the mid-1980s, as archival documentation from Kazakhstan indicates that

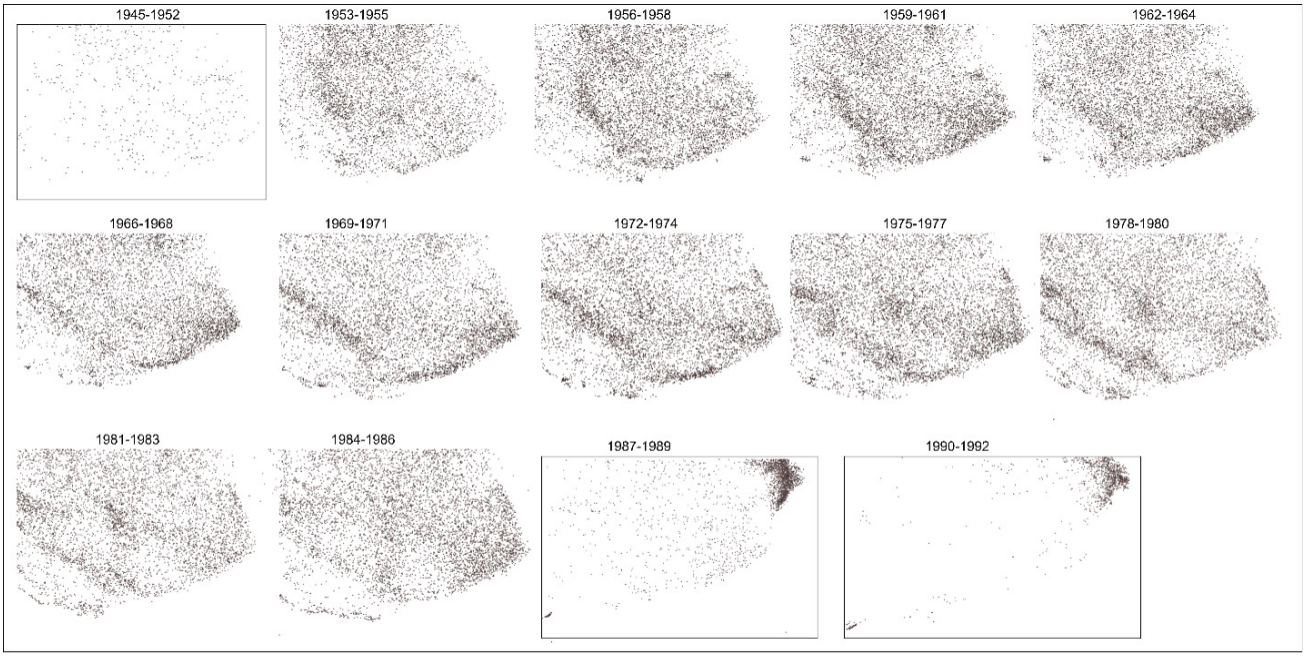

Figure 9. The 'Closeups of people' cluster in three-year chunks (apart from 1945-1952, were we have less data) shows that the cluster started to emerge in the latter half of the 1950s, and became emphasized starting from 1959. It started to fade at the end of the 1980s and beginning of the 1990s, where we have again less data. Year 1965 is missing.

newsreel cinematographers consciously avoided displaying any controversial elements in the footage, such as individuals with worn-out clothes or dilapidated farmyards (Clarke and Seksenbayeva 269).

When depicting people abroad, the footage often showed individuals suffering from capitalist imperialism, such as African Americans in the US (see 1961/07 in Fig. 8), or victims of the Vietnam War. It is noteworthy that all depictions of people, including those in the 'Closeups of people', 'Monumental Gatherings', and 'People in Meetings', feature individuals from the European side of the Soviet Union, Central Asia, Siberia, and the Caucasus, thereby emphasizing the multi-ethnicity of the Soviet Union. Closeups that appear to show non-Soviet, such as people of African descent, are also included. However, analyzing the representation percentages of different age groups, perceived genders, and expressed ethnicities in the official Soviet portrayal of the world would require the use of image detection and identification algorithms, and is beyond the scope of this article.

It is possible to identify smaller sub-clusters within the larger cluster of 'Closeups of people', such as 'Headwear', 'Helmets', and 'Drivers'. These sub-clusters interestingly showcase some archetypical professional groups: miners and construction workers in their helmets, female factory and kolkhoz workers in scarves, policemen and military personnel in their hats, and male political leaders in their city hats. The large number of individuals in helmets and workers' caps was distinctive to the depiction of the world in the state socialist countries. Uta Schwarz has observed that West German newsreels did not portray male workers or employees, whereas East German newsreels

frequently did. In East Germany, showcasing the workers served to promote the working class as the central political class of socialist society. In contrast, in West Germany, amid ongoing conflicts between the government, employers and unions, the government's newsreel depicted industrial productivity by featuring economic leaders, ministers, and directors (Schwarz 75).

The sub-clusters identifiable with the help of the UMAP projection offer a fascinating insight into Soviet symbolic culture through headwear. For example, women wearing hats during the warm season are almost completely absent, even in the 1950s. They either wore scarves or no headwear at all. In contrast, at the other end of the Soviet media spectrum, catalogs of the latest outfits published by the fashion houses depicted women wearing hats (*Modeli sezona, vesna-leto 1956*). This discrepancy suggests that women wearing hats might have appeared too 'bourgeois' to be shown in 'Novosti dnia', revealing that the depiction of people and the world in this series was more ideologically driven than other Soviet media products.

Exploration of the 'Closeups of people' cluster demonstrates that distant viewing of the newsreel frames with the UMAP projection not only reveals the size of the clusters in the collection but also helps to understand their centrality. Additionally, the density of a cluster in the projection indicates how similar the images are perceived by the UMAP. For a cultural historian, this provides an initial step in contextualizing groups of visually similar images within the collection, which can then be enriched through contextualization based on existing literature and other sources. This approach guides the researcher's attention to notice details or patterns that might not have been observed otherwise, such as headwear, if the research process had begun with pre-existing knowledge rather than observation of the data. As new questions arise, this lays the groundwork for further analysis involving the detection, identification, and annotation of specific features revealed through distant viewing.

Agriculture

Yet another constant theme in the 'Novosti dnia' newsreel series is agricultural production. This theme is evident both through qualitative observations and in the textual descriptions of the newsreel contents analyzed earlier (Oiva et al.). Agricultural production had an important propaganda value to the leadership. Collective farms were repeatedly depicted reaching their targets early or producing more food than planned (Clarke and Seksenbayeva 268–69).

Unlike the earlier discussed clusters, agricultural production does not form a clearly distinguishable 'island' or 'peninsula' in the UMAP projection but is scattered among the depictions of 'Nature' (Fig. 1). This is understandable, because although a human viewer of the newsreels associates the smiling people picking up fruits or cotton, caring for animals, and combine harvesters

working on vast fields with the overarching theme of agricultural production, this is not the case for image embeddings. The visual appearance of a basket of round apples and a chain of tractors on a field are visually too different to be clustered together. Additionally, these images share visual features, such as a distinctive horizon and elements of nature, with images depicting themes other than agricultural production.

As Figure 10 illustrates, it is nonetheless easy to identify decades of continuous patterns of sub-clusters of agricultural production, such as combine harvesters working in fields. A plentiful harvest, securing the well-being of the citizens, and human mastery over nature through technology are central themes in the 'Novosti dnia' repertoire, transcending all policy changes until the mid-1980s. In the 1980s, depictions of agricultural production continued, but without the iconic images of combine harvesters. Frames identified by UMAP as similar to those of the combine harvesters were used to depict ecological problems alongside agriculture (1988/01, 1988/21, 1989/10, 1989/22, and 1991/21 in Figure 10).

Exploring depictions of agricultural production reveals that a news story theme ('agriculture') does not necessarily correspond to a single visual cluster ('combine harvesters'), but instead may be associated with multiple visual clusters. Simultaneously, it is possible that the visual tropes, identifiable by a human viewer through the combination of visual features and recognition of specific objects in the images, are intermingled in the UMAP projection with similar images that represent other themes. Examining the temporal development of a sub-cluster of images recognized by UMAP as similar can illustrate how certain visual patterns begin to diminish ('combine harvesters') and are replaced by others that depict different subjects ('ecological problems and agriculture').

The Perestroika Problem

We will now return back to the particularities of the dataset's final period, which have been noted on various occasions of this article. As stated earlier, the annual number of newsreel issues halved in 1987 (Fig. 2); the opening, middle, and closing shots from 1985 to 1992 all include a new distinctive cluster absent in all other periods (Fig. 3); there are fewer closeups in this period compared to earlier ones (Fig. 8); and images depicting ecological issues merge into the 'Agriculture' cluster (Fig. 10). Indeed, there was something specific about this time, and it is clearly visible in the data.

These changes are clearly linked to the policies of *glasnost'* ('openness' in English) and *perestroika* ('reconstructing') introduced by Soviet leader Mikhail Gorbachev in 1985. This shift led to increasing openness in media coverage, introducing previously unexplored news topics, such as economic problems, blank spots of history, catastrophes, strikes, ethnic unrest, and crime in the press (McNair 44–59). In countries where newsreel production

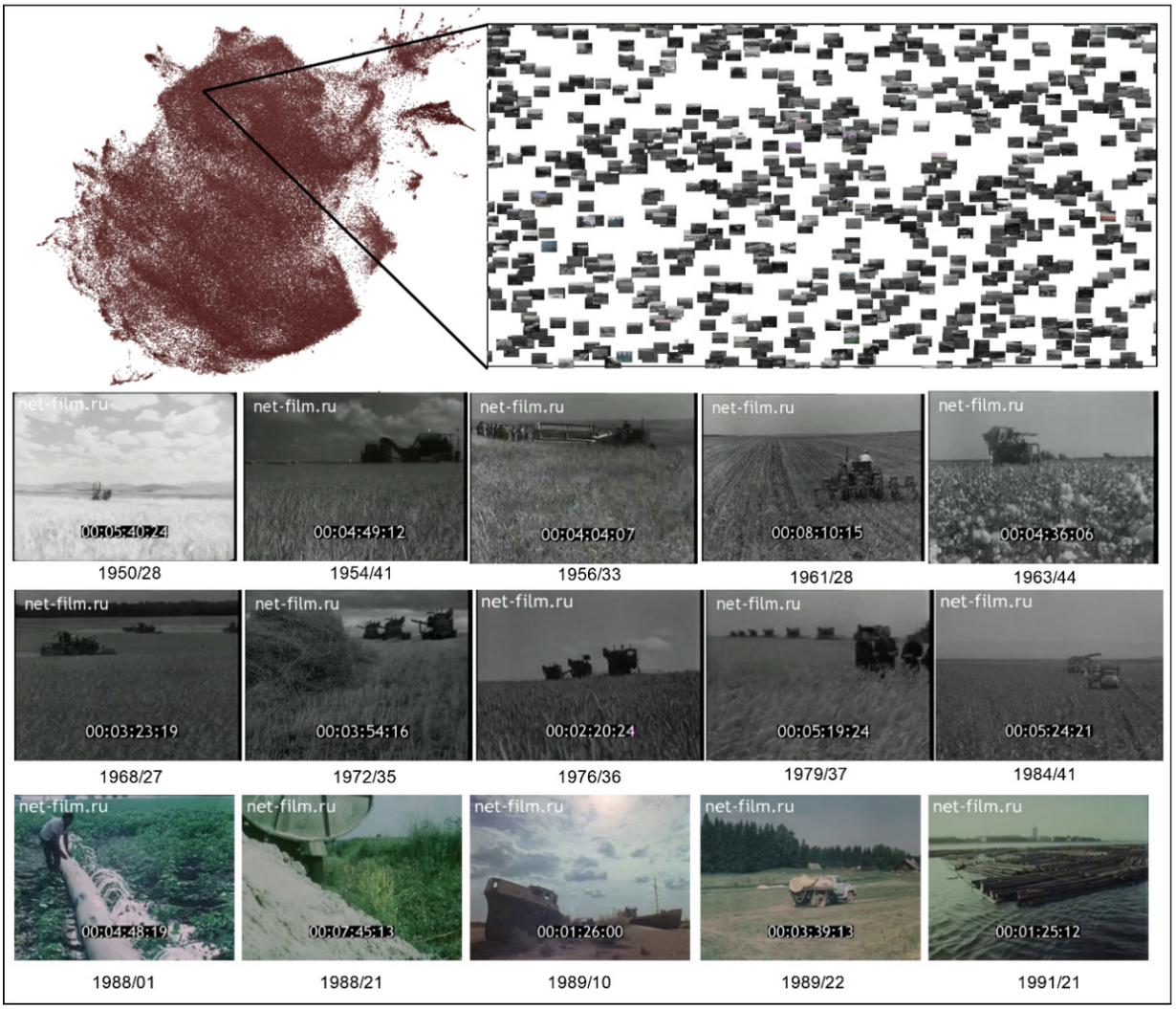

Figure 10. The 'Combine Harvesters' cluster The depictions of combine harvesters working on the field are located in the larger group of images depicting nature and outdoors with a distinctive horizon. However, it is easy to identify several combine harvester depictions within this group, shot from the 1950s to the mid-1980s. In the late 1980s the iconic images of combine harvesters disappear, and the images in the cluster begin to depict in addition to field work also ecological problems in cotton production (1988/01), water pollution (1988/21), the problems of the Aral Sea (1989/10), and forestry (1991/21).

had not been state subsidized, it had ceased by the late 1960s due to the rise of more popular television (Chambers et al. 6; Fielding 992–94); however, in the Soviet Union, production continued with state support. Ironically, the increased openness in mass media eventually led to the gradual decline of newsreels, likely due to reduced state funding and growing competition from other media forms.

On top of the specificities of this period listed earlier in this article, the UMAP projection of frames reveals a distinctive 'Perestroika' cluster emerging between 1985 and 1992 (Fig. 11). Interestingly, it is not visually obvious to a human viewer what new element in the images causes the UMAP to separate the 'Perestroika' cluster images from others. During this period, there were also images similar to those of earlier years; for example, the clusters of 'Nature', 'Monumental Gatherings', and 'Title frames and

other texts' persisted, while 'People in meetings' disappeared completely. The persistence of several clusters suggests that introduction of color film was not the distinguishing feature recognized by UMAP. It is possible that the images contain a technical feature, such as a watermark added later, which is difficult for a human to recognize and unrelated to the actual visual contents, but which causes UMAP to categorize these images as similar.

A closeup of the 'Perestroika' cluster (Fig. 12) shows that it contains a similar variety of images, ranging from closeups and large crowds of people to depictions of individuals at work, in meetings, or on the street. The frames seem to follow a color scheme, but it is not consistent. Another possible hypothesis is that the common feature of these images is that the people are not posing for the camera, and quite often the camera angle is not from below but either direct or slightly from above. Additionally, the postures of some individuals appear tired, with slightly bent backs. Testing this hypothesis is beyond the scope of this article, as it requires an examination of postures and camera angles to delve deeper. Therefore, determining whether the 'Perestroika' cluster is due to the changed political atmosphere, a result of shifts in filmmaking practices, evolving relationships between cinematographers and the subjects, a changing philosophy of what and how newsreels should depict, or something entirely different, remains to be explored later.

Alongside the 'Perestroika' cluster, there are also distinctive peninsulas elsewhere (Fig. 11). For example, the depictions from the State Kremlin Palace, discussed in the 'Kremlin' sub-section of this article (Fig. 4), continued in the late 1980s, albeit in a slightly modified manner. Figure 13 illustrates that 'Monumental gatherings' at the State Kremlin Palace persisted in the late 1980s, but their nature changed. Footage was consistently shot at meetings held in the palace, but the positioning of the frames in the UMAP projection shifted. The State Kremlin Palace hosted the 19th Party Conference in July 1988 and sessions of the newly-elected Congress of People's Deputies and Supreme Soviet in 1989, which discussed the country's reforms. These meetings were the focal point of news reporting both in newsreels and on television (McNair 62). It is possible that the changing atmosphere of these meetings was captured by the UMAP projection as well, although the exact reasons for the shifting position of the frames are not entirely clear. One differentiating feature is color, but this alone does not explain the variation, as the UMAP projection shows color images mixed with gray-scale images. For instance, 1978/41 and 1981/16 are located in close proximity to the frames from the perestroika period, although they are in grayscale. Meanwhile, no color frames from the perestroika period are found in the peninsula of the older frames.

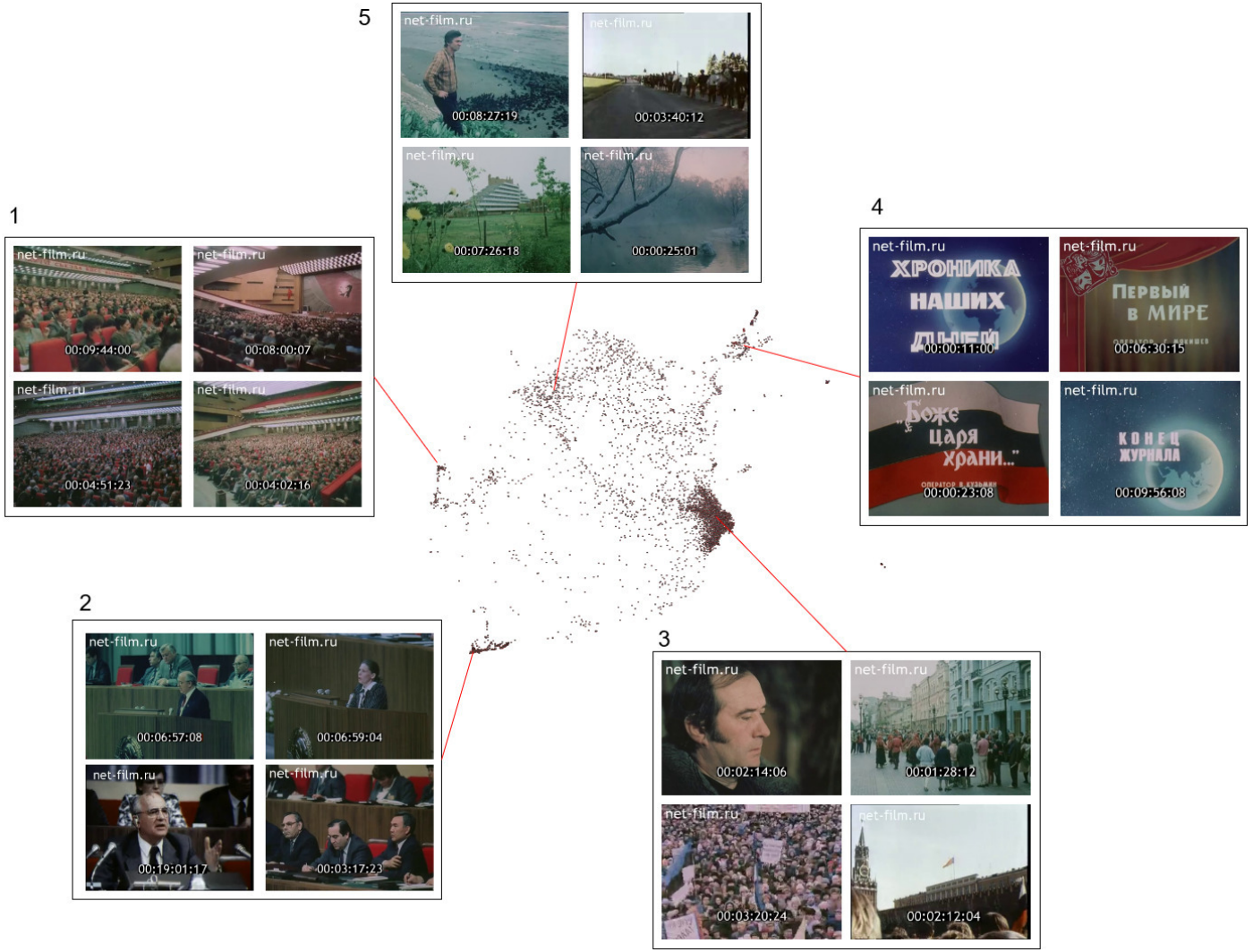

Figure 11. UMAP of frames from 1985-1992. (1) large crowds in meetings in the State Kremlin Palace; (2) a ‘peninsula’ of people giving speeches on a podium; (3) the ‘Perestroika’ cluster with a variety of images; (4) title frames and other texts; (5) nature sceneries with a distinctive horizon.

Figure 12. Closeup of UMAP projection of the "Perestroika" cluster 1988-1992.

One explanation for the different peninsulas representing frames from various years could be that, at least from a human viewer's perspective, the audience in the perestroika period is depicted in a more dynamic way: they are shown in poses that suggest movement or free interaction among themselves. In contrast, the most dynamic frames from the pre-perestroika period depict the audience standing and clapping their hands, thus collectively reacting to what was said on the podium, but not interacting with each other. One outlier frame (1981/16) portrays the audience in slightly more dynamic poses, although they are still clapping their hands, thus supporting the hypothesis that the basis for the different groupings of frames lies in the poses of the people depicted. However, a second outlier (1978/41) displays the audience and the speaker in motionless poses, which undermines the likelihood of this hypothesis. In this paper, we are unable to provide a definitive answer to the question of what underlies these differences, and further exploration of the pose hypothesis should be pursued in a separate study.

Conclusions

Did the depiction of the world in the Novosti dnia change over time, or did it remain the same? The answer to this question depends on the level of detail applied in interpreting what constitutes repetition and how we contextualize the images. As we have shown above, there were notable visual continuities, but also new visual clusters emerging, fading away, and new themes integrating into existing clusters. However, considering that the surrounding visual environment in the Soviet Union underwent radical changes from 1945 to 1992—introducing television and video, and the

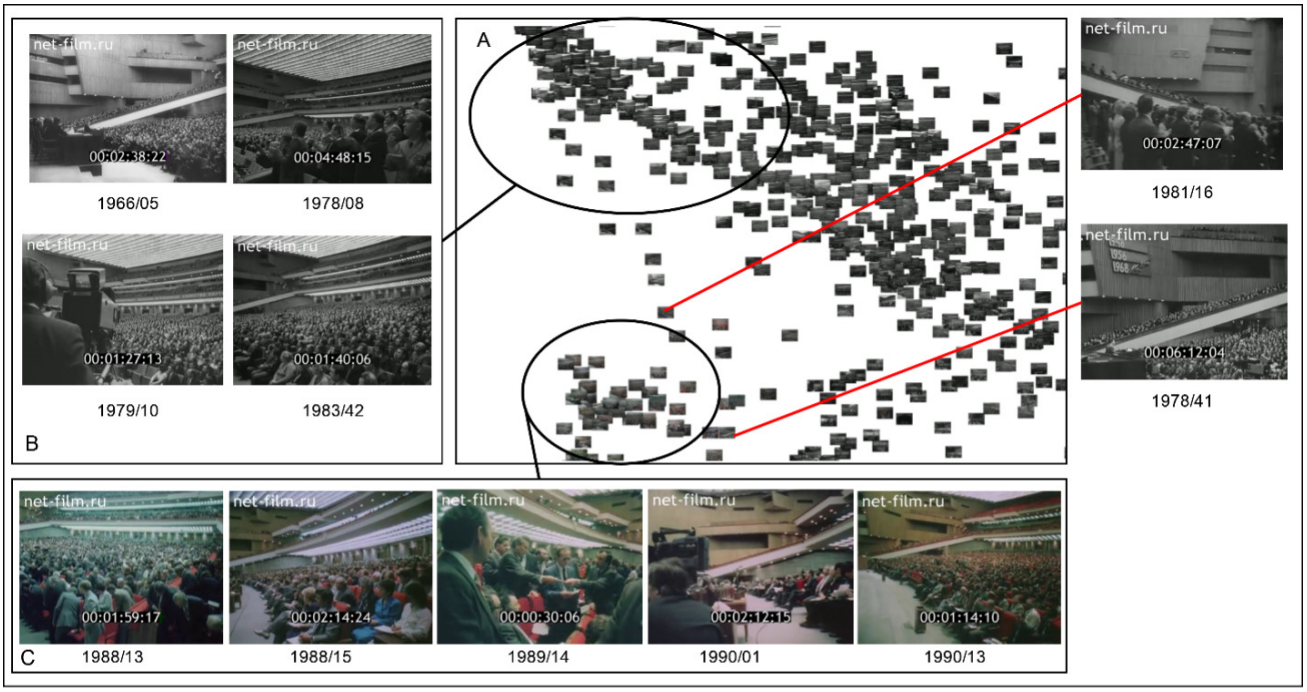

Figure 13. Meetings in the State Kremlin Palace. The UMAP projection of the central frames (A) divide the frames depicting the meetings into two distinctive 'peninsulas' that come from the pre-perestroika (B) and perestroika (C) periods. Two frames (1981/16 and 1978/41) are located close to the frames from the perestroika period, although they were screened in the earlier period.

increasing diversification of visual culture—the stability of the *'Novosti dnia'* is remarkable. For the audiences, often young people who came to watch their favorite domestic comedies or Indian melodramas (Roth-Ey 72, 82, 86, 89–91), the contrast with the newsreels shown before the main feature grew over the years. Decade after decade, it served as the backbone of the official Soviet viewpoint, faithfully repeating Soviet symbols, while the rest of the world moved forward.

Similar to Wevers and Smits (Wevers and Smits 205), our findings demonstrate that image similarity does not necessarily imply conceptual similarity. Visual similarity (for example, depictions of a field with a horizon), what is being depicted (combine harvesters), the relationship of the image to a news story topic (agriculture), and the intended meaning of the image (plentiful harvest or polluted water), represent different visual and conceptual layers of images. Our analysis has focused on the visual similarity layer, and we argue that identifying continuous visual patterns, especially in the highly curated material such as the 'Novosti dnia', is a fruitful way to capture fundamental trends and changes in visual culture.

While we have briefly discussed the relationships between visual similarities, news story topics, and intended meanings, there remains much to explore in this area. The image clusters examined in this article have generally been easy to associate with specific news story themes. For example, although the agricultural theme is distributed across several visual sub-clusters, it can still be readily identified through the presence of certain visually recognizable

objects (tractors, domesticated animals, fruits, cotton, wheat, fields). Additionally, it is worthwhile to explore how more abstract themes are visualized and to identify the temporal patterns they follow. One example of a news topic not addressed here, despite its central role in Soviet self-understanding, is industrial production and technological progress. These are questions that merit future study.

Submitted: July 18, 2024 EST. Accepted: May 21, 2024 EST. Published: July 18, 2024 EST.

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