Theorising TikTok cultures: Neuro-images in the era of short videos

Jian Lin (iD)
Chinese University of Hong Kong, Hong Kong

Joëlle Swart
University of Groningen, Netherlands

Guohua Zeng
Chinese Academy of Social Sciences, China

Abstract
Instead of viewing TikTok as a platform, in this article we borrow Dutch film theorist Patricia Pisters's concept of *neuro-images* to approach TikTok as a cultural form that is deeply participatory, platform contingent, and algorithmically engraved. In the co-production between algorithms and users, TikTok becomes an enormous database and generates personalised narratives about individuals and the world onto and through its 'brain-screen' interfaces, which simulate our conscious and unconscious mind, and actualise the idea of creativity based on repetition. TikTok thus enables a quasi-automated cinema, whose non-stopping filming of everyday lives does not seek to reduce desires and tastes into a singular and coherent structure, but instead uncovers, releases and contains them in its vast database and interfaces, leading to a fluid and modulating categorisation of identities. It is within this quasi-automated, deeply participatory digital cinema that TikTok constitutes neuro-images, producing a distinctive experience of time, and unpredictable and unstable futures.

Keywords
algorithms, digital culture, neuro images, platform, short videos, TikTok

Corresponding author:
Jian Lin, School of Journalism and Communication, Chinese University of Hong Kong, Room 419, Humanities Building, New Asia College, Shatin, New Territories, Hong Kong, People's Republic of China.
Email: jianlin1@cuhk.edu.hk

Introduction

Under the caption of 'they rejected my application to Hogwarts but I still found a way to be a wizard', a magical video of a man dressing up as Harry Potter, riding a broomstick and later revealing in the video he was actually using a mirror, received over two billion views on TikTok. Initially posted on the platform in 2019, the 22-second video quickly went viral on the internet, making its main character Zach King (@zachking) one of the best known TikTok creators around the world. Using the video editing tool Final Cut, Zach King created a new genre of magic shows, which he himself described as the 'digital sleight of hand'. Most of his videos last ten to twenty seconds and are filmed in everyday settings. In doing so, Zach King has managed to turn what would otherwise be mundane routines and life experiences into the spectacular, magical and mysterious. While Zach King did not start his video creating journey on TikTok, the platform has been a good match that has resulted in a huge boost for his creator career.

King is not alone: he represents a distinct type of visual culture that the platform of TikTok affords. Ostensibly, the platform's video length limit, algorithm-centric moderation and its built-in creative features, such as filters, effects and a wide repertoire of music, have empowered creators with great volatility and flexibility in content creation. For example, Khaby Lame (@khaby.lame), born in Senegal and currently based in Italy, is widely known for his TikTok videos in which he silently mocks overly-complicated life hack videos. Instead of using any complex creative skills, Lame's videos are characterised by his sarcastic and silent performance, in which he simply uses the platform's built-in tools of Stitch and Duet. If we turn to channels of other top TikTok personalities like Addison Rae (@addisonre), Charli D'Amelio (@charlidamelio) and her sister Dixie D'Amelio (@dixiedamelio), we may identify similarly shared aesthetics: everyday-like casual performance, upbeat music, and the prevalence of lip-syncing, dancing and humour.

Moreover, TikTok is not just about top-listed influencers. As tech journalist Stokel-Walker writes, 'existing celebrity doesn't determine success on TikTok', and Warhol's prediction about everyone can be world-famous in 15 minutes is finally actualised through 'a single, super-fast, ever-mutating social media app' (Stokel-Walker, 2021: 1). In their walkthrough analysis of TikTok's technical structure and interactive features, Zulli and Zulli (2020) argue that imitation and replication have become the central creative logic of the platform, which extends and incorporates internet memes and memefication to its platform infrastructure (p. 2). Indeed, many scholars tend to regard short videos on TikTok as 'memes' (Zeng et al., 2021), which according to Shifman (2013) are 'socially constructed' discourses that are shared, 'transmitted, imitated and transformed by individual Internet users' as a collective cultural experience (p. 376). Abidin (2021) also notes that the central positioning of reusable and memetic background audios on TikTok definines the 'templatability' of the platform and is 'perhaps the most novel feature on the app' (p. 80). Building upon this line of thought, Zulli and Zulli (2020) take the TikTok platform as a mimetic text for its 'digital mechanisms and processes' that 'uniquely engender mimetic behavior' (p. 6). The above-mentioned creators thus become the initial nodes in forming the platform's 'imitation publics', who are collections of 'people whose digital connectivity is constituted through the shared ritual of content imitation and replication' (Zulli and Zulli, 2020: 11).

Besides understanding TikTok as a social media platform, we can thus see TikTok also as an immensely complex text that is memetic and interactive. TikTok as a platform is not only mediating and facilitating the production of short videos but has become culture itself. Individual creation, imitation and remixing of short videos may be interpreted as practices of memefication. But the platform's algorithmic moderation of content and the unique viewing experiences shaped by recommendation algorithms also characterise and define memetic practices and imitation publics. When analysing short video cultures on TikTok, arguably, it would be inadequate to observe short videos individually and separate them from the hidden platform and technical logics. Instead, we argue that TikTok should be viewed a 'cultural form': compared with the television flows that Williams (2003) analysed decades ago, algorithms now have given rise to a new type of institutionalisation of culture, with diverse tastes, creativities and commercials seamlessly weaved into automatic yet highly individualised flows of content.

As Van Dijck (2013: 12) argues, at the core of social media platforms is the production of a 'culture of connectivity', in which online and offline sociality is coded by automated systems that render 'people's activities formal, manageable, and manipulable', thus 'enabling platforms to engineer the sociality in people's everyday routines'. Sociality and connectivity remain key functionality of TikTok, yet as Kaye et al. (2022) suggest, TikTok as a platform harvests on individual and community practices of creativity. These are essentially vernacular, social, distributed and circumscribed. In their diagnosis of the platformisation of cultural production, Nieborg and Poell (2018: 1) suggest that cultural commodities in the process of platformisation have become 'fundamentally contingent' – 'increasingly modular in design and continuously reworked and repackaged, informed by datafied user feedback'. In terms of TikTok, we can further argue that platformisation not only renders cultural commodities contingent, but turns platforms themselves into contingent cultural commodities. Studying TikTok culture, therefore, not only refers to the analysis of singular groups of videos, hashtags and community practices on the platform, but also requires a cultural analysis of TikTok as a deeply participatory, platform contingent, and algorithmically engraved cultural object.

How, then, should we make sense of TikTok as a contingent cultural form and object? In his study of TikTok's Chinese parallel platform Douyin, Zhang (2021: 233) illustrates that the platform has evolved into an all-encompassing 'video encyclopedia', which turns a wide range of activities including e-commerce, online education, cultural empowerment, propaganda and tourism into one creative repertoire. Given its immense scale and diversity, how can we study the cultural logics of such a 'video encyclopedia'? How does the 'archiving of the everyday' take place on TikTok? Where can we identify and address the political potentials of TikTok culture?

To address these questions, this article proposes a framework that understands TikTok culture as constitutive of neuro-images, a concept originally developed by film theorist Patricia Pisters (2012) to characterise cinema in the digital age. We use the concept as a theoretical prism to approach TikTok as a cultural form. To do so, we make an analogy between TikTok and contemporary digital cinema. Similar to many other forms of new media, the 'newness' of TikTok is built on the incorporation of historical practices in more traditional media culture (Lister et al., 2009). The endless flow of images on TikTok and the algorithmic moderation of it seem to generate a unique mode

of cultural consumption, which echoes in part the experience of contemporary cinema. The immersivity of viewing recalls our cinematic watching and the continuous screening of short videos in a different way resonates with the way montages work in films. TikTok's algorithmic computation of user behavioural data capacitates the simulation of our mind and brain. In comparison to the contemporary digital cinema analysed by Pisters (2012), TikTok and its backend algorithms turn pieces (short videos) of individual everyday experiences into an alternative database, designed according to their unique platform affordances and digital aesthetics. This database builds on a complicated machine-learning algorithms, as well as the mechanism of memefication and affective production: from different perspectives all of these deal with and work on our brain and mind and lead to a unique experience of time in TikTok culture. Our past individual memories are reorganised, reproduced and recirculated, calling for a constant incorporation and participation of every platform user, and turning individual experiences of the past into a collective production of unknown futures. We argue that it is in this organisation and production of time and future that makes the process of TikToks cultural production unpredictable and uncontainable.

The neuro-images, and the politics of digital screen culture

In his two-volume cinema books, Gilles Deleuze distinguishes two regimes of images in modern cinema: movement-image and time-image. The former mainly deals with the 'matter' using our human 'coordinates of the sensory motor system', while the latter examines 'pure memory and spontaneous thought' (Deamer, 2016: 5). Inspired by Deleuze's film philosophy, Pisters proposes a theory of a third regime of images that belongs to the digital age: the 'neuro-images', characterised by the dominance of digital screens, the rhizomatic brain screen and the schizoanalytic nature of contemporary cinema (Pisters, 2012). In the films analysed by Pisters (2012), images have explicitly become the brain-screen, which 'present[s] us with the reality of illusions and in this sense might be better considered as machines of the invisible' (p. 20). Pisters is particularly concerned with the impact of digital media technology (especially Web 2.0 technology at the time of her writing) on image production: the ubiquitous digital screens, the surplus and overload of information, misinformation, highly affective news and the prevalent participatory culture. Within this digital system, Pisters (2012) states, 'the screen itself should no longer be considered as a window or a painting, but it rather constitutes a table of information, a surface inscribed with "data"' (, p. 188). This table of information works in a database logic to actively capture, subsume and archive the everyday events, releasing and containing individual desires through its schizophrenic power of false and of affect, in which realities give way to affects, with both 'positive and negative effects' (Pisters, 2012: 25).

In this context, neuro-images refer to a form of brain screen dominated by participatory digital culture, ubiquitous lenses and screens. For example, in reviewing films directed by Alain Resnais, Pisters makes a clear comparison among the three regimes of images:

> Where the movement-image follows the motor-sensory logic of continuity editing, and the time-image relates to a logic of the irrational cut and the incomprehensibility of the crystals of time, the neuro-image mixes and reorders from all the previous image regimes, ungrounding and serialising according to a digital logic. The cinema of Resnais, as a digital cinema without the digits, demonstrates that it is first and foremost a 'will to art' that allows cinema's survival in and adaptation to the digital world. (Pisters, 2012: 148)

Importantly, the movement-images are grounded in the time of the present (documenting acts through story-telling narratives), the time-images are the time of the past (collection and projection of past pure memories) and the neuro-images are grounded in the time of the future: its database logic, articulated in the digital baroque aesthetics, which refer to 'a renewed unfolding of mathematical and baroque patterns' in contemporary cinema enabled by digital technologies (Pisters, 2012: 190). Together, the neuro-images capture both the visible (material-motion) and the invisible (mind) realities and points to the open possibilities of the future: constituting the open archive of the digital time. As Pisters notes:

> These hidden histories, including the forces behind the construction and disclosure of archival categories, selections, and (intended and unintended) uses, are important aspects of the open archive in a culture that is marked by a frenzy of the archive – a frenzy that is always already private and personal but is also a collective impulse. (p. 255)

It is in this sense that the neuro-images potentially incorporate all elements of the movement images and the time images and, according to Pisters, 'all other times can be revisited, reordered, and cut to new intensities, corresponding to a database logic of the digital age' (p. 303). Its logic of an open archive operates through the mechanisms of repetition and affective production, and opens up the political potentials of the neuro-images. TikTok's online screen culture, we argue in this article, shares such regimes of the neuro-images and their database logic. Algorithms mobilise numerous individual creators into the production of an automated cinema. Within this automated cinema, a specific type of the neuro-images have been created to constantly capture both visible everyday 'realities' and invisible minds of creators and end-users through its algorithmic computation and simulation. Duet, stitch, challenges and the platform's unique music repertoire manage to promote the practices of repetition and affective production among TikTok's online and offline communities, producing shared but different futures. After a brief description of our methodology, we will delineate four aspects of TikTok culture, which contributes to the formation of neuro-images in light of Pisters' analysis: database logic, brain screen (interface), time experience and the affective production.

Methods

To explore TikTok's cultural distinctiveness through the lens of the neuro-images, this article combines the walkthrough method (Light et al., 2018) with a digital ethnography of TikTok's algorithm-moderated online cultures. Combining the analysis of both TikTok's technological interface, as well as the communicative forms its users produce,

allows for a more holistic perspective on the interplay between the platform's affordances, creators' artistic choices and TikTok's audiences (see also Hautea et al., 2021), which we find shapes a unique digital culture characterised by high levels of repetition and affective production.

As several scholars have noted, TikTok researchers that aim to analyse its content face the methodological challenge of the platform's algorithmic filtering based on user patterns (Schellewald, 2021; Zulli and Zulli, 2020). TikTok's recommendation algorithms remain secret to outsiders despite a few attempts by the company to publicise its basic logics of recommendation (TikTok, 2020). Therefore, after an in-depth walk-through of TikTok's interface and design, the first two authors each created a new, separate TikTok account on smartphones that had not been used for TikTok before (one iPhone and one Android phone) to observe and experience the algorithm-moderated user content on the platform. Using Schellewald's (2021) routine approach, this digital ethnography was conducted in two rounds, from October 26th to November 1st 2020 and from March 6th to March 12th 2021. Our online ethnography was conducted within The Netherlands. Since TikTok's algorithms use location and phones' language settings as input for the curation of the For You page, the For You pages we observed are strongly shaped by and need to be considered within the Dutch cultural context, referencing for example national festivities, television shows, celebrities, companies, and so forth. With 1.6 million Dutch using the platform daily, TikTok is one of the most quickly growing social media in the country, in particular among younger demographics: for people under the age of 20, for instance, the daily use of TikTok has surpassed that of Facebook (Hoekstra et al., 2022). No major news events occurred in The Netherlands during the two weeks of data collection.

Aside from online observations, we follow what Seaver (2017: 7) calls the scavenging ethnography to reach a better understanding of 'the more persistent cultural worlds algorithms are part of'. The materials we approached include interviews with one previous algorithm engineer working in Kuaishou (a major Chinese competitor of TikTok), and two staff members at the international office of ByteDance. We also analysed TikTok's public disclosure about its algorithms and several online articles describing TikTok user experiences. Importantly, instead of offering an accurate account of the specific configuration of TikTok algorithms, we identify ourselves as 'active enactors', which according to Seaver (2017: 5), see algorithms in and as cultures, rather than a singular technical object exogenous to cultures.

The database logic and TikTok's algorithmic individuation

In *The Language of New Media*, Lev Manovich (2002) identifies data structures and algorithms as two halves of the ontology of culture in the computer age. Most new media forms such as CD-ROMs, webpages, and audio-visual platforms including Netflix, YouTube and Spotify, compared to traditional cinema and novels, align more with the logic of database than story-telling narratives. Within this database logic, computer softwares simulate traditional media and replace their physical bases with data and data structures, storing, sorting and coding new, digital information in the constantly

changing and enlarging database (Manovich, 2013). As a result, it is collections rather than stories that are produced by digital media. At the same time, the computerisation of culture does not completely eliminate narratives. For example, computer games, as Manovich states, are still 'experienced by their players as narratives'. These computer games simulate real-world games and invite players to explore and discover the hidden rule (algorithm) of the game universe. Algorithms, or game rules, therefore, drive new media to operate and process their data and data structures to yield particular and diverse digital objects, which may often be experienced by users as narratives.

We can recognise a similar but more complicated database logic on TikTok. Just as YouTube and Instagram, TikTok invites amateurish creators to post and share a variety of content, constituting an enormous collection of audio-visual data. Behind it, the operation of TikTok requires a massive data infrastructure to collect, store, compute and evaluate data. Central to TikTok's data infrastructure is the machine-learning recommendation algorithms that shape the networked organisation of data and curation of culture on the platform. According to its official disclosure, TikTok recommendations are based on three main factors: user interactions, video information, and device and account settings (TikTok, 2020). Similar to other dominant social media algorithms, demographic information such as gender, age and ethnicity receive less weight in the matrix factorisation of TikTok algorithms than the behavioural (e.g. likes, comments and shares) and contextual (e.g. location and time) data, which are believed to be more accurate and useful in developing psychographic categorisations of platform users. In a news article (Macgowan, 2020) titled 'The TikTok Algorithm Knew My Sexuality Better Than I Did' published in 2020, the 26-year-old Amalie Maggowan describes TikTok algorithms as 'illuminating' when the platform serves queer content on her feed while for years she has 'faced an unreasonable amount of denial' about her sexuality because of her background and her 'known desire for men'. Amalie's experience is echoed by studies of user perceptions of TikTok algorithms (Bhandari and Bimo, 2022). For example, Lee et al.'s (2022: 6–12) research shows that TikTok users widely perceive the TikTok algorithm as capturing 'many different facets of themselves', and their identity that is 'dynamic and changes over time'. In other words, as Bhandari and Bimo (2022: 9) point out, what distinguishes TikTok from other social media platforms is that TikTok produces self-representation and identification that 'departs significantly from the model of "the networked self" found on other social media'. Although TikTok integrates social and communicative functions in its interface, these features are secondary for most users, who instead develop their online/offline identities through engagement with multiple versions of themselves mediated and constructed through the algorithm (Bhandari and Bimo, 2022: 9). This production of the 'algorithmised self' on TikTok, termed by Bhandari and Bimo (2022), extends and compiles the previous notion of 'networked self' as constructed through associations with online/offline social circles, and speaks to development of self and identity through reflexive engagement with algorithms.

Observations from the above studies about the algorithms' confrontation with multifaced and dynamic notions of self suggest that TikTok's recommendation algorithms reject fixed markers of identity. Similar to what Prey (2018: 1095) argues about Pandora and Spotify, recommendation algorithms' context-sensitive nature (e.g. geolocation and time of use) unknowingly promotes the development of 'processual identity' and

'algorithmic individuation', which is constantly adaptable to the environment and context. In a critical sense, we may follow Cheney-Lippold (2011: 169) to suggest that individual users are becoming 'endlessly sub-dividable dividuals', which constitutes a 'cybernetic categorisation' of human identity, giving rise to the soft biopower and soft biopolitics that make governance and control of populations 'a modulating exercise'. A database query, or 'the compilation of a computer program', writes Cheney-Lippold (2011: 177), instantly forms modulating subjects and connects 'dividual parts through arbitrary closures'. This cybernetic categorisation operated by algorithms caters to proprietary interests and the context of online marketing and platform capitalism, whereas we must acknowledge that such categorisation also transcends a static, human-centric understanding of culture and identity. In their early study of Netflix Prize, a contest launched in 2006 to boost the accuracy of Netflix's recommendation system, Hallinan and Striphas (2014: 126) insist that the rejection of demographic categories in the contest and the adoption of matrix factorisation in user categorisation do not necessarily discover unknown aspects of human culture, but 'repatriated tools, numbers, and the non-human to a lifeworld from which they had been exiled long ago'. Just as the above-mentioned Amalie's story illuminates, the algorithmic recognition and factorisation of one's cultural identity may show 'profoundly ambivalent potentialities and their relationship toward existing modes of personal and cultural identity is far from determined' (Hallinan and Striphas, 2014: 127).

Affirming these potentialities, however, does not suggest that TikTok algorithms have become omnipotent in deciding and determining user subjectivity. Instead, social media users experience and encounter algorithms in their everyday life and actively develop folk theories about them, forming the algorithmic imaginaries that are not only productive of online behaviours and affects, but also impact the operation and modulation of algorithmic systems. As Bucher (2017: 42) suggests,

> While algorithms certainly do things to people, people also do things to algorithms. The social power of algorithms – particularly, in the context of machine learning – stems from the recursive 'force-relations' between people and algorithms.

According to Karizat et al. (2021: 19), it is the co-production between both users and TikTok's For You Page algorithms that shapes knowledge of person and social identities on the platform. As a result, TikTok manages to foster online content-based taste communities, rather than sociality-based network communities. Such taste communities are always dynamic and unstable, reflecting personalised, local, and changing preferences of culture and desire, which may deviate from one's demographic norms, be it race, gender, class and age. Beneath these taste communities, TikTok algorithms simulate users' brain processes, which according to Deleuze and Guattari (1983), are inherently characterised by the heterogeneous and multiple connections: the rhizomatic nature of brain activities. The enormous database that TikTok endlessly constructs act as the foundation of such simulation, while recommendation algorithms and platform users, as we will continue to argue in the following section, mobilise this database and produce personalised narratives about the individual and the world onto and through the app's brain-screen interfaces.

TikTok as brain-screen, the machine of the invisible

For creators, TikTok acts as a magic machine that provides a wide range of creative features to test, apply, imitate, and entertain, all with user-friendly designs and interfaces. Most of the videos we saw on the platform were ostensibly captured by phone cameras, and the organisation of them on TikTok is distinctive. First is the vertical screen with a minimalist design, which aligns with the portability of mobile phones. It creates a cinematic experience unique to the digital and mobile age: watching, playing and creating at any time and any location. It is a cinema without prologue and denouement: the non-stopping screening of individual clips of climax. This is a typical form of brain-screen, a fragmentation and breakdown of time and space displaying the schizophrenic assemblage of contemporary culture and resembling the rhizomatic nature of brain processes. Achieved by the algorithmic computing of personal behavioural data, as clarified earlier, the TikTok screen manages to read and follow our conscious and unconscious mind. When analysing the digital cinema, Pisters (2012: 15–20) recognises the potential of digital techniques like 'nested instancing' as turning digital screen into the 'machine of the invisible': making the visualising of the invisible brain/mind activities possible. Similarly but in a different way, we suggest that TikTok's algorithmic individuation has also transformed its digital screen into the machines of the invisible. When taken individually, most TikTok videos lack explicit engagement with the minds of characters: individual short videos follow the production logic of the movement-images, with visual elements chronologically recognised in producing a coherent, comprehensible and thus entertaining video. Instead, it is the algorithmic curation of these individual videos that track, follow and simulate human desires and tastes, which are 'organised' and 'contextualised' by algorithms as neuro-images.

The screen is also the interface, displaying, monitoring, connecting, and producing – a plethora of functions and features are hidden within a minimalist design of the screen-like interface. All the videos displayed have to follow the 60-second rule: the majority of them last between a few to fifteen seconds (the maximum length given to videos created via the app's built-in camera). This feature of ephemerality together with its portability caters to the time-space compression of contemporary society: post-Fordism, advanced logistics and digitalisation contribute to the acceleration of production, circulation and consumption – 'accelerating turnover time' (Harvey, 1999). As a result, contemporary popular culture values volatility, ephemerality and instantaneity – short rather than long term planning becomes essential. In Harvey's (1999) words, 'learning to play the volatility is now just as important as accelerating turnover time' (p. 287).

TikTok thus offers a marvellous collection of features and techniques to mastering such volatility. The overall logic is barely simple - to facilitate a maximum consumption and incorporation of time and space at the minimal cost of time and space to attract a maximum number of users (as both creators and viewers). To do so, TikTok encourages the idea of creativity based on repetition. For example, the screen-like interface is not only exhibitive but interactive. Aside from the common features of liking and sharing, prevalent on almost every social media platform, TikTok's screen is stimulating and inviting. The record icon on the bottom left offers the viewers a click-to-go option to apply the same music to their own videos (Figure 1). The share button on the right
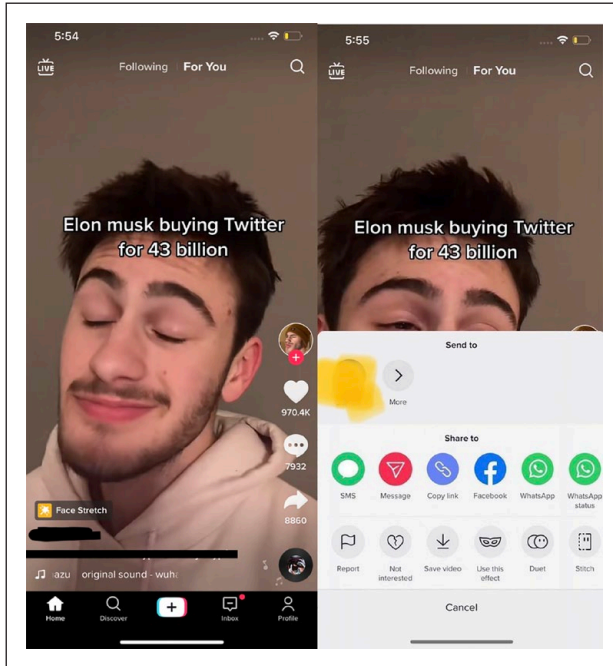
Figure 1. TikTok's sharing buttons.

includes two special functions duet and stitch, which invite users to use the currently watched video as a built-in material for further creation: such as commenting, lip-syncing and mimicking. Such an inviting feature is quite prevalent on the app. When the video on screen contains certain filters and effects, for instance, these effects and filters will also appear as a small interactive button on the left to encourage a viewer to click for more videos using the same effects or using them for her/his own creation. On the discover page (next to the homepage), videos are organised under hashtags. Clicking on them, the screen will direct users to a collage of videos with a beating, pink-red button on the middle-bottom displaying 'Join this hashtag' (Figure 2).

These features partly demonstrate on TikTok the continuation of the participatory and convergence culture (Burgess and Green, 2018; Jenkins, 2006; Leaver et al., 2020), but they also gesture to another important perspective to understanding creativity embodied in the TikTok interfaces. The surging popularity of TikTok and its short videos is often attributed to its comical, fun and creative aesthetics (we will address it in the next section), but the creative production on TikTok starts from repetition. Music, challenges, duet, hashtags and filters and effects, all these work as creative templates for imitation and repetition, which is the core of the vernacular visual production on TikTok. As we show in the previous section, TikTok specifically supports the creation of creativity-driven, content-centric taste communities.

Simmel (1971) once conceptualised taste communities as attachments that are, on the one hand, sustained through shared appreciations of taste that legitimise these tastes as
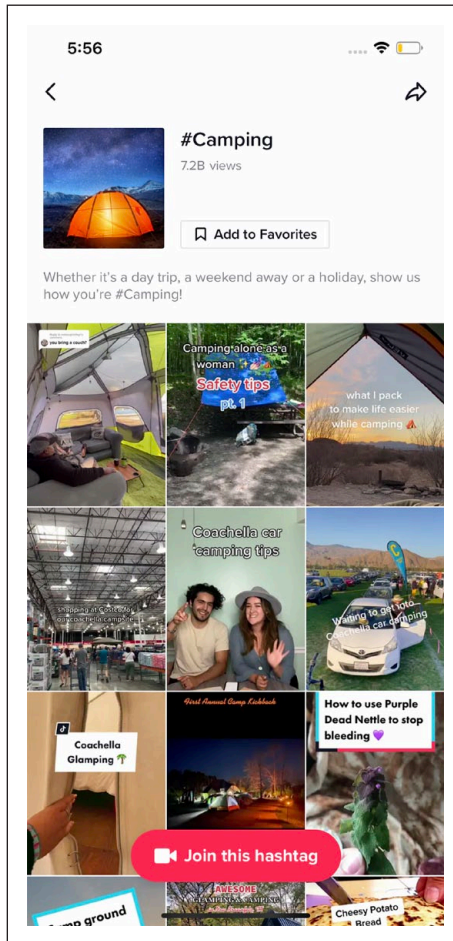
Figure 2. Join this hashtag.

socially meaningful; yet, on the other hand, they allow for tastes to be viewed as subjective to create space for personal interpretation. Creators' videos on TikTok, in order to go viral, require a certain level of uniqueness and individuality, that may be achieved through the articulation of authenticity and 'rawness'. Being recognised by the algorithm as 'relevant', however, also depends on a minimum level of similarity to prior content on the platform, resulting in an engagement with pre-existing cultural repertoires on TikTok in order to win what Cotter has effectively termed 'the visibility game' (Cotter, 2019). Remix and memefication play a key role in this process. Rather than the creation of fully novel, unique or original ideas, creativity in TikTok culture is concerned with the individual interpretation of trends, hashtags and challenges. The creation of 'imitation publics' (Zulli and Zulli, 2020) via TikTok creative interfaces is then enhanced by the strategic use of hashtags to increase algorithmic visibility and by explicitly tagging and

including comments of other TikTok users. More prominent on TikTok, however, is the implicit embedding, remixing and re-interpretation of cultural symbols and artefacts in short videos, including particular songs, movements, expressions and camera effects, and adapting them to make them fit users' everyday and cultural contexts. The associations between the videos in TikTok's taste communities are thus not necessarily centred around issues, but are primarily forged through parallel aesthetics and affects, similar to the loose associative functions of neural networks in the brain that Pisters (2012) describes.

In the practices of repetition and memefication, user-creators learn to master the creative machines of TikTok. As we analyse in the next sections, these practices endlessly absorb and project TikTok users' memories and imaginaries of everyday life from and onto the TikTok brain screen, producing a distinctive experience of time and pointing to a future that is co-productive with unpredictable potentials of politics.

Time experience and the digital baroque aesthetics

A third key element within Pisters' (2012) concept of neuro-images is the experience of time. In their study of algorithm awareness on TikTok, Siles et al. (2022) also note that temporality is 'the key in the experience of TikTok' (p. 2). The shortness of short videos, the pace of swiping, and the time needed for users to train and domesticise the TikTok's FYP all bespeak the unique experience of time on TikTok in its cybernetic categorisation of individuals and algorithmic curation of visual content. Similarly, Schelleward (2021) points out that the key challenge of studying short videos on platforms like TikTok rests on the ephemeral, accelerated nature of context and the algorithmic personalisation, which makes researchers' subjective, unintended bias almost unavoidable. As explained earlier, the same challenge troubles us, yet it does indicate one crucial logic of the TikTok culture. Short videos cannot be seen/analysed individually, but are embedded in a digital context nurtured diachronically by viewers, creators as well as algorithms. What TikTok has enabled is a quasi-automated cinema, a non-stopping filming of everyday lives: a bricolage of individual memories.

These individual memories are not circulated, however, as an organic totality as traditional cinema do – which Deleuze (1986) has categorised as movement-images Deleuze (1986). We observe a seemingly random display of a wide range of genres, themes and characters on TikTok: sexualised bodies, bus drivers, teachers, pets, parodies, pranks, beauty and life tutorials and food shows. The glamorised visual and creative effects are juxtaposed with amateurish, everyday-like performances. The algorithmic mobilisation of TikTok database, echoing Pisters' (2012) diagnosis of contemporary digital cinema (p. 11), brings to light the hidden life and historical materials (e.g., the everyday routines of either celebrities or ordinary individuals). Whereas, it redistributes them in a 'non-chronological order': not only do we as both audience and participants easily lose the sense of time, but time itself becomes incomprehensible and confusing when watching and interacting with TikTok. A young woman from LA dancing in front of a phone, three guinea pigs sneaking in a Dutch garden, while some Hong Kong residents are protesting on the street; similar but different images prevail on the platform. As we wrote about TikTok's taste communities, the organisation of images on TikTok is based on the

dialectics of repetition and differentiation, and the platform's algorithmic individuation appears schizoanalytical. It does not seek to reduce our (as end users) desires and tastes to a singular and coherent structure, but aims to uncover, release and also contain them in its vast online database and the brain-screen interfaces. Users develop their identities through watching the algorithmic-curated images, and individual desires and memories of mundane everyday lives are wrapped in what Pisters (2012) terms the 'digital baroque aesthetics'; the non-linear structure of time is camouflaged in beauty cameras, filters, and the vast repertoire of music, managing to turn the either routine or accidental daily events into a world of kaleidoscopic pleasure.

Within such digital baroque aesthetics, not only do everyday lives become creative, entertaining and political (as we will elaborate in the next section), but individual users are motivated and mobilised to participate in the production of TikTok cultures. Charli D'Amelio (@charlidamelio), the most popular TikTok creator, attracted hundreds of millions of views of her dances in mostly home/everyday-like settings: living room, kitchen, car, with friends and relatives and in casual outfits. Everything is relevant to our everyday life but appears spectacular for its digital baroque aesthetics, which are inviting and productive: if we are living in similar houses, dressing in similar clothes, speaking similar languages and listening to similar music, why can't we also become popular TikTok creators like Charli D'Amelio? TikTok in different ways thus turns these regular places and events into a theatre, inviting us, as ordinary as everyone, to perform and entertain ourselves and others. It is following this logic that we see a wide range of videos shot in the Netherlands where people are dancing, singing, and playing. Individual identities are blended, if not dissolved, into the theatrical performances. Masqueraded under theatrical and digital baroque aesthetics, TikTok thus opens up an archive of everyday memories, which not only documents and reorganises the everyday life, but invites an endless input of newcomers enabled and even empowered by its creative mechanism of repetition. For individual users, the schizoanalytical organisation of such digital archive translates others' pasts, through the regime of repetition and differentiation, into our own memories, identities and therefore futures. The fluid identification between viewers and creators is ensured and the individual memories of the past are rendered collective, which are continually repeated, reproduced and recirculated: sustaining the operation of TikTok and its platform ecology, but also constituting a co-production of unpredictable futures for all users.

TikTok politics and the power of affect

Finally, alongside the digital baroque aesthetics, in the heart of TikTok online communities is the integration and co-production of affects. In the videos that we observed related to the COVID-19 pandemic, for example, we saw a number of health workers posting TikToks about their workplace and with pandemic-related information. The key to the popularity of such videos is not the accuracy of the medical information they contain. As Southerton (2021) argues, it is the affective qualities of TikTok affordances – the platform's production of ''nonsense', playfulness, emotions and intimacy', that facilitate TikTok's health communities to spread and circulate health information: 'not only based on a health professional's authority to hold such information but also on their capacity to

tap into the circulating feelings, in-jokes, and trends that characterise TikTok' (p. 3261). The filming of hospitals and face masks here helped to foster affective connections between creators and viewers, and to capture the 'shared anxieties, discomforts, or sensations – how the pandemic is felt' (Southerton, 2021: 3261).

In their study of climate change-related content on TikTok, Hautea et al. (2021) similarly demonstrated how 'predominantly young, non-expert users' harnessed TikTok's affordances to 'visibly intervene in a discussion that generally takes place among expert-level scientists and journalists' (p. 12). Algorithms, hashtags, and music and visual memes effectively work together to form what Papacharissi (2015) terms affective publics on TikTok, with diverse and affectively charged discourses about climate change mixed and circulated in the same online space, where factual accuracy is secondary to relevance and relatability (Hautea et al., 2021: 9). These discourses and messages are disparate in nature – 'simultaneously earnest and mocking, alternate between care and indifference' (Hautea et al., 2021: 12), whereas they incorporate and actualise the ways in which climate change and other social issues are felt by users, and are thus generative of 'larger social patterns that subtly transform climate indifference into a subject of social disapproval and direct action' (Hautea et al., 2021: 12).

Scholars have observed similar patterns on TikTok on a variety of social issues such as gender inequalities and queer rights (Civila and Jaramillo-Dent 2022; Subramanian, 2021; Vizcaíno-Verdú and Aguaded, 2022), and in recent events such as 2020 Australian bushfires (Brown et al., 2022), the death of George Floyd, and the US Capitol riot (Literat et al., 2023). From these empirical studies we may trace the political potentials of TikTok cultures and how TikTok may amplify the affective power of social media. As Hautea et al. (2021: 2) suggest, 'the liminality of expression on social media, where messages are open to interpretation and multidirectional connections, makes it a rich space for imagining future possibilities'. TikTok users are networked and mobilised through affects: pleasure, desire and pain; these affects are internalised in the daily content production of numerous taste communities on the platform – well equipped by the platform's digital baroque aesthetics (filters, special effects, visual and sound memes, etc.). Affects, however, are not merely individual emotions, but generative and deeply political:

> Affect is inherently political. It provides a way of understanding humans as collective and emotional, as well as individual and rational, by presenting these states as confluent rather than opposite. (Papacharissi, 2015: 16)

Because of its affective nature, TikTok works to incorporate and reconcile heterogeneous voices, expressions and identities. The platform thus becomes a site of emergence, echoing Massumi (2021: 35), with its circulated affects presenting and capturing both virtual and actual possibilities. By participating in TikTok's affective production/consumption, individual users once again become modulating subjects: this time not by algorithms but through the exercise of the power of affects. In the climate change case, we may identify TikTok as an online ecosystem in which 'earnest activists compete with mocking satirists, playful attention-seekers, and bored time-killers for visibility and clout' (Hautea et al., 2021: 2). Sometimes, these different identities may result in conflicts and lead to what

Kaye et al. (2022: 126) suggest as the 'circumscribed creativity' of TikTok – TikTok's meme-driven platform logic 'encourages content creators' participation in collective voicing' while also 'jeopardises the causes' impact and efficacy' as the online campaigns can be easily undermined by 'trend free-riders and the platform's agenda-setting practices'. In a different sense, however, we may suggest that the affective nature of platform cultures on TikTok also generates agency and power of affects that lead to an increasingly fluid and modulating categorisation of identities: individuals are also becoming each other (or not) in their encounter of affectively charged but disparate climate discourses. The boundaries and distinctions between users identities become less clear-cut and subject to modulation.

TikTok, therefore, creates political potentials as in the cinema of neuro-images. According to Pisters (2012: 303), the movement-images are organised based on chronological association of movements – the first synthesis of the time of the present, time-images are collections of the pure past memories – the second synthesis of the time of the past and the neuro-images belong to 'the third synthesis of time, the time of the future'. In other words, the neuro-images shape our experience of the past and the present from the perspective of the future, recutting our pasts and presents 'with different speeds, intensities, and orders' (Pisters, 2012: 304). The future itself is largely unpredictable, and the political potentials (as well as liminality) of TikTok cultures lie exactly in their containing and reworking of pure pasts and presents into the future, through the intensity of affective participatory production.

Conclusion

In this article, we propose a framework to understand TikTok culture as constitutive of neuro-images, a concept originally developed by film theorist Patricia Pisters (2012) to characterise cinema in the digital age. Instead of viewing TikTok as a platform, we use the concept to approach TikTok as a cultural object that is deeply participatory, platform contingent, and algorithmically engraved. The vast collection and computation of user behavioural data by TikTok algorithms capacitates the simulation of our mind and brain, which are inherently characterised by the heterogeneous and rhizomatic connections. In the co-production between algorithms and platform users, TikTok turns itself into an enormous database and produce personalised narratives about individuals and the world onto and through the app's 'brain-screen' interfaces, which manage to read, follow and actualise our conscious and unconscious mind.

TikTok's screen-like interfaces offers a marvellous collection of features and techniques to deliberately encourage the idea of creativity based on repetition, adapting to the volatility, ephemerality and instantaneity of time experience in contemporary world. In the practices of repetition and memefication, user-creators learn to master the creative machines of TikTok, which endlessly absorb and project TikTok users' memories and imaginaries of everyday life from and onto the mobile screen. What TikTok has enabled is thus a quasi-automated cinema, a non-stopping filming of everyday lives, a bricolage of individual memories. Importantly, it does not seek to reduce our (as end users) desires and tastes to a singular and coherent structure, but uncover, release and also contain them in its vast online database and the brain-screen interfaces. Users develop their identities

through watching the algorithmic-curated images, and individual desires and memories of mundane everyday lives are wrapped in what Pisters terms the 'digital baroque aesthetics'; the non-linear structure of time is camouflaged in beauty cameras, filters, and the vast repertoire of music, managing to turn the either routine or accidental daily events into a world of kaleidoscopic pleasure. It is within this quasi-automated, yet deeply participatory digital cinema that TikTok produces a distinctive experience of contemporary time and pointing to a future that is co-productive with unpredictable potentials of politics.

Demonstrated by various online campaigns on the platform, the affective nature of cultural production on TikTok works to incorporate and reconcile heterogeneous voices, expressions, and identities, and lead to an increasingly fluid and modulating identification. In their encounter of affectively charged but disparate discourses about the self and others, individuals may at times find themselves trapped in conflicts but also implicitly becoming each other. The boundaries and distinctions between users' identities become less clear-cut and subject to constant modulation. The political potentials (as well as liminality) of TikTok cultures lie exactly in their containing and reworking of pure pasts and presents into the future, through the intensity of affective participatory production.

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ORCID iD

Jian Lin iD https://orcid.org/0000-0003-0436-0858

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