

The Evolution of Twitter: An Entangled History of Intermedia Relationships

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This article introduces an evolutionary perspective for understanding the transformations in Twitter (now X) since its inception in 2006. Rooted in media evolution, this framework examines long-term, interdisciplinary, and complex facets of media change, focusing on understanding historical and contemporary shifts in the media ecosystem. The article addresses key questions such as the role of *intermedia* relationships in its evolution. After delineating the evolutionary framework and accentuating its core analytical categories, the article delves into Twitter's evolutionary journey. Based on the idea that it is impossible to understand the evolution of a medium by isolating it from the other media, intermedia competition and cooperation relationships are highlighted throughout the analysis. The article evidences how Twitter influenced other media and was influenced by them; these movements could be considered as a part of an adaptation strategy in the context of a highly competitive environment. The concluding section summarizes the findings, discusses the ongoing process of platform homogenization, and initiates a discussion on the promises and limitations of applying an evolutionary approach to media change.

Keywords: Twitter, X, media evolution, media history, intermediality

The recent significant shifts in the management and overall strategy of the corporation Twitter (now X), which directly impact the users' experiences and the platform's interactions within the media and cultural landscape, position it as an excellent research object for examining the conflicts and pressures inherent in media evolution. Founded in 2006 by Jack Dorsey and other partners, it gained substantial popularity reaching a point of no return at the end of 2011, when it surpassed 100 million users. Elon Musk acquired the company in October 2022, sparking debates over the platform's general strategy. The rebrand to X was announced in July 2023. Musk's arrival is a key turning point that will reshape the evolution of this platform. Since interpretation is always a retroactive process, Musk's explosive entrance marks "a before and after" in Twitter's history that facilitates retrospective analysis.

Throughout its history, Twitter has served as a realm for experimenting with networked communications and has demonstrated remarkable adaptability despite its limited commercial success. Unlike its counterparts born during the same years, such as Facebook (created in 2004), YouTube (2005), and Instagram (2010), which have surpassed a billion users, Twitter has consistently maintained a user

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base of approximately 400 million, including fake accounts (bots). Although it has not had a successful business model, Twitter has managed to endure since 2006 in an intensely competitive landscape.

From its beginnings, Twitter has raised many discussions about its role and uses in contemporary digital society. Solis (2009) ignited the debate in a polemical article titled "Is Twitter a Conversation or Broadcast Platform?" In the midst of the furor over "Web 2.0" (O'Reilly, 2005) and the "markets are conversations" (Levine, Locke, Searls & Weinberger, 2000, p. 147), Solis questioned precisely the conversational value of Twitter. According to Solis (2009), even if "statistical exploration" indicated Twitter was "growing in prominence" (about 58M users at that time), perhaps its importance was more closely aligned "with a powerful, new, and seemingly engaging one-way broadcasting ecosystem rather than a two-way dialogue channel we initially suspected" (para. 10).

Another key issue was the use of Twitter as a political tool. The role played by social media in Arab Springs (2010–2012) attracted the interest of academics and political activists. Expectations of great social, democratic, and participatory change seemed to grow in direct proportion to the number of social media users (Castells, 2013; Gerbaudo, 2015, 2017). However, some intellectuals like Gladwell (2010) were quick to deflate these expectations: As social media operates on weak connections, the type of activism associated with them differs significantly from traditional political forms. As Gladwell (2010) put it, "the revolution will not be tweeted."

There has been permanent debate on Twitter throughout its history (Karami, Lundy, Webb, & Dwivedi, 2020; Weller, Bruns, Burgess, Mahrt, & Puschmann, 2014). The arrival of Elon Musk did nothing other than add a new chapter to the "rhetoric of Twitter," that is, the discursive galaxy that has surrounded this social media since it was first launched. However, the paratextuality around Twitter has not been limited to contributions from digital analysts: Scientific research has been intensive in the last decade. In a recent review of scientific production on Twitter, after systematically applying text mining and trend analysis to detect semantic patterns in +18,000 relevant articles from three databases, Karami et al. (2020) found that since 2006, the volume of publications on Twitter has significantly grown and is projected to continue to expand in the coming years. Among the prominent topics discussed, sentiment analysis, social network analysis, big data mining, topic modeling, and content analysis have garnered considerable attention. This study focused on the articles published in English between 2006 and 2019 and confirmed that diverse approaches were employed to research Twitter, with supervised and unsupervised computational methods receiving more attention than traditional methods. The literature has explored a range of data types (structured and unstructured) and scales (small, medium, and large), with Twitter serving both as a data source and a tool for recruiting participants.

This article proposes an evolutionary approach for understanding the changes in Twitter. Media evolution, an emerging research field, studies long-term, holistic, intermedia, reticular, and complex aspects of media change (Levinson, 1979, 1997; Scolari, 2013, 2022, 2023; Stöber, 2004). It offers an integrated framework that introduces new dimensions, such as the relationships between media (the *intermedial* dimension), new concepts from the biological domain (such as *coevolution* or *adaptation*), and new conceptions (such as *complexity*), placing them at the core of a media research program.

The main objective of this article is to analyze the evolution of Twitter since its emergence in 2006. The following questions orient this research:

RQ1: How did Twitter change from an evolutionary perspective?

RQ2: How did intermedia relationships contribute to the evolution of Twitter?

RQ3: What kind of competition/cooperation relationships and exchanges with other media can be identified during its evolution?

The article is organized as follows: The first section introduces the evolutionary framework that underpins the research, concluding with a strong emphasis on *intermediality*, a fundamental concept for understanding the evolution of a medium within the media ecosystem. The second section analyzes the evolution of Twitter, focusing on its exchanges with other platforms and intermedial relationships. Finally, the concluding section presents the findings and opens the discussion on the ongoing platform homogenization process, as well as the possibilities and challenges of an evolutionary approach to media change.

Media Evolution

Research on the evolution of Twitter is not new. Levinson (2011), a pioneer of media evolution (1979, 1997), discussed its historical roots in short communication forms like graffiti, telegrams, and book blurbs, the interconnections between Twitter and other media, and its growing impact on the arts. Donnelly (2010) described the six stages of Twitter evolution, whereas Rogers (2013) identified three distinct phases of Twitter's development (Twitter I, Twitter II, and Twitter III), each with its own approach to be researched. Liu, Kliman-Silver, and Mislove (2014) analyzed the evolution of Twitter users and their behaviors over seven years, observing trends such as the rise in spam and the shift from desktop to mobile usage. Lauschke and Ntoutsis (2012), for their part, proposed a topic-based user profiling and monitoring approach for detecting change and monitoring profile evolution. More recently, Abulaish and Fazil (2018) presented an approach for analyzing the evolution of Twitter users' behavior in terms of the topics they discuss over time, while Burgess and Baym (2020) studied Twitter from the perspective of media biographies. Beyond these and other contributions, this article proposes a slightly different approach based on an evolutionary theory of media change.

An Evolutionary Approach to Media Change

Studying the media in isolation has been a persistent characteristic of media history. In an article, Curran (2002) stated that

most history is actually medium history. It takes the form of historical accounts of an individual medium such as the press, books, film, television, radio, music, and telephony. This subdivision gives rise to fractured and incomplete understandings of the historical role of the media. (p. 135)

As the discipline has mainly focused on narrating the history of each medium separately, Curran (2002) proposed dedicating more efforts to “generalizing across media and offering competing forms of synthesis” as well as providing a broader and general account of societies in which “the history of media could be inserted” (p. 135).

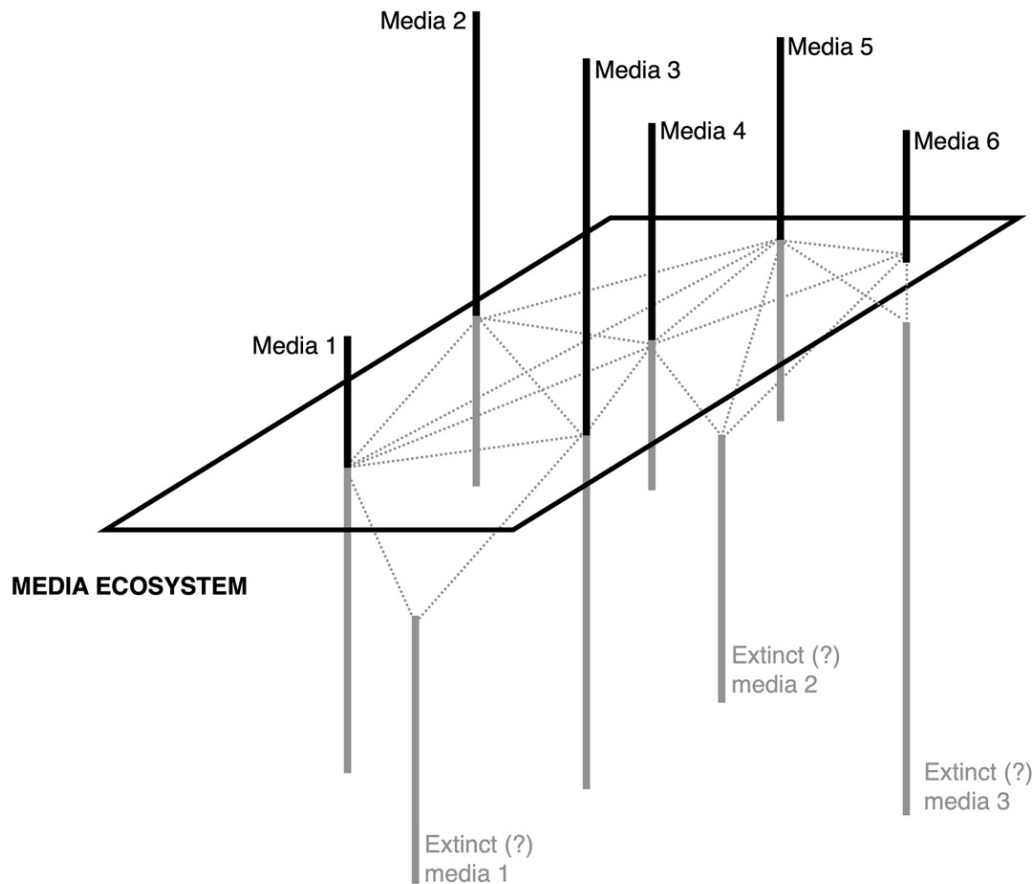


Figure 1. Media evolution as a complex and intermedia network (Scolari, 2023).

In recent years, media historians have incorporated new dimensions into their research to deal with the challenges that Curran (2002) raised, for example, by analyzing media as *systems* (Bastiansen, 2008; Hallin & Mancini, 2004) or considering the “entangled” interconnectedness of media across semiotic, technological, institutional, and political boundaries in history (Balbi & Magaudo, 2018; Cronqvist & Hilgert, 2017). In this context, an evolutionary approach to media change is not an alternative to media history but a complementary perspective that aims to go beyond traditional conceptions based on sequential narratives and timelines while offering an integrated framework that introduces new dimensions (e.g., the relationships between media, or the *intermedial dimension*), new concepts from the biological domain (e.g., *emergence*, *coevolution*, *adaptation*), and new conceptions (e.g., the idea of complexity) at the center of a media

research program (Scolari, 2013, 2022, 2023). It proposes activating a “wide-angle” vision of media change, understanding this amplitude from a dual spatial and temporal perspective (Figure 1).

Media evolution also takes a distance from, as well as complements, other approaches like media archaeology or the construction of media biographies. If media evolution is a framework that studies media change from a long-term, holistic, intermedia, reticular, and complex point of view, media archaeology, on the other hand, focuses on single forgotten, neglected, or obsolete media forms and practices, leaving aside the comprehensive or long-term analysis of these cases (Parikka, 2012; Scolari, 2023; Zielinski, 2006). About media biographies, applying this approach to Twitter focuses on “how the changes in specific platform features can help us understand both changes in Twitter’s culture and changes in how the internet is organized, and in whose interests, over time” (Burgess & Baym, 2020, p. 16). This biographical method begins with a feature and reconstructs the entire platform from that point, creating a narrative of change “by weaving together the stories of material objects, social relations, and events” (Burgess & Baym, 2020, p. 113).

For instance, we can imagine the life story of Facebook being told through the history of the newsfeed, or the “like” button; (. . .) Similarly, the life story of Spotify might be told through the playlist; the story of YouTube through its video and channel discovery and recommendation systems, or its protocols for copyright control. (Burgess & Baym, 2020, p. 113)

However, intermedial relationships, which are central to the media evolutionary approach, are not fully explored within this biographical analytical perspective. For instance, although in Burgess and Baym (2020) the relationships between Twitter and platforms like Facebook and YouTube are examined in detail, other media such as Vine, Foursquare, and Storify receive only minimal attention. In other words, the evolutionary perspective advocates for an intricate interweaving of the biographies of different media to better illuminate intermedial relationships within the media ecosystem. It is important to remember that media evolution does not replace but rather complements and integrates the contributions of historical, archaeological, and biographical approaches.

Intermediality

Media never walk alone. Numerous scholars have acknowledged the limitations of focusing solely on individual approaches when analyzing the transformations of a single medium (Balbi & Magaudo, 2018; Curran, 2002; Cronqvist & Hilgert, 2017; Jensen, 2016; McLuhan, 2003; Müller, 2010; Scolari, 2023; Staiger & Hake, 2009). If McLuhan postulated that “no medium has its meaning or existence alone, but only in constant interplay with other media” (McLuhan, 2003, p. 43), Curran (2002) suggested that media history’s orientation toward describing individual media (history of radio, history of television, etc.) had led to “fractured and incomplete understandings of the historical role of mass media” (p. 135). Cronqvist and Hilgert (2017) rightly point out the limitations of current media history research, as it has “focused exclusively on one medium at a time” (p. 131). To fully comprehend the complexities of media change, researchers are required to adopt an intermedial perspective based on the dynamic interactions among various media forms. According to Müller (2010),

it had simply become unacceptable to see “media” as isolated monads. The familiar media theories and media histories were no longer able to meet research expectations; it had become necessary to turn one’s attention toward contemporary audio-visual phenomena and their mutual relations, and to study their complex interactions. (p. 18)

Dijck (2013) also noted that platforms should not be studied in isolation and emphasized “the interdependence and interoperability of platforms” (p. 41). For instance, the integration of Twitter’s “trending” feature into various platforms is a good example of its influence and interconnectedness with other media (Dijck, 2013, p. 42). In later work, Dijck, Poell, and Waal (2018) introduced the concept of *platform ecosystem*, understood as a network of interconnected platforms with specific governing mechanisms that shape daily activities. From among the wide spectrum of intermedia relationships, this article will focus on the competition/cooperation dynamics between Twitter and other media.

The history of communication is crisscrossed by the competition/cooperation among diverse media. Although the contemporary landscape is intensely competitive, historical periods witnessed varying material support, technologies, and alphabets vying for supremacy (Innis, 2007). Dimmick (2003) made significant contributions in this field by examining how various media industries carve out spaces (*niches*) and compete within an evolutionary framework. Analyzing common factors like relationship, sociality, convenience, routine, and entertainment, the *theory of the media niche* delves into the survival and coexistence of media with seemingly similar purposes in a highly competitive environment. According to this theory, for a media entity to endure, it must occupy a distinct niche within the ecosystem that provides it with the necessary resources for sustenance.

Competition

Studies on Twitter from the perspective of the media niche theory have been rather marginal compared with other approaches. A study by Kweon and colleagues (2020) applied this framework to examine the competition between Facebook, Instagram, YouTube, Pinterest, and Twitter. About the degree to which a medium satisfies a range of needs (*niche breadth*), findings revealed that Facebook excels in sociality and convenience, whereas YouTube leads in routine and entertainment. Instagram stands out in the relationship factor, whereas Twitter and Pinterest rank lower overall. About the *niche overlap*, Facebook and YouTube exhibited the highest overlap in relationship and sociality, whereas Pinterest and Twitter showed significant overlap in routine and entertainment. YouTube and Twitter displayed the most overlap in terms of convenience. Beyond the obvious difference in the number of users, Twitter has managed to create its own space among giants like Facebook, YouTube, and Instagram. According to this study, Pinterest emerged as the only “direct competitor” in terms of niche overlapping and competitive superiority; however, it never posed a real threat to Twitter.

Twitter’s crisis has inspired other corporations to launch new social media (like Donald Trump’s Truth Social or Meta’s Threads) or expand the niche of older ones like Mastodon (created in 2016) or Parler (created in 2018). However, the competition between X and these actors is so recent that it is too early to make any deep reflections on it from an evolutionary perspective. In any case, if we look back at the evolution of Twitter between 2006 and 2013, the concept that best defines that journey is *resilience*. In

other words, Twitter has shown *adaptative capacities* to manage the competition of powerful media and deal with its own limitations to develop a successful business model.

Cooperation

Intermedia collaboration can manifest at various levels, ranging from corporate mergers to the synergies resulting from the acquisition of competitors (Grainge, 2007). On a consumer level, media outlets can implement cohesive marketing strategies, such as the inclusion of books, VHS tapes, and DVDs in magazines and newspapers during the 1990s. In other instances, media entities coevolve together, as witnessed in the 19th century when the telegraph forged strong partnerships with railroads and newspapers (Carey, 1983). Last, media outlets can adopt traits and features from other media forms to adapt and survive in the media ecosystem (Scolari, 2023). This intermedia dimension, central to the current analysis, highlights the importance of examining the interactions between different media.

Now we are situated at the center of an evolutionary interpretation of media change. In a few words: the relationships between media are a key element of the evolutionary analysis of media change. This model should be considered as an analytical instrument for understanding the transformation of a medium—Twitter—in the context of the media ecosystem.

On the Evolution of Twitter

The evolution of Twitter has gone through different phases. Broadly speaking, we can say that it is a medium that has already reached its maturity and is struggling to adapt to a hostile and ultracompetitive ecosystem after years of stagnation and an unsuccessful business model. Quantifying the number of users across different social media and comparing them with Twitter can provide a valuable starting point for analyzing the evolution of this platform (Figure 2).

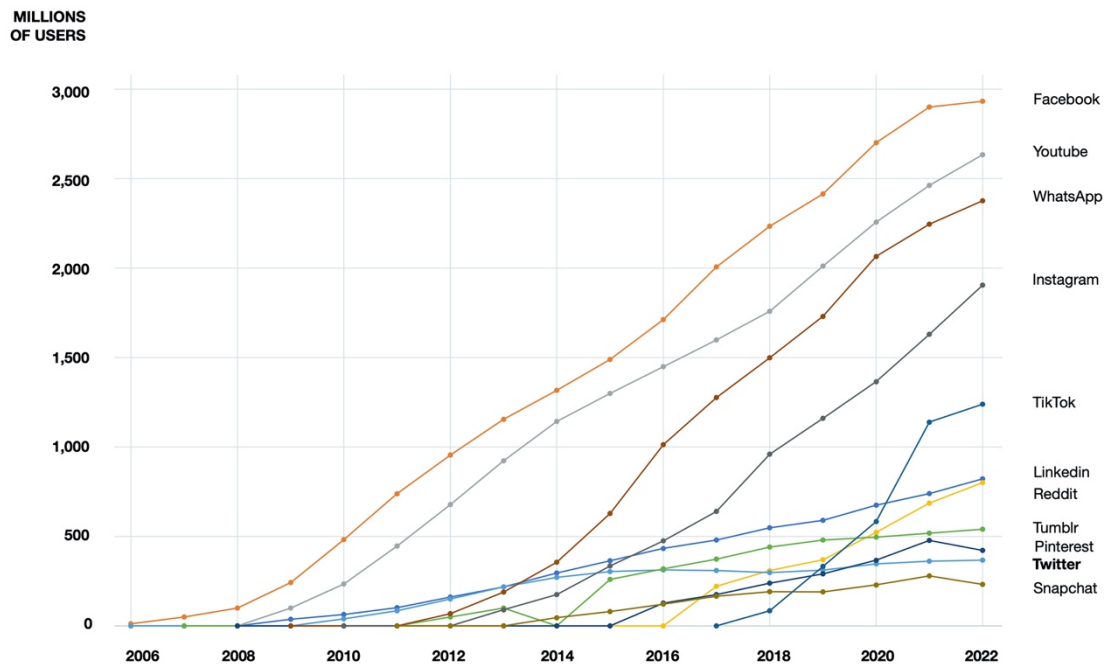


Figure 2. Social media users (author's creation). Source: Business of Apps (n.d.) and companies' data.¹

Compared with other social media, Twitter's growth stopped after 2014 and decreased between 2016 and 2019, to then become stabilized. Twitter ranks with Snapchat, Tumblr, and Pinterest, which all fail to exceed 500 million users. Its "stability," unlike the explosive growth of Facebook, YouTube, Instagram, and TikTok, is seen as a failure in terms of business and monetization. Despite this, Twitter maintains significant social and political influence, often exceeding platforms with larger user bases, and is a crucial subject in academic research. It continually adapts and innovates to sustain its position in a highly competitive landscape, often by adopting features from other media. The following section analyzes these exchanges.

An Entangled History

Twitter was launched in 2006. The platform initially attracted tech enthusiasts, bloggers, and early adopters, fostering microblogging and quick updates. The content shared was informal and personal, while the business model was centered on building user engagement without well-defined monetization strategies. Because of its specific features, Twitter was not a direct competitor but a complement of other major social media (blogs, MySpace, Facebook, etc.).

¹ Tumblr does not release detailed user statistics beyond the total number of blogs, which stands at 518.7 million. Because users can create multiple blogs, this figure does not accurately represent the number of individual user accounts.

Twitter did not evolve merely through the interaction of the service itself and its users. Many of the ideas and ideals users brought to Twitter came of its users' interactions with similar technologies. In some cases, Twitter has sought to be integrated with this larger ecosystem. So, for example, the early adoption in September of 2006 of RSS (machine-readable) feeds and permalinks (stable URLs that allow individual tweets to be hyperlinked) no doubt owed some of their impetus to users' familiarity with blogging. (Halavais, 2014, p. 31)

From the beginning, Twitter both influenced and was influenced by other social media. Here are two examples: When Twitter was introduced in 2006, the "like" or "favorite" button was already common on other platforms like Vimeo. Twitter's original favorite button was a star, which was replaced in 2015 by a heart, following Vimeo's example (Pullen, 2011; Twitter, 2015b). Intermedia exchanges, as it will be seen throughout this section, have been a constitutive feature of its evolution. On the other hand, Twitter influenced Facebook from the beginning. Before 2006, Facebook consisted only of profiles, requiring users to visit each profile to see new posts. In September 2006, Facebook announced the News Feed, an alternative home page showing a constantly updated list of friends' activities, inspired by Twitter's classic timeline (Murphy, 2013).

In the following pages, I will describe from an intermedia perspective the main exchanges, appropriations, and changes that Twitter experienced from its emergence in 2006 until 2022, when it was acquired by Elon Musk. This assessment will cover how Twitter influenced and was influenced by other social media, as well as significant shifts in its features and functionality.

At Sign and Hashtags

Twitter enhanced its semiotic system by introducing the at sign (@) in March 2006, and hashtags (#) in August 2007. Originally introduced in the early 1970s to separate the name and address in e-mails, the @ symbol was later adopted by Internet Relay Chat (IRC) and other online platforms like MUDs and MOOs in the 1980s and 1990s. Initially, Twitter's first users employed the @ symbol to mark locations. However, a few months after its emergence as a user convention, the company incorporated the @user syntax (without a space between the @ and the username) into Twitter's architecture (Burgess & Baym, 2020).

The hashtag was also popular among programmers in the 1970s, and, like the @ symbol, was used in exchanges within IRC. The idea of using the # sign to create a hyperlink that connects tweets with a common topic or theme was proposed by Chris Messina, a social technology expert (Burgess & Baym, 2020; Halavais, 2014). This feature quickly gained popularity and became an integral part of Twitter, allowing users to easily discover and follow discussions on specific subjects. It is important to note that the introduction of the @ sign and of hashtags was not initially a business decision by Twitter. Rather, these signs were adopted and incorporated into the system of conventions by the platform's early users, shaping the way exchanges were conducted on the platform.

Many social media followed Twitter and incorporated the @ sign in the next years, including Instagram, Facebook, and LinkedIn, to mention other users in comments and posts. Online forums and

communities also adopted the @ sign to mention other users, as did platforms such as Discord and Telegram. Instagram followed Twitter's lead by introducing hashtags in 2011, which Facebook later adopted in 2013 (Ortutay, 2013).

Lists, Trends, and Promoted Tweets

In 2009 Twitter introduced Lists, which allowed users to curate and organize accounts they follow. Its user base expanded globally, establishing it as a significant platform for news and real-time discussions. Promoted Tweets (2010) and Trends (2008) initiated monetization efforts, aiding user discovery and advertising. Although the Lists were an original creation of Twitter, Trends was inspired by Google Trends, a website that analyzed the popularity of search queries across various regions and languages, launched in 2006. Promoted Tweets were standard tweets (they could be liked, commented on, and retweeted) that advertisers paid for to increase their Twitter reach and/or engagement (Mialki, 2023). Google Search started incorporating content promotion in 2000 through Google Ads and AdWords. By 2005, significant enhancements like Conversion Tracking and Google Analytics enabled advertisers to effectively track user actions and analyze customer journeys through post-ad clicks. In 2008, Google introduced visual display ads in its Display Network, enriching engagement through images and videos. This system was well-established and user-accepted by the time Twitter launched Promoted Tweets in 2010.

Facebook had already implemented a similar strategy by 2007 with the launch of Social Ads, which allowed marketers to specifically target potential customers. At the Facebook Social Advertising event, Mark Zuckerberg introduced this as a groundbreaking shift in online advertising, highlighting the innovative use of social graphs to make marketers a part of user conversations:

For the last hundred years, media has been pushed out to people, but now marketers are going to be a part of the conversation. And they're going to do this by using the social graph in the same way our users do. (Mark Zuckerberg, as cited in Deshpande, 2021, para. 12)

Short Videos

Vine was a short-form video-hosting service where users shared up to 10-second looping clips. Acquired by Twitter Inc. in 2012 before its official release in January 2013, Vine allowed users to share videos on platforms like Facebook and Twitter. The app made it possible to browse videos by theme and aimed to help users "trend" videos. Competing with Instagram and Snapchat, Vine had over 200 million active users by December 2015.

About intermedia relationships, the appearance of Vine in early 2013 coincided with Snapchat's release of video-sharing features and accelerated the adoption of short video sharing by other social media. Instagram, for instance, introduced similar features just a few months later.

In 2013, Vine became the most-used video-sharing application and one of the most downloaded apps in the market. Vine attracted various types of content, including short-form comedy, music

performances, video editing, and stop-motion animation. According to BBC's technology reporter Chris Fox (2016),

Vine seemed a natural progression for Twitter when it was launched in 2013. Six-second videos seemed a great pairing for a service famed for its punchy 140-character posts. But in time, it was clear Vine just couldn't compete with short video on Snapchat and Instagram, and that's why Twitter has decided to shut it down. (para. 4)

Vine was shut down in January 2017 as a part of Twitter's restructuring, and the app was discontinued shortly after.

Polls

Over the years, Twitter solidified its role as a news-sharing platform and a space for public discourse (Maireder & Ausserhofer, 2014). It also focused on optimizing the mobile experience and enhancing user engagement, for example introducing features like Polls and Moments (compilations of tweets about a specific topic or event; 2015). Polls, an original feature introduced by Twitter in 2015, were added to Facebook Messenger in 2016, to Instagram Stories in late 2017, and to LinkedIn in 2020. The company promoted polls as a collective intelligence tool: "If you want the public's opinion on anything—what to name your dog, who will win tonight's game, which election issue people care most about—there's no better place to get answers than on Twitter" (Twitter, 2015a, para. 2). Any user can create his or her own two-choice poll directly from the compose box, and it remains live for 24 hours. You can vote in any poll, and your choices are not shared publicly.

Moments

In October 2015, Twitter launched Moments, a feature for curating collections of trending tweets on various topics. It was initially managed by Twitter's editorial team and partners for news and events. By September 2016, all users gained the ability to create their own Moments. The new feature introduced a series of tensions in Twitter's user experience:

Twitter has taken the same blue notification dot that lets users know about a new mention and deployed it to alert them that, hey, there's a new *moment* to check out. For a neurotic, social-media-addled individual like myself, it is absolutely infuriating. (Weismann, 2015, para. 6)

To understand the incorporation of Moments into Twitter, it is useful to examine Snapchat's evolution. Launched in 2011 as an ephemeral messaging service, Snapchat introduced Snapchat Stories in October 2013. This feature allowed users to create chains of shared content that could be viewed an unlimited number of times over a 24-hour period. In early 2015, Snapchat launched Discover, showcasing curated collections of photos, videos, audio, and Web pages by editorial teams. Unlike regular messages, Discover Stories were also available for up to 24 hours. Deals were made with over a dozen media and entertainment brands, including National Geographic, Yahoo News, Comedy Central, People magazine, Food

Network, CNN, Warner Music Group, ESPN, Vice Media, DailyMail.com, and Cosmopolitan (Spangler, 2015). This is the context that precedes the incorporation of Moments into Twitter (2015), and Stories into Instagram (2016) and Facebook (2017).

Like many other features that disappeared or were integrated into others, in 2017, Twitter replaced Moments with the Explore tab, which bundled together Moments, trends, live video streams, and search. Finally, Twitter canceled the Moments feature in 2022 amid a general restructuring of the company, which included changes to its functions and interface.

In addition, in 2015 Twitter launched Curator, a real-time search and filtering feature for media outlets that some commentators defined as a Storify competitor (Perez, 2015). Storify, launched in 2010, was a social network for creating stories using content from Twitter, Facebook, and Instagram. Media organizations used Storify for covering events like elections, meetings, and social movements. Storify was discontinued in 2018.

Live Video and Geolocation

A key acquisition for Twitter in 2015 was Periscope, a live video-streaming app. Periscope's services were available both within its mobile application and on Twitter. Users could choose to make their videos public or restrict viewing to specific users, such as friends or family. Facebook Live, initially launched in August 2015, was limited to celebrities. In February 2016, it began a global rollout, with Facebook prioritizing live content over older posts. Commentators noted that Facebook Live marked the platform's entry into the live-streaming space, competing with Twitter-owned Periscope. Later in 2016, live videos were also introduced into Instagram (Constine, 2016b). Periscope was discontinued on March 31, 2021, because of declining usage, product realignment, and high maintenance costs (Shontell, 2015). Nevertheless, Periscope videos remain accessible through Twitter, and most of its fundamental features have been integrated into the application.

The emergence of social media based on smartphones' GPS systems like Gowalla (2007) and Foursquare (2009) accelerated Twitter's adoption of location features in 2009. In those years, Twitter worked closely with both companies to associate a geolocation with tweets generated by their services. Foursquare founder Dennis Crowley described the "big idea" behind incorporating geolocation features into Twitter as "a system that could crawl the world with people in the same way Google crawls Web pages with machines" (Crowley, 2016, para. 5). From that moment, Twitter users could see when tweets were from a specific location, enhancing Twitter Moments and improving ad targeting (Constine, 2016a). Foursquare provided precise place identification for Twitter, gaining branding, backlinks, and an improved database in return.

Fleets and Spaces

Over the years, Twitter, unlike Facebook, Instagram, and YouTube, did not significantly expand its user base. To address this, it introduced new features and monetization methods like Fleets and Spaces in 2020. If Fleets aimed to compete with Instagram and Snapchat's stories format, Spaces, inspired by

Clubhouse, facilitated audio-based conversations, emphasizing community engagement. This diversification enhanced content variety, incorporating multimedia and audio interactions.

In March 2020, Twitter began testing in select markets an ephemeral content feature called “fleets” inspired by Instagram’s stories. It was finally launched in November of the same year. Fleets, which could include text and media, were accessible for only 24 hours. One of the things fleets copied from Instagram

is the idea of one-tap story reactions: a heart, a fire emoji, a crying emoji, and so on. It’s interesting to think about this move in the context of Twitter’s long-stated desire to spur more ‘healthy conversations’ on the platform. (Newton, 2020, para. 10)

This new feature lasted for just a few months: Fleets were removed in August 2021 (Newton, 2020; Perez, 2020).

Finally, in 2021, Twitter released Twitter Spaces, a social audio feature for live, audio-only conversations. Spaces was inspired by Clubhouse, a popular platform that also influenced other features like Discord’s Stage Channels. At that time, other social media like Facebook and Spotify were working on similar projects, all with the same objective: to increase the number of users and improve monetization. Another initiative, Ticketed Spaces, was designed to create Spaces that required a ticket purchase to join, with the aim to help users monetize their Spaces and encourage more live audio conversations on the platform (Lyons & Peters, 2021). Figure 3 illustrates the origins of main Twitter’s features and their subsequent influence on other media, as discussed in the previous sections.

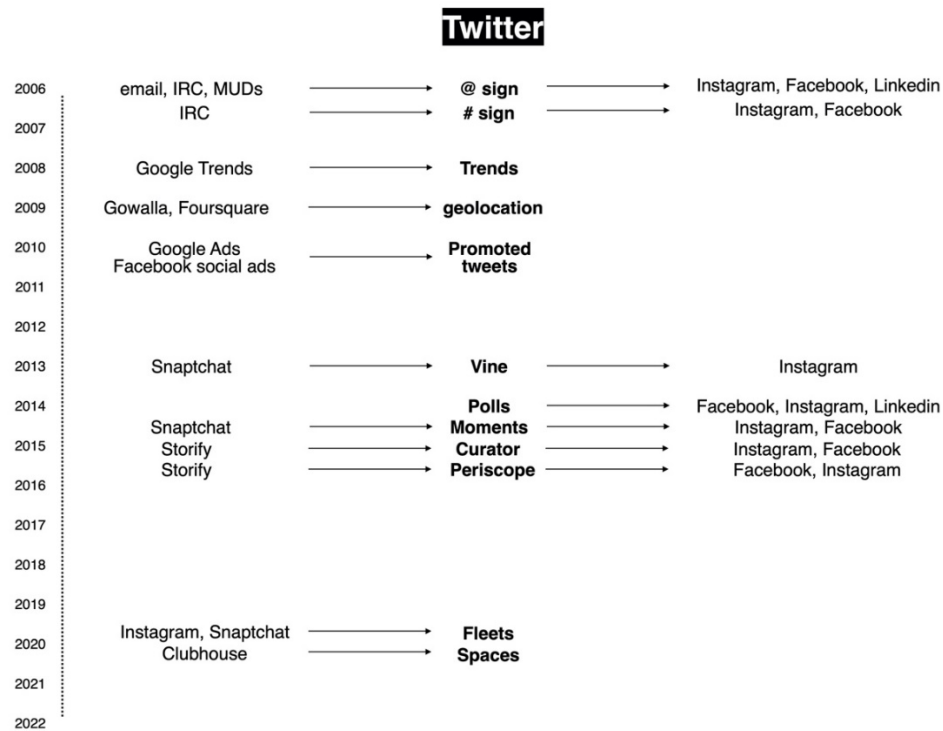


Figure 3. Main key features of Twitter (2006–2020) and its major intermedia relationships.

De-Westernizing the Evolutionary View

Before concluding this map of intermedia relationships, we need to include the social media that were inspired by Twitter in other markets. Fanfou, Jiwai, and Digu were among the early Twitter clones in China. However, all three, along with Twitter itself, faced a Chinese government ban in July 2009 because of their role in the Ürümqi uprisings, as the authorities attributed the escalation of violence in the region to online agitators. Before it was shutdown, Fanfou, often called “China’s Twitter,” had reached almost 1M registered users by June 2009. Following the closure of Twitter, Fanfou, Jiwai, and Digu, other platforms like Taotao (owned by the QQ instant messaging company) and Zuosa.com emerged (Macmanus, 2010). Weibo, owned by Sina.com, finally became the leading microblogging service in China with 600M users in 2023. An in-depth analysis from an evolutionary and intermedial perspective of how Chinese platforms have appropriated features from Twitter, while maintaining cooperative and competitive relationships within their own media ecosystem, remains a pending task.

Toward Homogenization

After this overview of Twitter’s evolution and its interactions with other social media, a medium cannot be analyzed in isolation from the broader media ecosystem. This dual dynamic of competition, where a growing number of platforms vie for a finite number of users, and cooperation, where platforms form

temporary alliances, is further enriched by the continuous incorporation of features developed by other media, leading to *homogenization* processes.

Although this article does not primarily focus on homogenization in social media, these phenomena can be examined within the media evolution framework. Instagram, which launched in 2010 as a photo-sharing app, now includes live video and shopping features to help creators market their work. Snapchat, launched the following year, evolved from a private messaging app to offering curated content, games, and maps. Twitter started as a public ideas platform but added image, video, and audio sharing to facilitate discussions on current events. According to Pardes (2020), “copycatting on social media has led to platforms that look suspiciously similar, with fewer things that set them apart. It’s harder to know what any given platform is for when they all do the same thing” (para. 3).

Table 1. Social Media Features.

	Direct messages	Live video	Photo filters	Stories	Public follower account	AR/Lenses	TikTok- like video feed
Instagram	•	•	•	•	•	•	•
Facebook	•	•	•	•	•	•	
Snapchat	•	•	•	•		•	•
Twitter	•	•	•	•	•		
LinkedIn	•	•	•	•	•		
Skype	•	•	•	•		•	
TikTok	•	•	•		•	•	•
WhatsApp	•	•	•	•			
YouTube		•		•	•		•
Pinterest	•		•	•	•	•	
Reddit	•	•			•		
Twitch	•	•					

Source: Fischer (2020, para. 1).

A report by Axios based on a comparative study (Table 1) confirmed this homogenization of the different social media: “Tech platforms used to focus on ways to create wildly different products to attract audiences. Today, they all have similar features, and instead differentiate themselves with their philosophies, values and use cases” (Fischer, 2020, para. 3).

The issue of platform homogenization will be revisited in the next section, where it will be connected to Elon Musk’s strategic actions as the head of X.

Conclusions and Discussion

Since the beginning, it was clear that Twitter was not an entirely novel social media but rather a hybrid creature that integrated the best features of blogs, SMS, messaging apps, and online communities.

However, this is not a feature unique to Twitter, but rather a constant of the emergence of any medium. As McLuhan (2003) put it in the early 1960s, "the content of any medium is always another medium" (p. 19). Twitter has demonstrated a particular plasticity in establishing intermedia relationships with other media and services over the years.

Between Competition and Cooperation

About competition, although Twitter, as the niche theory analysis demonstrated, never had a tough direct competitor, it was always immersed in competitive dynamics with other platforms. After all, the users' time and attention are limited resources and the number of media actors competing is constantly increasing. These types of competitive dynamics have been inherent to the functioning of media systems since ancient times (Innis, 2007).

The cooperative relationships between Twitter and other media actors have obviously evolved over time; however, at the same time, they could be considered as one of the forces behind the aforementioned *resilience*. Why are cooperative relationships so important? It could be said that like biological species, *media need the exchanges with other media not only to innovate but also to survive*. More generally, a medium that does not cooperate or compete with others risks remaining isolated within its niche while watching how the other media evolve and gradually reduce its influence. For this reason, the analysis of a medium cannot be limited to its relevant features or social influence; understanding a medium in its entirety requires incorporating its relationships with other media. This is one of the main contributions of a media evolutionary approach.

Between Continuity and Change

The evolution of Twitter is an ideal object for studying the tensions between continuity and change. What meaning can we give to these opposite logics? As Balbi and Magaudo (2018) put it, the logic of continuity brings into focus "the stability of the transition from analog to digital focusing on the tendency to preserve existing production models, consumption habits and cultural media formats," while the logic of change highlights "the tendency to a reconfiguration of cultural forms, markets assets and consumption practices triggered by digitization" (p. 159). These two logics are not mutually exclusive; they are interconnected aspects of the same phenomenon, complementary tendencies that vary across different mediums or sectors. Highlighting continuity dispels the notion of perpetual "radical revolutions" in media narratives, while focusing on change underscores the ever-accelerating transformations in the media ecosystem.

Intermediality

The centrality of intermedia relationships was identified by Levinson (2011) in his analysis of Twitter's evolution. He states that Twitter's implementation of the location feature "was no doubt a result of the success of Foursquare and highlights another aspect of media evolution in general and of Twitter in relation to other media: embracing of a successful competitor's features" (Levinson, 2011, p. 19). The same thing happened, but in the opposite direction, when Facebook adopted the @ and hashtags (#). It is very

likely that this ability to establish cooperative relationships with other media allowed Twitter to survive and be resilient, even though it never consolidated a successful business model; neither was it able to make the “big leap” in the number of users (like Facebook, YouTube, and Instagram did).

In essence, a medium operates within a larger ecosystem, never in isolation, as part of a complex network alongside many other media, each evolving through different life stages. It is vital to understand that media cannot be studied independently; their traits and development are significantly shaped by interactions with other media. Intermediality involves a diverse Web of connections affecting media discourses, platforms, and institutions. When examining these relationships, it is important to recognize intermediality’s dual nature of continuity/change and competition/cooperation.

Homogenization

Homogenization processes are not new in the digital world. For example, word processing software has undergone similar processes since its introduction in the 1970s. When Microsoft launched MS Word for Macintosh in 1986 (with the Windows version following the next year), there were about 300 word processing programs on the market (Kruse & Rapp, 2023; Scolari, 2004). According to Heilmann (2023), the evolution of word processing software “followed the trend of the PC platform as a whole: from various competing but incompatible products to a single, ‘universal’ solution” (p. 11). A market with hundreds of products ended up dominated by a handful of very similar applications.

The arrival of Elon Musk in October 2022 positioned Twitter in a new scenario where survival strategies were crucial, from the rebranding as X to the continuous technological and feature improvements. Despite these changes and the related criticisms, it seems that the platform has retained its role as a space for discussions and real-time information sharing, while grappling with the challenges of rebranding. Content diversity is expanding to include audio and multimedia contents (while writing this article, X announced the incorporation of video and audio calls). Musk’s vision is to create “a single application that encompasses everything,” with the aim of X replacing YouTube, LinkedIn, FaceTime, dating apps, and even banks (Heath, 2023, para. 2). This vision extends the trend of homogenization, as Musk is directly proposing a merger or convergence of features into a single super-app. Under Musk’s direction, X seeks to emulate the model of WeChat, the Chinese app known as the “app for everything,” which offers a wide range of functions. Musk’s treasure is clear: One app to rule them all.

Thinking About Media Change in Evolutionary Terms

According to Levinson (2011), Twitter has evolved much like the evolution of all media,

starting with writing and pictures, and moving on to sounds and moving images, in the same way that phylogeny recapitulates ontogeny in living organisms. Also like the biological world, Twitter is increasingly interconnected with other online “organisms,” e.g., Facebook and YouTube, moving our world ever closer to a “noosphere” of the Earth as an interconnected consciousness. (p. 7)

When evolutionary models are applied to media or technologies, we must always be aware that it is impossible to automatically apply concepts and categories from the biological to the sociotechnological field. In the last 170 years, researchers have applied Darwinian principles to technology, highlighting key differences from biological evolution (i.e., Basalla, 1988). Unlike biology, media and technological evolution are Lamarckian, with acquired traits passed on. For example, once cars added radios, they became a standard feature. Technological artifacts can converge, creating new devices. Bike plus engine equals motorcycle; iPod plus cell phone equals iPhone. As seen in the analysis of Twitter, this lateral “gene transfer” fuels media evolution, when not leading to media cloning, media homogenization, or media convergence.

Despite these limitations and considering all precautions, media evolution proposes exploring and applying the evolutionary metaphor to develop theoretical models of media change. The evolutionary metaphor is an almost inexhaustible source of ideas, concepts, and analytic categories that deserve to be explored. In any case, we must remember that media evolution stands apart from simplified linear timelines and monomedia approaches. Instead, it champions a complex, entangled approach that focuses on the relationships between media and other actors within the sociotechnological landscape.

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