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Agency and structure in digitally-mediated dating. A case study of Tinder

Maria Stoicescu[1]

Abstract
When using a dating app, users must adapt to the dynamic contained within its digital structure and balance the potential benefits against the perceived disadvantages. With a broad palette of dating app options, users distinguish and describe existing dating technologies in specific ways. Inspired by this idea, this study analyzes the structural elements that may influence the audience's understanding of a dating app and shape the user experience. By employing Giddens's structuration theory (1986), I have mapped the main structural elements through which the dating activity on Tinder is organized. The results show that six main structure dimensions may influence and shape users' perception and participation: (1) app identity, (2) business model, (3) design elements, (4) app pattern, (5) features, and (6) the machine learning algorithm. Tinder proposes a flexible approach to dating, promising to address a wide range of user needs. Using a dating narrative, the company offers a digital space for meeting new people, designed to maximize engagement. The proposed organization of digital dating is successful from an economic point of view. Through the global success of this system, Tinder not only shapes how users meet, but offers a successful template for other similar businesses to follow. Thus, Tinder's technological design and business strategies become the rules of the dating game, leading to its increasing rationalization through quantification and a focus on scale and speed.

Keywords
Structuration theory; Dating apps; Tinder; Agency and structure; Design; App identity;

[1] Faculty of Sociology and Social Work, University of Bucharest, Romania, maria.stoicescu@sas.unibuc.ro.

Introduction

Soon after its launch, Tinder quickly became popular among users. The app promoted flexibility of use not observed in other dating platforms. For instance, the general user experience in Match, the first dating platform launched in 1995, is organized around the personal characteristics and traits requested from each user (McDermott, 2022). Because of the time required to build a profile that fully describes themselves and their ideal partner, using Match implies engagement and persistence. Knowing some details about a potential partner before interacting with them creates the idea of compatibility between those who connect on the platform. The mass adoption of smartphones allowed digital dating services to emerge through apps. Popular apps such as OkCupid, Badoo, Coffee Meets Bagel, Grindr, Her, or Bumble follow a similar pattern, with variations, each promoting a unique feature to distinguish themselves on the app market or to attract a particular category of users. For example, OkCupid organizes its activity around questions and compatibility scores. Each user must answer 15 questions when joining the app. Many other questions are available after building a profile. Depending on the users' answers, OkCupid calculates compatibility scores and thus encourages users to acknowledge them when interacting on the app. Badoo differentiates itself on the market with various unique features, such as "people nearby," which allows users to see available people in their area without swiping. The dating app Coffee Meets Bagel promotes meaningful interactions by limiting users' options by design and offering the users dating options promoted as "must-haves" (Myers, 2023). These dating app variations are just a couple of examples to show how the structure of an app can influence users' perceptions and direct future engagement.

Tinder is currently one of the most used dating apps in the world (Iqbal, 2023). The app, launched in 2012, has drastically switched from the traditional online dating model fixed by Match. Initially, users could build a profile much faster than in other apps, having to input only a few personal details, without worrying about personality quizzes or compatibility percentages. Users could only present themselves through a 500 characters description. In recent years, Tinder has enhanced how users can describe themselves, by including a series of predefined self-presentation sections (e.g., "Interests", "Relationship Goals", "Relationship Type", "Languages I Know", "Basics", "Lifestyle").

The main innovation introduced by Tinder was the selection of others through the swipe gesture (Clifford, 2017), meaning left touching and dragging on the screen to dislike and right touching and dragging to like, a system later incorporated by other dating apps as well (e.g., OkCupid, Badoo, Her, Bumble, etc.). This decision-making system substantially lowers the selection efforts of users and promotes an accelerated selection process. Thus, choosing partners on Tinder is resumed to a "brief moment where one decides whether to swipe right or left" (Ward, 2017, p. 1655). Having initially ignored by-design how users can present themselves, Tinder directed users' attention toward the visuals—the users' attractiveness as a primary criterion for matchmaking. Despite the recent improvements made for how users describe themselves, Tinder is mainly recognized as a dating app that prioritizes matchmaking based on physical good looks.

According to David and Cambre (2016), the foundational mechanism of Tinder, "the swipe logic," involves repetition and domestication of user behavior. Users are given a template of interaction and are thus limited in approaching others in alternative ways. Moreover, in their analysis of what Tinder entails and how it is used, Krüger and Spilde (2020) have observed that the "objectifying tendencies" embedded in the app's interface can stimulate users' intuition to assess possible partners. Furthermore, MacLeod and McArthur (2019) showed that gender takes a functional scope in both Tinder's and Bumble's architectures — "a way for the app to determine which profiles to show" (p. 834). In other words, these authors have demonstrated through their analyses how technological functions influence the experience of use.

Previous studies have analyzed Tinder's purpose by looking at users' motivations for use (Ranzini & Lutz, 2017; Sumter et al., 2017; Timmermans & De Caluwé, 2017), app interface (David & Cambre, 2016; Garda & Karhulahti, 2019; Krüger & Spilde, 2020; MacLeod & McArthur, 2019; Regan, 2021), and algorithmic mechanisms (Courtois & Timmermans, 2018). Through this study I contribute to the existing literature by analyzing how actors and structure elements interact to constitute the final digital product, looking especially at how the socio-technical structure elements of a product can shape the experience of use.

Giddens's structuration theory

In Giddens's view, a structure allows related social practices to occur under a systemic form, characterized by varying temporal and spatial affordances, in "an intersection of presence and absence" (Giddens, 1986, p. 16). In this sense, a structure is composed of the elements available to agents and those unavailable. Agents may use the available elements more as other elements are absent and further define the structure. The structure in Giddens's vision is "both constraining and enabling" (Giddens, 1986, p. 25), empowering the agent with means to pursue their desires and, simultaneously, imposing borders that limit and shape individual actions. At the same time, the interaction between agency and structure is mitigated through repetitive actions that enable the change and evolution of the social structure (Giddens & Sutton, 2017). The agents are as relevant as the structure in Giddens' vision—they are rational and aware as they "will usually be able to explain most of what they do if asked" (Giddens, 1986, p. 6). At the same time, the definition given to agency relies on the idea that "the individual could, at any phase in a given sequence of conduct, have acted differently" (Giddens, 1986, p. 9).

In this study, I discuss the socio-technical structure of Tinder to describe the characteristics of its digital dating universe and associated public identity. Hence, I reveal here the specificities of the app that may influence users' behavior and motivations by answering the following question: What is the social organization of Tinder, and what structural elements influence users' engagement?

Methodological approach

This paper is part of a broader doctoral study in which I explored the relationship between Tinder's socio-technical structure and user experiences and motivations of use. For the

analysis contained in this article, I have submitted to the critical digital and social media arguments forwarded by Fuchs (2014), which, together with the structuration theory (Giddens, 1986), provides a theoretical basis to explore the structure, power dynamics and the social implications contained in the Tinder dating app. Essentially, the theory highlights the profiteering implications of social media businesses, which flourish on "the unpaid labor of Internet users, targeted advertising and economic surveillance" (Fuchs, 2014, p. 255). To understand the power dynamics in the Tinder dating app, the first step of the investigation was to map the company's socio-technical structure by accounting for all the elements that constitute it (Figure 1, below). Furthermore, I relied on announcements posted by Tinder to obtain a complete understanding of the services delivered by the company.

Moreover, the study is complemented by observation of the app, under the guidelines of the walkthrough method (Light et al., 2018). The walkthrough method was explicitly intended for investigations performed on apps, with the purpose of "engaging directly with an app's interface to examine its technological mechanisms and embedded cultural references to understand how it guides users and shapes their experiences" (Light et al., 2018, p. 882). Specifically, I installed the app (version 14.2.0) to document the elements of the structure: the user interface, available screens, and possible transitions, the available subscriptions, app features, how I can present myself—the details requested by design, the design elements (i.e., colors, symbols, imagery, wording, etc.), the notifications received, paying attention to the possible elements that could influence the machine learning (ML) algorithm, acknowledging the app pattern, the atmosphere within and the behaviors encouraged by the app. To discern better what might influence the ML algorithm, I have also downloaded my data recorded by Tinder. The analysis and results are detailed in the following section of this paper.

Results

Defining the agents and the elements of the structure

The agents and structure elements must be identified to investigate the agency-structure duality of the Tinder dating app and how the constituent parts co-create the ensuing environment. In the interaction with agents, a structure can change and evolve, but it has a stable form. According to Courtois and Timmermans (2018), Tinder's digital structure can be understood as the result of a tripartite combination of agents: (1) the creators, including here platform owners, CEOs, and designers, (2) the users, relevant when building a digital socio-technical structure but also as the business evolves, and (3) the ML algorithm, that enforces the scope of the business. This study extends and rethinks the analysis done by Courtois and Timmermans (2018) through an interface analysis that focuses mainly on Tinder's structural elements.

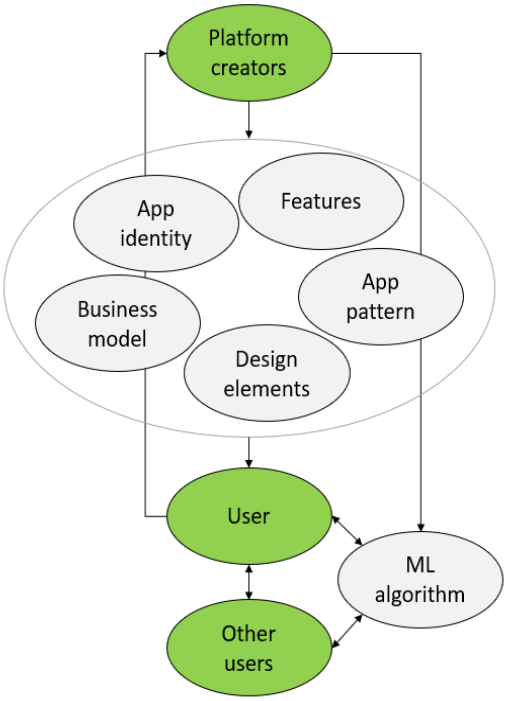

Figure 1. Schematic overview of Tinder's socio-technical structure

In the above-schematized description of Tinder's structure (Figure 1), there are two main categories of components: (a) the agents (in green) and (b) the structure elements (in grey). The agents are represented by the platform creators, but also by the users of the platform. Figure 1 shows platform creators at the top of the structure. They make decisions concerning the form and the purpose of the app and define the scope of the ML algorithm (Courtois & Timmermans, 2018). Within the set digital structure, the users interact with each other and the ML algorithm. Users behave as the structure dictates but act on their own terms (e.g., lie about their age). For instance, in its beginnings, many considered Tinder an app designed for hooking up (e.g., Sales, 2015); along the way, many other uses of the app have developed, not necessarily related to dating (e.g., raising Instagram followers, interacting with locals when traveling, etc.). Users play an essential part in the (re)creation of the dating atmosphere. Social perceptions are reproduced as well as formed in digital structures. Along these lines, users may be influenced by the app's reputation and thus, in their interaction with other users, may display specific behaviors. One example of a social norm reproduced on dating apps is who initiates conversations on such platforms. According to traditional dating practices, men can expect and be expected to be the ones to initiate conversations (Sassler & Miller, 2011), if this aspect is not regulated by design. Notably, on Bumble, the fact that women must initiate conversations is decided by design, which significantly modifies the interaction dynamic.

The following elements form the structure: (1) app identity, (2) business model, (3) features, (4) design elements, (4) app pattern (5) the ML algorithm. These elements are defined mainly by the creators and can only change or be modified under their intervention. The app identity refers to how the business presents itself, how is perceived

in the media, by the public, and in comparison to other dating apps. The business model exploits the product's potential for profit and shapes how users get to use the service. The design elements (i.e., color, symbols, wording, imagery, flow, etc.) make the app recognizable and memorable for users and distinguish it from other businesses. The features, free or paid, significantly shape the activity of use, granting the user extraordinary capabilities (e.g., talking with more people at the same time). The app pattern (i.e., swipe, match, chat) directs the dating dynamic, disrupting the real-life courtship process. Lastly, the ML algorithm is configured by designers to respond to the actions performed by users in specific ways. Table 1 (below) contains a framework for the structural analysis of dating apps and summarizes the main findings of this study. This paper's next section discusses the Tinder dating app's structural components.

Table 1. Framework for the structural analysis of a dating app

Structure elements	Description	Tinder
App identity	How is the dating app described in the media, in scientific report, and it is perceived by the public? How does the company describe itself?	Described in the media as a hook-up app (Sales, 2015). Users present conflicting opinions and diverse motivations for use (Timmermans & De Caluwé, 2017). Initially promoted as a hook-up app (launched on student campuses), currently advertised as an app for flexible social/dating use.
Business model	How does the company make profit?	The business relies on the premium options to make profit, along with advertising tactics, taking advantage of the specific gendered behaviors displayed by users: dating possibilities through Tinder depend (especially for men) on the acquisition of premium options.
Design elements	What does the aspect of the app (e.g., colors, symbols, images, wording) communicate?	The appearance of the app is dominated by the primary color red. As a logo, the app uses the "flame" symbol. Images and expressions contained in the app promote an idealized image of young love and carefree dating.
App pattern	What is the main usage pattern contained in the app?	Through the pattern "swipe, match, chat" the app offers an intuitive and easy usage flow. The experience of use can be entertaining and addictive, as engaging on the platform relies on gamification elements instant gratification.
Features	How are the features contributing to the construction of dating on Tinder?	The self-presentation features help users describe themselves, however, they significantly standardize how profiles look, leading to a superficial experience of use.
ML algorithm	How does the ML algorithm work?	According to the company, Tinder's ML algorithm is configured to consider the age, gender, sexual orientation, location, and activity of the users (tinderpressroom.com, n.d.-a). How the algorithm works is still not fully understood, with previous research demonstrating that it supports the company's economic goals (Courtois & Timmermans, 2018).

App identity

Tinder is advertised as an app for dating but also for developing friendships and meeting new people. Through its current tagline, it aims to include and promote all three possibilities: "*Dating, Make Friends & Meet New People*." Notably, the company promotes its approach to dating as flexible, easy, and standing at the boundary between casual chatting and dating:

> "When it comes to dating apps, you've got options: Badoo, Bumble, Hinge, Match, POF, OKCupid, and many more. It doesn't matter if you want to find love, a date, or just have a casual chat, you still want to find an app that's the right match for you. And it's not always black and white — when you want to meet new people, your friends at Tinder can help you out with features designed to make the impossible possible. Dating online just got easier. We won't brag about being the best free site — we'll let you decide for yourself by giving you Tinder at a glance." (Tinder, n.d.)

Tinder was launched in 2012 by a group of young entrepreneurs, who specialized in business, marketing, engineering, and international studies. Since then, several members of the group have gone their separate ways. The trio formed by Sean Rad, Justin Mateen, and Jonathan Badeen has remained present in the leadership of the business. Notably, Whitney Wolfe Herd, who was associated with Tinder in its early days, abandoned the company because of a sexual harassment scandal and founded Bumble, which is considered a more "women-friendly" dating app, being known in the media as the "feminist Tinder" (Bennett, 2017). Tinder and Bumble are dating apps that are frequently described in opposition (Bivens & Hoque, 2018).

According to Bergström (2021), online dating generally reflects the expectations of heterosexual male users. Like other dating apps available on the market (e.g., Badoo, OkCupid, Hinge, Happn, etc.), Tinder is a masculine invention. When designing products, creators can be influenced by their own experiences and expectations. Consequently, Tinder's matchmaking system indicates a rather masculine type of dating scenario: connecting fast, with low effort, in proximity, and making choices based on physical preferences. The initial lack of concern for safety strengthens the argument that the early app pattern evoked a masculine scenario and not a feminine one, which, by considering the feminist ethics perspective, would be more focused on care, establishing trust and minimizing risks (MacHold et al., 2008).

Tinder's identity is marked by its first years of hook-up app reputation (e.g., Sales, 2015), which still shapes the expectations of the users and how they are perceived when using the app (Silva et al., 2019). Moreover, Tinder appears to be more appealing to male users, who are more likely to use the app driven by the casual sex motivation (Bryant & Sheldon, 2017; Ranzini & Lutz, 2017). As the Tinder dating app is used less by women (Statista, 2021), the advertising strategies of the company are more focused on attracting the feminine audience on the platform.

The company's marketing campaigns exploit notions of singlehood, feminism, consent, and potentiality (e.g., "Single, Not Sorry", "Let's Talk Consent", "It Starts With a Swipe"). In their study, Morris and Dobson (2023) observed that the company uses a

postfeminist approach to promote casual sex as a liberating and empowering choice for young women, changing the narrative around hooking-up. Driven by economic growth, Tinder's identity as a dating app is constructed around flexibility, an approach adopted to fit multiple dating goals and diverging cultural dating tendencies. Thus, it reframes *singlehood* as a period of exploration, *casual sex* as an empowering choice for women (Morris & Dobson, 2023) and, at the same time, swiping on Tinder as the sure path to one's next love story.

Business model

A business is considered successful when it "connects technical potential with the realization of economic value" (Chesbrough & Rosenbloom, 2002, p. 529). The economic aspect represents an essential condition for an activity to be acknowledged as a business. Evidently, a profit-oriented mindset can significantly influence the content of a product.

Tinder is a product owned by the Match Group and represents its most successful dating platform (Match Group, 2021). The business model adopted by the platform is based on subscriptions (i.e., Plus, Gold, Platinum), separate acquisition, without a subscription, of the available features, and advertising (Match Group, 2021). Tinder is the first dating app that integrated the swiping gesture as a main way of selecting partners (Clifford, 2017), which later became a strategy to increase the number of subscribers, by limiting the number of possible swipes (Courtois & Timmermans, 2018).

Tinder's business model significantly relies on user vulnerability to reach its monetary goals, namely, male users' frustration and user privacy needs. Until recently, the company limited the number of free swipes differently depending on gender, allowing 50 right swipes per 12h for male users and 100 right swipes per 12h for female users. This aspect shows that the company has acknowledged the pecuniary potential of gendered behavior. Adjusting the allowed swipes and even reducing the costs of the premium plans for women affirms what Bergström (2021) observed about women's participation on dating platforms—"they become assimilated to the services on offer" (p. 56). Men represent the category of users most attracted to using the app and, therefore, the category whose members are most likely to pay for the premium options, especially when obtaining matches is proved difficult (Stoicescu, 2022). Women, on the other hand, are less likely to pay; however, their participation is essential, dating companies making efforts to attract them on such platforms, through advertising and personalized pricing (Bergström, 2021).

Other than allowing unlimited swipes and other privileges, the premium subscription plans also extend users' privacy options (e.g., "don't show my age", "don't show my distance", "control who sees you"), an aspect that "reframes privacy from a right into a commodity" (Stoicescu & Rughiniș, 2021, p. 459). Such features can be appealing to those users who want to keep their use of Tinder and other personal details private. Having these options makes searching possible partners through an app less constraining for users and, at the same time, significantly more profitable for business owners.

Design elements

The design of an app has the potential to shape the experience of use through its aspect and symbols used, which inform the user of what the product is for, through the digital elements that stimulate users' participation, and through the available features that organize the possible in-app activities and their results.

Designers use diverse strategies to make products popular. Triggering feelings of appreciation, sensations, and emotions is not an uncommon strategy, as documented in the literature under the "*emotional design*" notion. The concept of *emotional design* is influenced by the studies of Norman (2004) and Jordan (2000). In his book, Norman (2004) underlined the critical importance of products' aesthetic appeal by accounting three dimensions: the "visceral" dimension, which refers to the sensory elements (e.g., look, feel, sound); the "behavioral" dimension, representing how decipherable a product is through its technicality and shape; and the "reflective" dimension, which contains the intellectual level, through which the consumer is invited to embed the product in their life, to use it together with other objects, people, and in diverse surroundings. In his take on "designing pleasurable products," Jordan (2000) is inspired by the idea that people live unhappy lives and are always in pursuit of pleasure. Thus, in Jordan's view, successful products must provoke pleasurable sensations, including anticipation, enjoyment, or gratification to be successful.

Previous research has shown that businesses actively search to create captivating technologies through the appearance of their design (Desmet et al., 2007), the pattern of use sustained through *flow* (Triberti et al., 2016), engagement sustained through *gamification elements* (Morford et al., 2014) and *instant gratification* (Sinarta & Buhalis, 2018), or through various features provided through freemium and premium strategies (Wilken et al., 2019). For instance, Desmet, Porcelijn, and van Dijk (2007) investigated how cell phone features create the "wow effect" and concluded that users of technologies react favorably to designs perceived as fascinating, pleasantly surprising, and desirable. However, nowadays, new technologies must go beyond the attractiveness of the design of their products if they want to maintain their audience. Thus, the sensation of "surprise," an emotional reaction linked to the idea of novelty and unanticipated events (Horstmann, 2006), may be embedded into the design of an app to ensure entertainment and long-term engagement. For example, the Tinder app triggers the feeling of surprise through digital elements that appear on the screen every time users like each other (i.e., "It's a match!"), but also through notifications or messages exchanged by users in a context of mystery and eroticism.

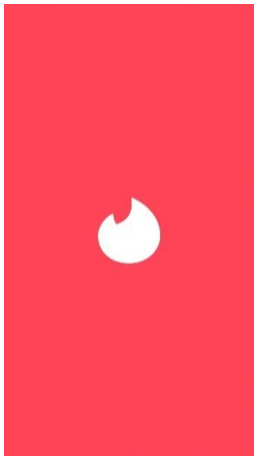

Figure 2. Tinder's loading screen. Source: Tinder dating app

The primary color red dominates the Tinder dating app (Fig. 2). Colors carry socially constructed meanings and significance. Likewise, they can help form identities and direct reactions. Depending on their saturation, values (i.e., darkness/lightness), or temperature, colors are used in various intensities to transmit messages and ease comprehension (Timothy, 2014). Research has shown that the color red attracts attention in a powerful way, even more so in emotionally-infused situations (Kuniecki et al., 2015). Red can take positive connotations, being associated with aliveness, passion, and sexuality, but also negative ones, being associated with aggressivity, danger, or extreme heat (Kuniecki et al., 2015; Timothy, 2014). The chromatic palette used by the Tinder dating app is a gradient based on the RGB color model, which includes colors derived from the primary color red in combination with orange and violet: electric pink, fiery rose, and pastel red (SchemeColor.com, 2022).

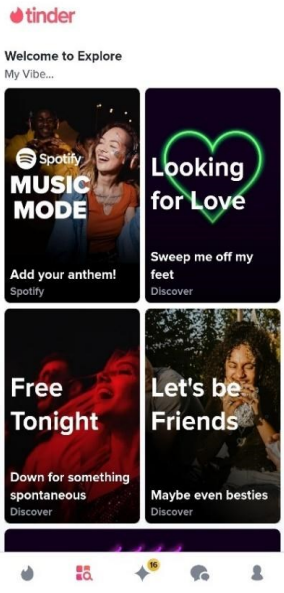

Figure 3. Tinder's "Explore" screen. Source: Tinder dating app

App companies use words and symbols to support identity creation and ease of remembrance. According to the Cambridge Dictionary, *tinder*, as a noun, refers to "small pieces of something dry that burns easily, used for lighting fires" (Dictionary.Cambridge.org, 2022). In tandem to the signification of the word, the app's creators have appropriated the flame symbol as the brand's logo. According to Foroudi, Melewar and Gupta (2017), a logo is a visual element that "evokes an emotional response in the minds of consumers" (Foroudi et al., 2017, p. 21) and that needs to be carefully chosen as it can have a significant impact. In other words, the symbols associated with brands are not selected coincidentally. Companies define their products with the help of already-known words and symbols and associate them with the services they deliver to create meaning and ease comprehension. As for Tinder, it is not difficult to interpret the message transmitted through the choice of words and symbols, which are archetypally used to refer to sparks, burning desire, passion, and explosive outcomes.

Colors and symbols have an informative role. Bumble, Tinder's "opponent," uses yellow as its dominant color and the *bumblebee* as a symbol, being frequently described as "women-friendly." Grindr's design is dominated by the colors black and yellow and use of the *mask* symbol as a logo, which suggests anonymity. At least at a visual level, the colors and symbols used by dating apps add up to their identity and form a suggestive layer. Future research should investigate in what ways colors and symbols engage users of dating apps.

The appearance of a design can be strongly sustained through images and additional text. Creators can construct diverse narratives by pairing images with words (Timothy, 2014). The Tinder dating app contains mostly images of people in their youth engaged in entertainment activities (Fig. 3). This choice of images and expressions (e.g., "Sweep me off my feet", "Down for something spontaneous", "Maybe even besties"; see Fig. 3) may influence users' perceptions, motivations of use and outcomes imagined. Essentially, the app offers an idealized image of connecting through an app, which is specifically linked to juvenescence, successful matchmaking, instant attraction and connection, and positive outcomes.

App pattern

An intuitive and fluent navigation process is a highly desirable goal when it comes to ensuring a comfortable experience for users. The culmination of a comfortable and captivating experience within an online environment can be referred to as "flow" (Johnson & Wiles, 2003; Triberti et al., 2016). The concept belongs to the psychology field and is defined as a state of full involvement in an activity (Csíkszentmihályi, 1990). In the ICT field, the *flow* response was discussed as an indicator of a comfortable and absorbing experience while playing video games (Johnson & Wiles, 2003) or as a stage revealing an increased level of social presence and synchrony while networking (Triberti et al., 2016). On Tinder, the effect of *flow* is given by the *"swipe, match, chat"* app pattern, a dynamic that users adopt easily.

Mainly, on Tinder, the activity is constructed around the swiping action, delivered in a binary "yes" or "no" form (David & Cambre, 2016). Users may see the profiles of others one at a time and evaluate their physical appearance, self-description, and other optional details. Users must swipe left or right to make choices and continue seeing other participants. If both users "swipe right" on each other (i.e., like), it means they have a "match" and conversations are further possible, as if they unlocked a new feature or went up a game level (Duguay, 2017; Garda & Karhulahti, 2019).

Including gamification elements in the design of an app can be a powerful way to engage the user. Gamification was defined as "the use of game design elements in non-game contexts" (Deterding et al., 2011, p. 9). Along with gamification features, to completely assess the experience of use, the social situation must be considered. Aspects such as the type of engagement (compulsory/voluntary), nature of the system (utilitarian/hedonic), and type of involvement (cognitive/affective) can influence the gamified experience significantly (Hamari et al., 2014). For example, the gamified experience of using Tinder is based on a voluntary engagement, has a hedonic nature, and stimulates affective involvement.

Previous research discussed the ways in which Tinder resembles a mobile game or slot machine, technologies mainly known for their attention-grabbing features, uncertainty-driven engagement, and entertainment purpose (Garda & Karhulahti, 2019). The potential of Tinder to be perceived as a game (Berkowitz et al., 2021; Sobieraj & Humphreys, 2021) seems to be higher than in comparison with other dating apps.

Tinder's matchmaking system significantly relies on the *instant gratification* effect, a component usually associated with learning and habit-building (Sinarta & Buhalis, 2018). The app offers engagement rewards in the form of "matches" that accumulate across sessions. To compare, the matches raised on Bumble expire in 24 hours; thus, by design, users are encouraged to approach other users (otherwise they will lose their chance), whereas on Tinder no such constraints exist. The users who cannot accumulate matches may feel rejected and have a negative experience on Tinder (Stoicescu, 2022).

When two users match, they obtain the ability to interact through text. The *chatting* stage is perhaps the component most influenced by social perceptions and norms of the "swipe, match, chat" sequence. Chatting implies that one of the parts must initiate the conversation. If unregulated by design (such as in the case of Bumble), the parts rely on the social norms predominant in their group of belonging. For instance, in heterosexual interactions, the perception that men must initiate interactions with a romantic potential remained persistent in time (Eryilmaz & Atak, 2011; Sassler & Miller, 2011). In homosexual interactions, this aspect remains receptive to personal preferences. The chatting experience on Tinder is also influenced by the number of matches raised by users, which significantly depends on the gender identity of the user (Tyson et al., 2016).

Features

Apart from the already famous swiping, matching, and chatting capabilities, users benefit from various free or premium features. Features allow users to meet their privacy needs

(i.e., "block contacts", "don't show my age", "don't show my distance", "control who sees you"), and extend their capabilities of swiping, matching, and chatting (i.e., "unlimited likes", "passport", "see those recently active", "priority likes", "message before matching", etc.), or have a more pleasant experience of use (e.g., "unlimited rewinds", "hide ads"). Interestingly, the "Global" feature, which allows users who have fewer profiles nearby to overcome this inconvenience, ensures access to the abundance of users around the world and promotes the swiping and chatting experience as separated from the immediate face-to-face meeting possibility.

Women in particular perform "safety work" on Tinder (Gillett, 2021). In response to the various safety concerns that emerged with the wide adoption of the app, Tinder made available a series of safety features, such as: "unmatch", "report", and safety guidelines available in the "Safety Center." Additionally, users can "get verified" with Tinder's photo recognition feature. These additions however, although essential, cannot guarantee safety when meeting face-to-face.

Other features contained in the app are the ones that shape the self-presentation of users. A Tinder user can specify their age (which cannot be modified after setting up the account), gender, sexual orientation, upload up to nine photos, write a 500 characters description, and mention their job title, company, school, and city. Recently added are the sections of "Interests", "Relationship Goals", "Relationship Type", "Languages I Know", "Basics" (i.e., zodiac, education, family plans, COVID vaccine, personality type, communication style, love style), "Lifestyle" (i.e., pets, drinking, smoking, workout, dietary preference, social media, sleeping habits) where users can describe themselves through predefined terms designed for convenience. Users can also pair their Instagram account (i.e., to show additional photos), and to show their music preferences through the "My Top Spotify Artists" feature. Moreover, through the "Tinder Explore" screen, introduced in 2021, users can act on the spur of the moment and signal to other users their intentions (tinderpressroom.com, n.d.-b).

The self-presentation template offered by Tinder is now considerably more developed than in its first years on the app market. Users may describe themselves better and have an idea of the other's interests and relationship preferences before swiping right. It is visible that the company seeks to make the app more appealing to those users who need more information before interacting online with complete strangers. This can be an example of how the app can transform in time to better answer users' needs.

As Bergström (2021) observed, dating sites are created by entrepreneurs with no formal knowledge of dating and relationship. Hence, digital dating structures are merely attempts through which creators seek to understand what works best in terms of business and keeping users interested. Recent research has concluded that romantic desire cannot be predicted by interests, preferences, or beliefs, underlining the complexity of human intimacy (Joel et al., 2017). In fact, what truly predicts happiness and good relationships is "a person's perception of the relationship itself" (Joel et al., 2020, p. 19070).

The ML algorithm

The machine learning algorithm does not necessarily serve the user. As Courtois and Timmermans (2018) argued, "platform owners set out a desired outcome (e.g., increased and recurrent user activity or conversion to paid services) and define the available parameters for the learning algorithm to autonomously analyze patterns within (meta)data, seeking out the right recipe to maximize the outcomes and thus the platforms profitability" (p. 3).

In their analysis, Courtois and Timmermans (2018) suggested that Tinder's ML algorithm possesses agentic abilities. However, given the fact that engineers program its purpose, its decision-making ability is significantly limited and controlled. One way through which the ML algorithm on its own might shape a user's experience is by regulating the order in which the profiles are displayed, which is not always straightforward to predict, this being a characteristic of algorithms (Gillespie, 2014). Even so, the ML algorithm used by Tinder has limited action space and cannot be considered an independent agent but rather an element of the structure.

Until 2019, Tinder's algorithmic matchmaking system was based on the "Elo score," which was assigning attractivity scores to users (presumably calculated from the number of likes or right swipes received) and thus influencing the order in which the profiles were displayed. Hence, a user labeled as attractive had more chances to match with a similarly attractive user and a user labeled as moderately attractive or unattractive would have had significantly lower chances to match with an attractive person.

The way in which the current Tinder algorithm works is not fully understood. As O'Neil (2016) observed, even if they shape the outcomes of many digital and social processes, the algorithmic recipes on which many digital businesses base their activity remain secluded. This limits users' access to understanding how their experience is influenced by the mechanisms within the app and leaves room for speculation and experimentation. The company has disclosed only a few details regarding how the matchmaking system is programmed to behave. According to the official statement published by the company, the ML algorithm is influenced by age, gender, sexual orientation, location, users' interests, and activity within the app:

> "We prioritize potential matches who are active, and active at the same time. […] Aside from current location and gender, it's just age, distance and gender preferences to start. Proximity is a key factor; […] However, we want to make sure members see people they'll vibe with, so we take a few other things into account:
>
> - **Things members tell us** - Tinder has and always will be an open-ended adventure. For those who want to share more, Tinder factors in interests and lifestyle descriptions members add to their profiles.
> - **Similar Photos** - Beyond using what members tell us, we use anonymized cues from photos to help tailor recommendations.
> - **Likes and Nopes** - Likes and Nopes are obviously key pieces of insight into what members like. We are constantly honing the potential matches members see based on how often their profile - and all profiles in their area - are Liked or Noped." (tinderpressroom.com, n.d.-a)

The company does not reveal whether the algorithm is programmed to extend user engagement within the app. However, this aspect was problematized in previous research. For instance, Courtois and Timmermans (2018) found that the app may deliberately control how matches are delivered to prevent the received likes from running out too fast, which supports the economic activity of the platform by challenging users' curiosity.

By downloading the data I agreed to share with the company when installing the app, I observed that the app stores not only the user inputs but also many other details of a user's activity. More specifically, Tinder stores the photos uploaded by users (if the user logs in with Facebook, the app automatically obtains several profile pictures), the birth date, email address, gender, sexual orientations, gender filter and preferences, age filter, location (country, city, and GPS coordinates), job, company, name, school, phone number, user interests and answers, bio, purchasing history, the number of times the user has opened the app in each day, the number of swipes per day, the number of matches obtained per day, the number of message sent and received, and ad clicks. However, it is unclear if the ML algorithm uses all this data to direct the users' activity. Recent concerns regarding data-sharing practices involving several dating companies, including Tinder (The Norwegian Consumer Council, 2020), demonstrate that the company can use the collected user information to serve hidden purposes.

Conclusion

In this paper, I have analyzed the composition of a popular technological product and business. By relying on Giddens's *structuration* theory, I have mapped the main structural elements of Tinder's universe: (1) app identity, (2) business model, (3) design elements, (4) app pattern, (5) features, and (6) ML algorithm.

As communicated by its parent company, Tinder has known a viral expansion (Match Group, 2021). Though Tinder is widely known as a dating app, its purpose is actually broader and even obscured, lacking a precise definition. This broad orientation towards a diversity of uses and users derives from the company's attempts to adapt its image over time and to conquer increasingly larger markets.

Tinder describes itself a flexible social dating app, aimed at interactions ranging from casual chats to casual sex that could turn into short experiences or long-term relationships. Technically, Tinder is a digital structure aimed at connecting people who do not already know each other. Taken outside the dating narrative, the logic of swiping and matching would have hardly been profitable or even feasible. Dating, love, eroticism, curiosity, and uncertainty are embedded into the design of the app to facilitate and drive user engagement. Tinder's design elements communicate a digital space with an erotic theme, in which the imagery and wording evocative of love, entertainment and relaxation shape the expectations of users. The digital dating activity is sustained by an easy and intuitive flow. The app pattern, "swipe, match, chat," advances a fast-paced profile-browsing dynamic and gives a gamified addition to the activity.

Along with the dating narrative enforced by the company, curiosity and uncertainty are reactions digitally replicated in Tinder's infrastructure. The machine learning behavior

is unpredictable, using participants' socio-demographic inputs, activity, and other information to order the available profiles (users cannot see what comes next). Likes received are not prioritized, creating uncertainty and frustration (Courtois & Timmermans, 2018). Because the ways in which the algorithm works are only partially disclosed, users engage on the platform unaware of the mechanisms that shape their swiping results, which limits their agency and shifts the power of decision in the favor of platform owners.

Dating and intimacy are complex human behaviors (Brooks, 2021; Joel et al., 2017). Dating apps and platforms can only offer digital structures for human interaction that can be economically successful or not, depending on the narrative used and digital elements employed. Users, in return, must abide to the proposed structures of interactions to attain their dating goals, with limited agency. Tinder remains a successful business with a catchy product that resumes dating to a "good for all" digital structure, built especially on the principle of immediate returns and extended use, which consequently shapes the experience of use in unique ways.

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Maria Stoicescu is a PhD student in Sociology at the Doctoral School of Sociology, University of Bucharest. Her current research focuses on the social and technological construction of dating, including the changing temporality of interactions, social trajectories of use, and emotional norms and reactions stimulated by digital dating platforms.