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DE-CODING INSTAGRAM AS A SPECTACLE: A CRITICAL ALGORITHM AUDIT ANALYSIS

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ABSTRACT

In 2016 Instagram integrated personalization algorithms into its system, promising to show the moments they believe we will care about the most. The platform's personalization logic and its commercial nature raise concerns regarding the emergence of filter bubbles and "individual realities", privileging topics that reflect a firm market logic and represent a reality where capitalism dominates. The present study aims to investigate the existence of a filter bubble on Instagram, posing the following questions: Do filter bubbles exist on Instagram? Do Instagram algorithms favor commercial soft topics? The study employs the algorithm auditing method, impersonating a user interested in soft-topics and another one involved in public-oriented topics by creating fake accounts. Both accounts' recommendations were collected and analyzed qualitatively. The analysis shows that Instagram algorithms render certain topics much more salient, generating a filter bubble of soft topics that closely resembles what Debord introduced as the spectacle.

Keywords: Instagram ▪ spectacle ▪ filter bubble ▪ personalization ▪ audit studies ▪ algorithms ▪ critical internet studies

1.   INTRODUCTION

"To improve your experience, your feed will soon be ordered to show the moments we believe you will care about the most", Instagram announced in March 2016, while introducing a new personalization algorithm. Since then, the platform has become more algorithmic and increasingly computational (Carah & Shaul, 2016). Personalization algorithms have raised discussions regarding their implications on democracy, polarization and stereotyping behavior (Cheney-Lippond, 2011). Despite being often framed as neutral information mediators, critical approaches argue that users can be isolated in "filter bubbles" with severe repercussions (Just & Latzer, 2017; Pariser, 2011).

Many studies have tried to investigate the consequences of personalization algorithms and the existence of filter bubbles on several platforms, such as Facebook,

Twitter and Google (Feuz et al., 2011; Bakshy et al., 2015; Salehi et al., 2015; Kulshrestha et al., 2017; Barker, 2018) – with mixed results thus far. In the context of Instagram, there are few studies on personalization to date. Skrubbeltrang et al. (2017) focus on the exploration of users' beliefs about personalized algorithms, whereas Stoica et al. (2018) explore social recommendations and their effects on gender and homophily. Other studies look into algorithmic awareness (Fouquaert & Mechant, 2021) or how influencers interact with Instagram algorithms, and may control them to their benefit (see Cotter, 2019; O'Meara, 2019). Individuals devote a remarkable proportion of time and energy to Instagram: they "like" 4.2 billion photographs on average per day (Aslam, 2019) while being exposed to a vast number of images. However, is this content what they really care about the most?

Instagram is a platform that has been integrated into people's life, constituting an everyday activity. As noted by Abidin (2016), some researchers still tend to overlook the significance of Instagram, characterizing it as mere entertainment or junk. However, I argue that we should not turn our back on things that may seem trivial or "superficial", as the familiar is not necessarily understood (Hegel, 1807/1977). Instagram was created to inform people about the world around them (Kiss, 2013), as its core is everyday life. At the same time, Instagram consists of over 25 million brand accounts (Smith, 2019), confirming that part of its content has commercial character. In addition, the platform's personalization logic and its commercial nature raise concerns regarding the emergence of filter bubbles and "individual realities" ((Just & Latzer, 2017, p. 248), privileging topics that reflect a firm market logic and represent a reality where capitalism dominates. The present study aims at investigating in depth the existence of a filter bubble on Instagram posing the following questions: Do filter bubbles exist on Instagram? Do Instagram algorithms favor commercial soft topics?

2.   INSTAGRAM ALGORITHMS, COMMERCIALITY, POPULARITY AND FILTER BUBBLES

A decade ago, Pariser (2011) popularized the term "filter bubble" referring to the decrease of information diversity that people receive online. According to this approach, personalization renders possible that users encounter content based on their previous online actions and history, being enclosed in predetermined endless loops of information. On the one hand, several studies have already indicated its presence in social media and web search (Feuz et al., 2011; Bakshy et al., 2015; Salehi et al., 2015; Kulshrestha et al., 2017; Barker, 2018) and its harmful repercussions, like stereotyping behavior, political polarization (Wolf, 2016; Cheney-Lippond, 2011; Pariser, 2011), adverse effects on knowledge gain (Beam, 2014) and "different individual realities" (Just & Latzer, 2017, p. 248). Barker (2018), focusing on creative process actions, argued that Google's personalization practices limit exposure to qualitative stimuli necessary to trigger creativity and new ideas. On the other hand, some studies challenge these impacts, as people may maintain a "diverse information

diet" across online spaces or entirely avoid platforms that tend to provide them with one-sided information (Burns, 2019; Dutton et al., 2017).

In the case of Instagram, the filter bubble assumption is currently underexplored. Researchers from Columbia University (Stoica et al., 2018) studied social recommendations on Instagram and their effects on gender and homophily. Focusing on the platform's algorithms from a computational perspective and using statistical analysis, the study reveals that algorithms can worsen pre-existing inequality and homophily. Instagram is a commercial platform and a strong corporate tool for businesses that disseminate their content via their accounts. Examining the Instagram activities of the Smirnoff brand and fashion retailer "General Pants", Carah and Shaul (2016) highlighted that Instagram has become more algorithmic in the ways it presents images' and brokers' attention. Brands and businesses use algorithms to engage users with their brands and increase visibility. This can affect the standardization of specific content, like how the human body is represented (ibid). Also, influencers seem to familiarize themselves with how algorithms work and accordingly formulate tactics to gain visibility (Cotter, 2019). Instagram has never distinguished advertisements and brands from the content shared by ordinary users (Carah & Shaul, 2016). As the platform consists of a remarkable number of businesses, the recommended content may be affected by the brands' visibility strategies. The role of advertisers and brands that advantageously promote their content and the platform's commercial nature raises concerns about whether personalization favors a marketplace predominantly for advertising purposes and creates a "commercial filter bubble".

Although Instagram's algorithms are sealed entities, affinity and popularity are two essential criteria used to algorithmically suggest content to users (see Mosseri, 2021). In the page "Search and Explore" Instagram's algorithms recommend content tailored to each user (affinity); these posts "are selected automatically based on things like the people you follow or the posts you like" (Instagram, n.d). More specifically, Instagram claimed that some of the most significant factors for a post to be recommended are the user's history of interacting with the person who posted, information about them and the user's activity (Mosseri, 2021). At the time of writing, popularity is also an essential component for a post to go viral on Instagram: "The more comments and likes you get, the likelier you are to find your place on the Instagram Explore page" (Carter, 2019, para. 24). Many websites and blogs suggest tips to users to become more popular and make it to the Explore page. Two standard pieces of advice are, first, to exploit the popular hashtags and brand names and, second, to follow Instagram trends (see Moreau, 2019; see Forsey, 2019). These suggested practices provide vital clues about the existence of a popularity loop. Additionally, some of the top hashtags of 2020 and the most famous Instagram categories (Gotter, 2020) show that popular topics relate to soft and entertaining topics. Thus, what the algorithm chooses to display along with brands' promotion practices may play an essential role in forming of popularity and establishing of specific kinds of "privileged" topics.

Although Instagram can be seen as a platform that exists merely for commercial and entertainment purposes (Abidin, 2016), in the last few years, it has been embraced so widely by users that it has become a tool for engaging with other causes such as social movements, political content, and topics pertaining to social advocacy and human rights, like body positivity, feminism, etc. (Mahoney et al., 2016; Crowder, 2021; Savolainen et al., 2020). Several politicians utilize Instagram for political influence, while social movements leverage it towards a collective goal (Cornet et al., 2017; Ekman & Widholm, 2017). However, even that content can sometimes be conducive to capitalist interests (Cwynar-Horta, 2016). A recent study (Afnan et al., 2019), for example, has indicated that commercial accounts exploit the popularity of social movements' hashtags, like the #MeToo, to increase their products' visibility promoting commodified posts. The findings revealed that one in five posts sampled with a hashtag related to the MeToo movement had a commercial aspect (ibid).

Instagram is a commercial platform, but at the same time, a place of visual public culture (see Manovich, 2016), and when algorithms become arbiters of culture, we have to ask how it is shaped and whether diversity is promoted. These concerns echo users' concerns, as documented by Skrubbeltrang et al. (2017), who investigated more than 8000 users' comments regarding the implementation of algorithmic personalization on Instagram. According to Skrubbeltrang et al. (2017) users are most concerned about the prevalence of commercial interests and the domination of mainstream content on their feeds. Hallinan and Striphas (2016, p. 122) explicate the risks for content diversity with "algorithmic culture":

> The production of sophisticated recommendations produces greater customer satisfaction which produces more customer data which in turn produce more sophisticated recommendations, and so on, resulting—theoretically—in a closed commercial loop in which culture conforms to, more than it confronts, its users.

These concerns point to the question of whether Instagram users are exposed mostly to recommendations of mainstream and commercial content, thus being enclosed in a filter bubble. Given that Instagram is part of people's everyday life and has simultaneously been quite uncritically incorporated into it (Carah & Shaul, 2016), it is vital to investigate the stimuli and content to which users are exposed.

3.   METHODOLOGY AND DATA

Three empirical audits of Instagram were held. These audits focus on exploring algorithms as a recommendation system and the existence of filter bubbles and their nature, emphasizing the Explore page of Instagram, as it has been characterized as "one giant recommendation engine" (Titlow, 2017). By the term *audit studies*, I refer to the research design that reveals the potential unwanted consequences of algorithmic

systems (Sandvig et al., 2014). The current research design belongs to the type of "sock puppet audit studies" in which researchers impersonate users, usually by creating fake user accounts (ibid). This study proposes algorithmic audits as a method employed in critical approaches to the study of platformization (see Poell et al., 2019). The diagram below (Figure 1) shows the procedure and the research questions of each audit study.
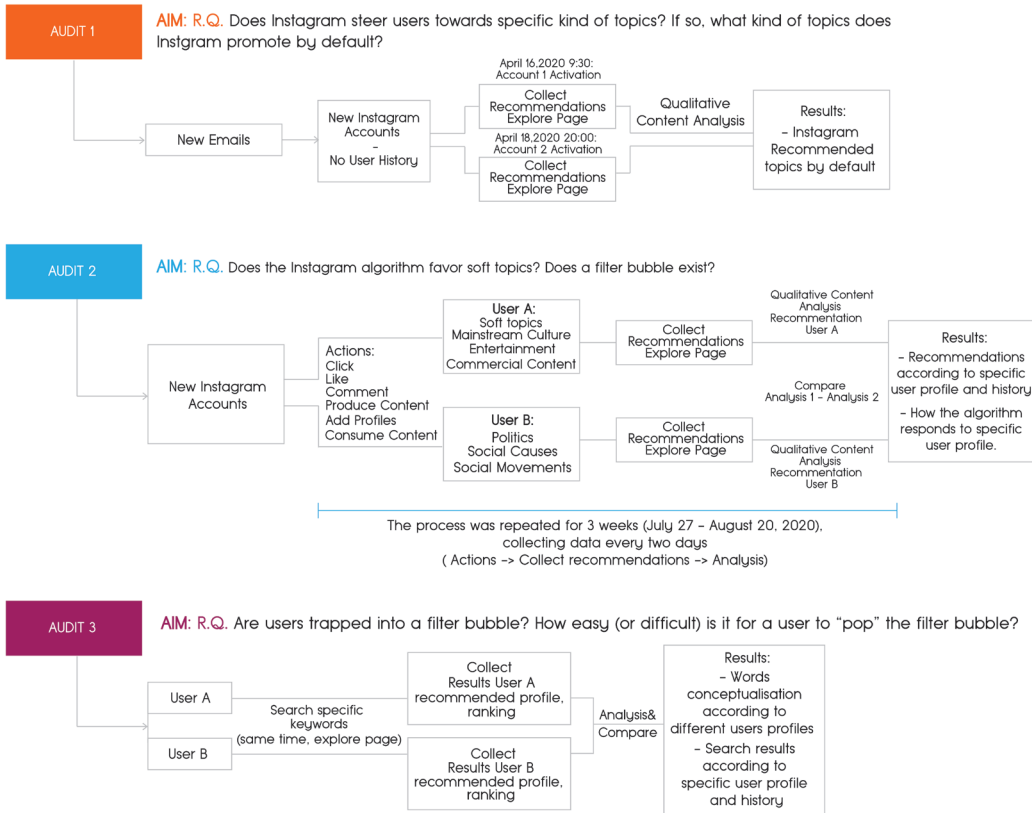

Figure 1. Three empirical studies of Instagram regarding the investigation of the existence of a filter bubble.

3.1. Audit #1 methodology

The recommendations made to users without previous use history were collected to answer the first research question (see Figure 1). To achieve that, two new mobile devices were utilized, and two new email accounts were created and used to make two new Instagram profiles. Since the Instagram content is renewed almost every minute, the profiles were activated in different moments in time to explore whether there are different kinds of results over time. The first one was activated at 9.30 on

April 16, 2020 (Audit1.1), the second profile at 20.00 on April 18, 2020 (Audit1.2). Given that different locations may result in different recommendations, it should be mentioned that both profiles were activated in Nicosia, Cyprus.

In both cases, the data was collected by taking screenshots of each post on the Explore page, together with its tags, text, profile name, etc., also marking the order in which they appeared on the Explore page. The first 80 posts were captured. Furthermore, at the time of data collection, Instagram also recommended images organized by categories, like food. The first ten photographs of the first two recommended categories, namely décor and travel, were also gathered.

Next, the posts of Audit1.1 and Audit1.2 were analyzed qualitatively, applying an open coding process, coding for the topics of each post (e.g. topics related to architecture, shopping emerged, etc.). This analysis aimed at showing which topics Instagram recommends by default. In addition, the number of likes, text, hashtags, timestamps and the commerciality of each post were recorded and analyzed by the same process. Furthermore, the profile of the user who posted each image was visited, collecting information concerning its type (namely a business profile, a photographer's profile, etc.), and the number of its followers. The profiles were visited through a third mobile device and account so as not to influence the new accounts' use history. These elements were included in the analysis to understand if they play a role in the (algorithmic) decision about which posts appear on the Explore page and to what extent they affect the Instagram algorithm.

3.2. Audit #1 results

Nature and architecture-related photographs seem to dominate the recommended content of both Explore pages, like waterfalls, the sea, sunsets, monuments and buildings depicting their interior or exterior design. In particular, 65 out of 88 images belonged to these topics[1]. Both categories represent the space surrounding people, either natural or constructed, something that is undeniably part of everyday life. The vast majority of the images come from business profiles, namely architects, architecture studios or professional photographers aiming to promote their services. On the one hand, the content is top-notch and professional and can inspire, but on the other hand, it depicts a distant reality for many people. Luxury buildings with concrete, glass and stylish aesthetic accompanied by hashtags related to minimalism, which is perceived as a lifestyle accepted by the wealthy population (Nikolic & Vasilski, 2018), are displayed. Furthermore, the first category Instagram recommends is décor. The initial photographs of which depict atmospheric rooms decorated with brands, like Channel, Prada or Apple products, featuring consumerism as a part of an ideal lifestyle. Regarding the nature-related images, fascinating, unique landscapes prevail, captured and edited with professional techniques resulting in idyllic places emanating

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1   Nature/Landscape: 20 (Audit 1.1), 19 (Audit 1.2), Architecture: 12 (Audit 1.1), 14 (Audit 1.2).

positivity. The texts that accompany them imply that those landscapes are part of the photographers' everyday life or that they are places they can easily visit, "can't wait to get back in the Tuscany" (see Figure 2), "I'd probably go back to the waterfalls in the rain…". The content shares a specific aesthetic, catching users' eye with its atmosphere or style, highlighting the importance of aesthetics and appearance.
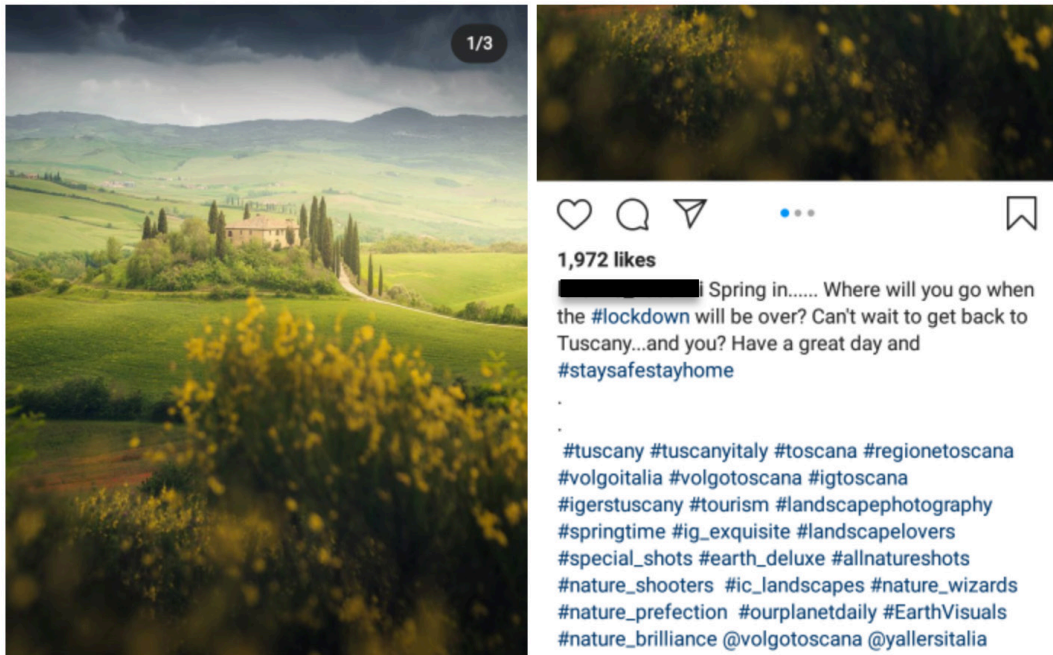

Figure 2. Photographer's image

The majority of the pictures that appeared in both accounts belong to commercial profiles. Several hashtags accompany almost every image, a tactic usually employed to gain more visibility. In addition, phrases like "Check out more at" or "Do you like it?" are used to engage ones audience. Most of the accounts that emerged during the data collection were popular accounts with many followers or likes. Based on this finding, popularity seems to be a critical factor that drives an image to the Explore page as well as marketing strategies that commercial accounts employ.

This analysis shows that a new Instagram user without prior use history is mainly recommended commercial content related to soft topics and an ideal everyday life, coming from business accounts. We can argue that popularity plays an essential role for an image to appear on the Explore page, especially when Instagram cannot associate the posts with users' previous activity and use history. Although there are accounts that pertain to news or social causes and movements, with thousands of followers and likes (see Yang, 2020), such accounts did not appear in the data gathered, raising concerns about how the platform promotes the content. On Instagram's

outset, Kevin Systrom claimed he created an app because of his love for photography (see Hartmans, 2020). Presently, however, the retro photographic character of Instagram has been blended with its commercial purposes.

3.3.   Audit #2 methodology

To answer the second research question (see Figure 1), a user profile (User A) was constructed, with a preference for soft topics, namely mainstream and commercial content, indicated by clicks, likes, comments, posts and connections to profiles as well as following the most popular topics on Instagram (see Puttkamer, 2019) (see Figure 3 for more details). This procedure was repeated for two days. To fortify the User A's history, approximately four to five profiles (recommended by Instagram) were followed each day of the data collection period. User A also searched for some profile names to enrich ones history with other soft topics, e.g., luxury lifestyle and travel. Furthermore, the user liked the recommended photos that were aligned with their preferences, while also watching all 'stories' of the followed accounts and reacting to them to increase engagement. Hence, this profile mimics and represents a user aligned with soft topics.

This process was repeated simultaneously with a second profile (User B), which user indicated preference for non-commercial and non-mainstream accounts (see Figure 3 for more details). Each profile was cautiously chosen to represent a more alternative perspective. The profiles found were visited and reviewed through a third account and mobile device so as not to affect the profile's history. Those that met the criteria of an alternative profile, namely having as their aim political and social action (Atton, 1999) and also being non-commercial and non-mainstream, were followed by User B. In particular, none of the aforementioned profiles had any commercial interests and most were not popular in terms of followers and likes. Otherwise, the same process as in case of User A, i.e., liking photos, following accounts, was followed. Thus, the second profile represents a user interested in public affairs and non-mainstream, non-commercial topics.
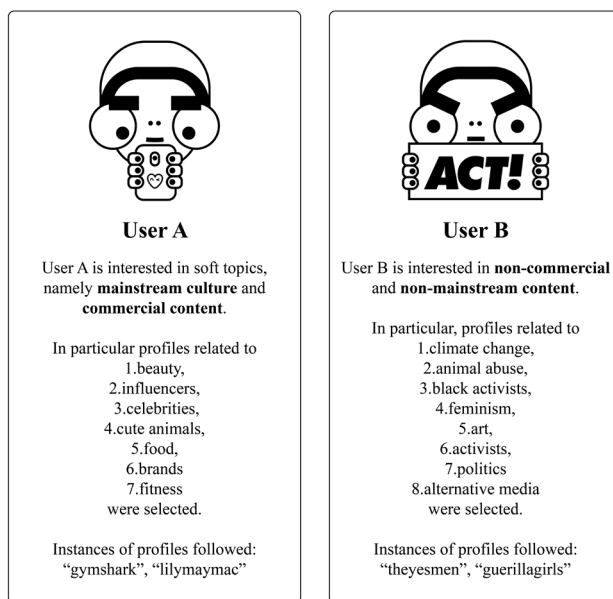
User A

User A is interested in soft topics, namely **mainstream culture** and **commercial content**.

In particular profiles related to
1.beauty,
2.influencers,
3.celebrities,
4.cute animals,
5.food,
6.brands
7.fitness
were selected.

Instances of profiles followed:
"gymshark", "lilymaymac"

User B

User B is interested in **non-commercial** and **non-mainstream content**.

In particular, profiles related to
1.climate change,
2.animal abuse,
3.black activists,
4.feminism,
5.art,
6.activists,
7.politics
8.alternative media
were selected.

Instances of profiles followed:
"theyesmen", "guerillagirls"

Figure 3. The main characteristics of the profile owners behind two "fake" accounts

Both accounts' recommendations were collected. The posts appearing in the first two scrolls on the Explore page of each account were gathered. Screenshots were taken of each image/video, keeping track of their order (see Figure 1 for more details), gathering in total 474 images. The data collection ended when saturation was reached; namely, no more new and distinct material showed up.

Next, qualitative content analysis was conducted, applying an open coding process to the collected data. This method is traditionally applied to text, but it can also be used for images and videos (Pennington, 2017). According to Pennington (2017), the codes can represent categories that exist at the surface level or reflect more profound levels of meaning. The specific analysis focuses on the topics of each image/video, analyzing what it is represented in the photograph and marking each post's commerciality. A multi-coder analysis was not feasible, which is considered a limitation of the current study. However, the codes regarding each post's thematic category were easily enacted, as there was much evidence on the surface of the visual content. After the analysis, three broad thematic categories emerged related to a. soft, mainstream and commercial topics, b. non-commercial topics and c. unspecified topics. The unspecified category contains all unclear topics (e.g., the profile of the Embassy of Kazakhstan) that did notfit any of the previously mentioned categories.

3.4. Audit #2 results

3.4.1. The filter bubble of the Spectacle

Analysis of the content of the Explore page of User A, indicates a close following of the user's preferences. More specifically, 233 out of the 237 posts in the sample were

related to consumerism, appearance and ideal life. One photograph was related to a non-mainstream topic, namely autism, and three were grouped under the unspecified category.

These findings suggest that a filter bubble of mainstream and commercial content clearly appears, narrowing down the stimuli to soft topics for mass consumption. In total, the User A received only one image unrelated to their interests, indicating that personalized algorithms do fulfill their purpose by providing users with information closely related to their proclaimed interests. The image related to autism appeared on the first day of the data collection. After this, while the continuous selection of soft topics enriched User A's history, no similar topics emerged, limiting users' choices to those related solely to their interests. The 233 images recommended to User A represent an ideal lifestyle where brands and consumerism prevail, resembling what Guy Debord introduced as the spectacle (see Debord, 1967/2002). Debord asserts that "in societies dominated by modern conditions of production, life is presented as an immense accumulation of spectacles. Everything that was directly lived had receded into a represenation" (1967/2002, p. 9), demonstrating a connection among economy, capitalism and the spectacle. In the "spectacle", media bombard audiences with images representing an ideal life that is far removed from one's actual everyday life. Representation becomes more important than actual living, as capitalism has occupied social life, generating to people the aspiration to work to fulfil the imposed wants. The spectacle can be seen as an instrument of the economy that generates pseudo-needs and new desires. A vast number of photographs that appeared in User A's feed belonged to brands, different influencers or promoters of luxurious experiences, celebrities, and attractive users with perfect bodies. Thus, during the one month-long data collection, User A came across images depicting an ideal reality with expensive clothes, amazing landscapes, happy families and couples. Many of the objects surrounding these personas had a price tag depicting everyday life organized around the needs of the dominant economy. In Debord's views of the spectacle, the commodity has succeeded in totally colonizing social life (Debord, 1967/2002, p. 37); in a similar vein, User A received content that represented various trivial everyday moments, from meals to family gatherings, with latent commerciality, representing a reality where a strong market logic has spread across several aspects of the everyday.

Thus, on the content revealed to User A , a positive ambiance is created, while the platform's algorithm disregards topics that may trigger concerns about the complexities of everyday life, defusing contradictions (see Debord, 1988/1998). A good illustration of this is that no post related to current affairs at the time of data collection (Covid-19, the Beirut explosion, the US presidential election) emerged in the feed. Thus, user A is urged to engage with fitness tips and celebrity profiles but does not receive even a small proportion of content related to more non-commercial topics increasing diversity. Another reality, a simulacrum, is constructed, comprised of advertisements, commodification, and trivial concerns, possibly manufacturing

false desires and interests (Armano & Briziarelli, 2017). In short, we can see a filter bubble of the spectacle emerging.

By the same logic, we would expect to encounter another homogeneous sphere created through Instagram to fit the second user's interests (User B), namely politics, social issues, etc., given that personalized algorithms tend to reflect users' preferences. However, in the second case, a "reverse filter bubble" did not appear. Overall, 232 pictures were gathered from the User B profile, of which 120 belonged to non-commercial topics related to social causes, 92 were categorized as soft topics and 20 images were grouped into the unspecified category.

The differences between the first two categories are crucial. Although the user's interests focus on sociopolitical issues, even in radical forms (anarchy, anticapitalism), the recommendations by the Instagram algorithm still contained a relatively high number of images related to celebrities, gossip, influencers, and beauty. Despite the fact that the user's history was constantly being loaded and fortified by the researcher's actions, ignoring the recommendations of soft topics, the user continued to receive images related to soft topics in the course of the entire analysis period (see Figure 3).
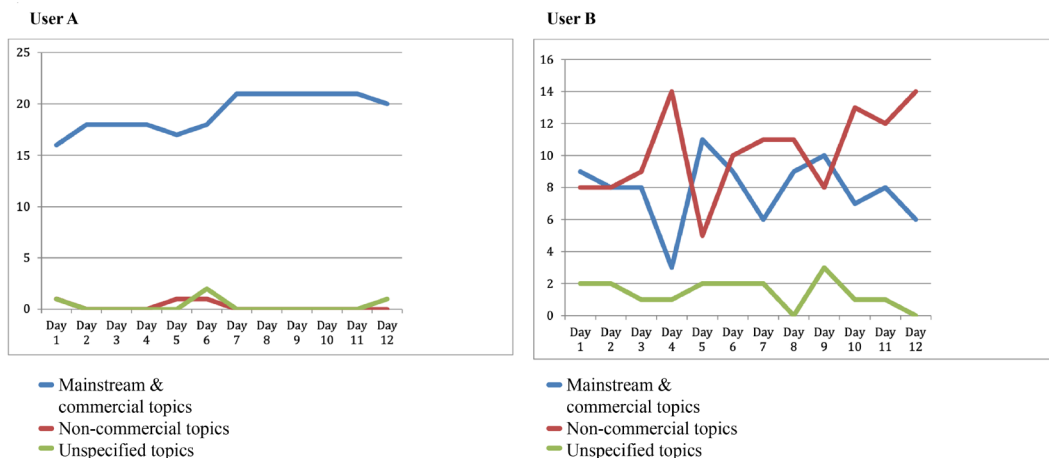

Figure 4. Topics during the data collection

Pariser (2011, p. 11) claimed that "if we never click on the articles about cooking, or gadgets, or the world outside our country's borders, they simply fade away"; yet in this case, although the user never clicked on soft topics, they were still prominent in the feed, raising concerns about the non-or under-representation of diverse topics. In the algorithmic world of Instagram, it seems that more complex issues and the realities of diverse social groups are less likely to be present in users' feeds. The algorithm urges users to engage with more mainstream content, which may be more appealing and profitable than an activist group, as it may keep users on the platform for more extended periods of time . At the same time, it creates and promotes a space

for businesses that also pay to be advertised on the platform. These results also con-firm the concerns of users themselves, as revealed in the study of Skrubbeltrang et al. (2017). As Bucher has argued (2017, p. 3), commenting on algorithmic politics, "we need to be attentive of the way in which some realities are always strengthened while others are weakened". In the case of Instagram, it seems that a reality related to the spectacle prevails.

3.4.2. The Instagram lifeworld

The non-commercial content User B received (N= 120 images), could be inter-preted to reflect the lifeworld (Habermas, 1985), i.e. the domains of actions char-acterized by social interaction and cooperation. These posts reflect topics related to a world that is actually experienced, e.g. accounts linked to social causes, movements and news. In total, user B was recommended 120 images related to ones interests. More specifically, 14 categories of specific topics emerged (see Table 1).

Table 1. Topics User B

TOPICS	NUMBER OF IMAGES
news (Covid-19, D. Trump, the Beirut explosion, politics)	46 (CNN, Ajpllus, Huffpost, Nowthisnew, The Guardian, Worldeconomicforum (1), The Daily Beast)
informative	8
environment	6 popular media | 5 other media
black people	6
political figures	5
users' empowerment	5
activism	5 celebrities-activist | 1 activist
feminism	6
alternative users and anti-Trump profile	4 alternative user | 4 anti-Trump profile
LGBT	4
UNICEF	4 UNICEF | 2 UNICEF-Covid
satire - current affairs	3
animal	1
art	1

The vast majority of images dealt with news (see Table 1) and thus brought User B up to date regarding current affairs and matters besetting society. Although User B had expressed their interest to lie more with alternative and unpopular sources, CNN and other mainstream media sources dominated in the recommendations and news updates, and gossip and celebrity news also appeared. The two remaining images, which did pertain to popular media, came from accounts publishing only positive news without political references. The first profile was most popular, with 1.8 million

followers; the second had 326 K followers but simultaneously promoted t-shirts. Six images from the environment category also were distributed by mainstream popular media (CNN, Bloomberg) and five by non-institutional users. The latter profiles had high numbers of followers; profiles with lower metrics did not appear. The results, thus, suggest that the content for User B's feed mainly came from well-established and popular accounts which had a large following, indicating that although Instagram appears to be recommending information regarding social causes, these recommendations are made within the confines of popularity, commerciality, and capitalism.

Even though the results reveal that the algorithms in Instagram tend to favor popular, institutional and well-established sources, the posts shown to User B also displayed some images representing more alternative views, e.g. regarding feminism and black people (see Table 1), confirming that diverse content exists on Instagram. Five images (N=230), coming from three popular accounts devoted to empowering people, also came up. The platform also suggested activists' profiles to User B, but five out of six suggestions could be referred to as celebrity activists' accounts. Four images in the sample were posted by ordinary users who expressed a more alternative voice and enjoyed quite a big follower base, while posts by the fifth user whose profile was publicly presented to be against Donald Trump, appeared four times.

3.5.   Audit #3 methodology

To find an answer to research question number three (see Figure 1), I searched for specific keywords in the Explore page through both the profiles of User A and User B simultaneously to avoid a possible time effect on the results. The search terms were related to alternative topics, such as "feminism", specific topic categories, such as "technology", and issues related to sociopolitical realities of the day. The word "party" was also included, as it can refer to both a political group and a celebration. The final search words were "feminism", "woman", "crisis", "technology", "black", "body", "virus", "party".

The search results, namely the recommended profiles and their ranking, were collected for both User A and User B. The process started on August 29, 2020, and was completed on December 11, 2020. During this period, recommendations were collected on six different days (29/8, 6/10, 13/10, 2/11, 26/11, 11/12) to increase the possibility of getting diverse content. The profiles were then analyzed through qualitative content analysis and compared. In particular, each account was analyzed regarding its topic and commerciality, and the order of appearance. My aim was to investigate how easy (or difficult) the platform renders for users with a specific online behavior to come across specific non-mainstream, non-commercial content. In addition, this design allowed me to explore how the algorithm conceptualizes specific topics, such as technology and feminism, according to particular user histories. Ultimately, the possibility of users being trapped within a "filter bubble" was investigated on Instagram by comparing system recommendations. The third and final step was to explore

how easy (or difficult) it is for a user profile focused on soft topics to "pop" the filter bubble, through the use of active search.
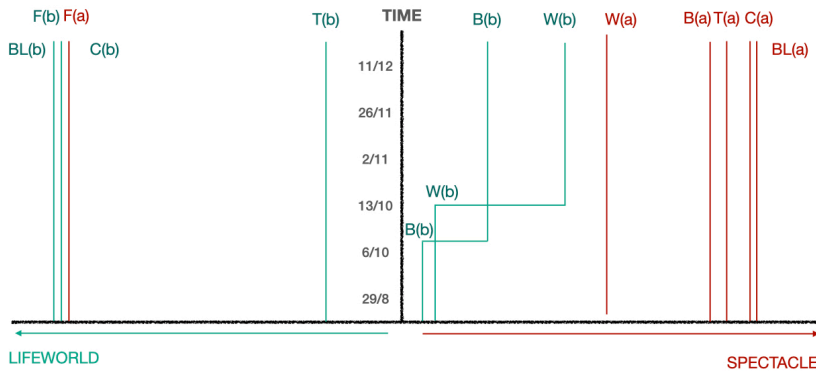
4.6. Audit #3 results

The findings indicate that in several occasions, similar outcomes between the search results carried out between User A and User B occurred. For example, when searching content with the keyword "feminism" profiles related to female empowerment topics, motivational quotes, and groups of people who share a feminist perspective emerged in both accounts, and in several instances both users were recommended the same profiles. Such similarities in the results could possibly be explained by the specific nature of the search term as it can hardly be interpreted into something unrelated to its actual meaning. Both users also received similar recommendations of brands and fitness accounts with a particular representation of the body when searching for the content related to "body" and "woman". Although User B first received some results related to famous body positive movements, these profiles decreased over time and the profiles pertaining to fitness and ideal body types started to dominate. Accounts of alternative body shapes also occurred in the User A results, but only twice, and in both occasions these accounts were placed at the bottom of the rank.

Responses to search queries with keywords like "crisis" and "black", however, brought different results for User A and user B, in both occasions the recommendations were aligned with each profile's history. When typing in the word "black", User A received suggestions of fashion influencers, girl bands, products, cars, etc., while User B received mostly recommendations of movements supporting black people. When using "crisis" as the search term, climate change related results dominated User B's suggestions; while User A received irrelevant, generic results about nails, cartoons, and music, and just one profile regarding the crisis in Venezuela. When typing in the most ambiguous of the search terms - "party"- User B did encounter accounts related to political parties, but also similar to User A, whose feed was full of event planners, did also receive recommendations of party planners. The latter finding, however, could be interpreted as an indication of the existence of the spectacle which aims to distract users from social concerns, pushing them towards consumerism (see Debord, 1967/2002). The findings also revealed that User A was solely recommended business accounts, while User B was also recommended commercial content, despite the fact that their history was unrelated to commercial interests. The search word "technology" wielded results following more or less similar pattern.

Overall, it was somewhat difficult for User A to come across content unrelated to soft topics. The only case that this user received non-mainstream recommendations was when searching for "feminism", indicating that a filter bubble exists. The findings of my study suggest that even when a user with a history related to soft topics actively searches for different content, the search results are still related to their activity and interests. Although User B received more diverse content keyword

searches for "body" and "woman" lead also in their case to commercial and mainstream topics, indicating that commercial sources are more likely to be suggested by the algorithms, even when persons' interests and previous history would suggest otherwise. Relying on such findings one could claim that user A is trapped into a filter bubble of the spectacle, as algorithms render it challenging to come across other perspectives, while user B received more diverse suggestions related both to lifeworld and spectacle. However, over time the user's recommendations resembled more the spectacle in specific keywords (see Figure 5).

keywords: feminism (F), crisis (C), black (BL) body (B), woman (W), technology (T)

profile A (a)
profile B (b)

Figure 5. Audit #3 Results

4.   DISCUSSION

The findings of my audit studies indicate that Instagram users are relatively likely to encounter more mainstream and commercial content regardless of their interests. First and foremost, without use history, algorithms endorse and bring into attention posts created by business profiles with many followers and likes promoting their services and products. However, although alternative accounts related to social causes have also been gaining fame on the platform over the last few years, Instagram does not recommend these kinds of topics by default. A possible explanation may be that the images recommended to users have followed marketing strategies, such as a call for action or the use of hashtags, and Instagram seems to "reward" them. Users with a tendency to follow soft topics are thus more likely to be enclosed in a filter bubble of the spectacle. They encounter entertaining posts presenting an ideal reality surrounded by brands. As Debord claimed (1967/2005, p. 15) "the illusory paradise that represented a total denial of earthly life is no longer projected into the heavens, it is embedded in earthly life itself. The spectacle is the technological version of the

exiling of human powers into a 'world beyond'". Users with more diverse interests, however, are also urged to engage with mainstream content following Instagram's personalized suggestions entrapping them into a filter bubble that consists of mainstream, commercial topics presenting an ideal life full of opportunities for material consumption, where satisfaction equates with commodities and is turned into an ideal representation of consumer society. According to Debord (1967/2005, p. 27):

> "The spectacle is a permanent opium war designed to force people to equate goods with commodities and to equate satisfaction with a survival that expands according to its own laws. Consumable survival must constantly expand because it never ceases to include privation."

In addition, I found that users cannot easily "escape" the bubble: when User A actively searched for specific keywords like "black", "party" or "body", algorithms suggested content related solely to their interests, in contrast to User B who received more diverse outcomes, e.g. recommendations to accounts that amplify black people's voices. Thus, it is most difficult for users to "pop" the filter bubble and find information unrelated to their interests, especially if they are attuned to mainstream topics.

Kevin Systrom, Instagram's co-founder, mentioned years ago: "I want to see not just content from my friends but my morning news on Instagram, from multiple channels"; "to be the place I learn about the world" (Kiss, 2013). It seems that his vision has not been fulfilled, as the platform mostly promotes an ideal reality, neglecting social issues and news through which users would learn about the world. The emergence of a "filter bubble of the spectacle" can have several repercussions. Firstly, following the ideas of Debord (1967/2005, p. 11), the more of a spectator one becomes, the less one lives, as "the more he identifies with the dominant images of need, the less he understands his own life and his own desires". Being constantly bombarded with goods such as expensive cars, stylish clothes, ultimate travel destinations and high-tech gadgets on Instagram, may thus have an impact on people's needs and "desire for more" (see Grosser, 2014). The spectacle on Instagram can therefore be seen as an instrument of capitalism, driving users towards consumer society, generating pseudoneeds. Individuals are urged to be immersed in contemplating the images proposed by the dominant system and capitalism, living the lives of others, a life full of products, instead of understanding their real desires and needs. According to Debord (1967/2005, p. 20), " the spectacle is capital accumulated to the point that it becomes images", this statement described, at that time, a new mode of capital where society moved from industrial capitalism to a consumer society. Nowadays, consumer capitalism is incarnated on Instagram, where corporate platforms have even more opportunities to silently penetrate individuals' lives. This is possibly why Instagram has become such a robust corporate tool. It seems that the economy and the contemporary spectacle are inseparably connected, creating a spectacle controlled by capitalism even more (see Debord, 1962). Both accounts' recommendations, especially

User A's suggestions, consisted of brands, businesses and users who sell products and services. Instagram posited that users become more interested in a brand when they see ads for it on the platform, while 83% of users discover new ones on the Explore page (see https://business.instagram.com/igb/a/ads-in-explore). Instagram exploits these statistics to attract more business profiles and by extent profits. Thus, by constantly encountering this type of content, users are more likely to discover a brand or make a purchase, possibly affecting their desires and needs attuning to capitalism. Consumerism is intensified while the platform raises its profits. User A encountered content that represents an enormously positive and promising reality where capitalism reigns, urging users to engage with brands instead of the reality surrounding them. Instagram commercial accounts embrace and promote positive content so as to drive users to engage more with their brands (Mazzarolo et al., 2021). In addition, being exposed to standardized content, users are urged to reproduce mainstream content. At the same time, this may limit their creativity (see Barker, 2018), as algorithmic culture "sort, classify, and hierarchize people, places, objects, and ideas, and also the habits of thought, conduct, and expression that arise in relationship to those processes" (Hallinan & Striphas, 2016, p. 119). As Debord claimed (1967/2005, p. 17), there is a shift from being into having and from having into appearing. It does not matter who individuals are or even what they possess; it maters how they appear to be, and Instagram provides a paradigm to be reproduced, as "the passive acceptance it demands is already effectively imposed by its monopoly of appearances, its manner of appearing without allowing any reply" (Debord, 1967/2005, p. 12). This bubble contains standardized content, a reproducible, ideal, and positive lifestyle that can lead to a "daily passivity manufactured and controlled by capitalism" (Debord, 1962).

Secondly, questions are raised regarding the extent to which non-popular accounts have the possibility to disseminate their content and reach a broader audience. User B consistently viewed radical content on Instagram and did not like or click on any post unrelated to ones interests. Nevertheless, 92 images related to commercial topics were recommended to him, and several of the 120 images related to the "lifeworld" were derived from well-established, popular, and mainstream media sources. It is reasonable to assume that users who make mixed choices on Instagram but are still interested in topics related to the lifeworld may receive even fewer non-mainstream and alternative suggestions.

This study also confirmed the significant role of popularity in content dissemination, as the most common topics that emerged in the collected data were related to the most popular hashtags and topics of Instagram at the time of the data collection. In addition, in Audit 1 and Audit 2, popular business accounts that leveraged much-advertised marketing strategies emerged on the Explore page, possibly at the expense of non-commercial content that does not follow marketing tips. Non-commercial profiles can also exploit these strategies, but this means that their content should be redefined and follow specific guidelines, sometimes jeopardizing their aim (see Afnan et al., 2019; Brathwaite & DeAndrea, 2021). In addition, business profiles

are provided with tools, such as advanced Instagram insights, statistics, and metrics, to develop a better strategy, while non-commercial profiles do not usually have such analytics at their disposal.

Although Instagram is a commercial platform, its very content is created not only by businesses but also ordinary users and individuals who want to leverage the platform to express themselves or even bring about social change. Users may produce and resist invisibility without rejecting the system and making their actions visible (see de Certeau, 1984). A problematic aspect of the Debordian spectacle was that individuals were excluded from its production, as they were just receivers and spectators. Nowadays, users can participate in its formation. Instagram seems to reward users with visibility and embrace an effective neoliberal subject, as Marwick (2013, p. 13) stated, referring to a subject who "attends to fashion, focused on self-improvement, and purchases goods and services to achieve self-realization. He/she is comfortable integrating market logics into many aspects of life, including education, parenting, and relationships". To conclude, on a more positive note, although we might expect more diverse content to be recommended to User B due to the logic of personalization, the penetration of non-mainstream content in a commercial platform can be seen as an opportunity for users to break the mainstream bubble and undermine the spectacle, even in a hugely commodified sociotechnical environment such as Instagram. Still, how easy is it for the users to deny this possibility for popularity and participation and dissociate themselves from the spectacle or even subvert it? Future studies might investigate this question focusing on user practices. In addition, audit studies may sometimes provide "fuzzy glimpses" on how the algorithms operate (Diakopoulos, as cited in Kitchin, 2017, p. 24). Thus, researchers can repeat the present inquiry utilizing real users' accounts instead of constructed ones. Additionally, the study has not focused on big data. The appropriate tools can be developed to enable researchers to collect recommendations (i.e. the Explore page) from Instagram's mobile version with the help of methods introduced by computational social sciences.

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