Augmented Reality Filters and the Faces as Brands: Personal Identities and Marketing Strategies in the Age of Algorithmic Images

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Abstract. This paper analyzes the so-called "augmented reality filters" (ARF), a technology that makes it possible to produce and spread widely on social media a particular type of video selfies that are manipulated live while filming – for example, by modifying the somatic characters of the producer's face. The first part of the paper analyzes ARFs in the light of a socio-semiotics of dispositives. This approach makes it possible to identify three interconnected aspects of ARFs: their technological consistency, which is closer to mixed reality than to augmented reality; their socio-psychological uses, and in particular personal identity construction through body image manipulation; and finally, their economic-political implications, linked to face recognition and social surveillance. The second part of the paper focuses on the marketing uses of ARFs and, in particular, on branded ARFs transforming users' faces. In these cases, the radical involvement of brands in defining the identity of users requires a profound rethinking of the mechanisms of trust that bind them to consumers.

Keywords: Media semiotics · Socio-semiotics · Digital advertising · Augmented reality · Mixed reality · Enunciation · Identity · Algorithmic capitalism · Media experience · Dispositive

1 Changing Images, Changing Branding

This paper deals with a particular image production technology, generally referred to as "Augmented Reality Filters" (hereinafter ARF). The ARFs allow you to manipulate video footage while filming – for example, by modifying the somatic characters of the portrayed subjects, or by introducing elements that are not physically present in the environments. I will particularly focus on ARFs manipulating users' faces, that have rapidly spread on social media platforms over the past five years. Among the reasons of interest in ARFs is their adoption by a growing number of brands as a new marketing tool – for example, to allow you to try some makeup or clothing products in virtual form, or to disseminate funny and personalized images of brands and of some of its products.

In this paper, after having presented a brief history of ARFs (Sect. 2), I will propose an analysis of them from the point of view of a socio-semiotics of dispositives; in this

way, I will bring to light three aspects of them: the technological, the social and micro-social, and finally the economic-political ones (Sect. 3). The second part of the paper is devoted to the analysis of the uses of ARFs in marketing and advertising, with a focus on branded ARFs manipulating users' faces (Sect. 4): I intend to analyze (still from the perspective of a socio-semiotics of dispositives) how these new types of images determine on the one hand the processes of identity constitution pursued by subjects, and on the other hand the relationships between subjects and brands.

2   Augmented Reality Filters: A Very Short History

In September 2015 Snapchat - a social platform facing some competition problems with Instagram - launches a new feature called "Lenses": users can add some dynamic effects to their video selfies. The innovation comes from having acquired a small Ukrainian startup, Looksery, which has invented this type of effect and introduced them to the app market the previous year. Although the first Lenses are only seven, they immediately prove to be a great success: the one that depicts the subjects vomiting a rainbow is particularly trendy. In November, the platform opens a paid "lens store". Given this success, in May 2017 Instagram introduces a similar feature that it calls "augmented reality filters"; also in this case, the software comes from a Belarusian startup, Masquerade, acquired in 2016. At this point, the number of effects has significantly grown and includes fake glasses, animal muzzles, strange hats and so on. And the competition rate between the two platforms has raised correspondingly.

Snapchat takes the next move: in December 2017, it introduces their "Lens Studio AR developer tool", a free software that allows users to create original filters and upload them to Snapchat. In addition to end-users of social media, the software is aimed at creative agencies and intends to promote the design of branded ARFs, thus establishing a new market. Instagram understands the opportunity and launches the analogue "Spark AR Studio" between October 2018 and August 2019.

The combined effect of desktop software for creating filters on the one hand, and mobile platforms for their use on the other one, is disruptive. In the United States alone, ARF users were 43.7 million in 2020 [1]. The sector is rapidly growing: experts estimate that ARF users in the world are passing from 0.44 billion in 2019 to 1.73 billion in 2024 [2]; but some estimates increase to 3.5 billion in 2024 and 4.3 billion in 2025. And if 4.6 billion photos or videos applying ARF were uploaded in 2021, they are expected to reach 17.6 billion in 2025 [3].

3   The Many Faces of Augmented Reality Filters

3.1   ARF as Dispositives

In this paper, I will analyze ARFs in the light of a socio-semiotics of dispositives, the main lines of which I have drawn elsewhere [4]. In a nutshell, I consider a dispositive as a governmental instrument for managing a series of resources (that can be material, financial, informational, cognitive, emotional, etc.). Therefore, a dispositive allows you to produce or extract; to circulate and exchange; to valorize or devalue; to transform

or destroy the resources it encompasses. Note the ambiguity of the term "governmental instrument": on the one hand, dispositives allow subjects involved within them to manage resources; on the other one, they regulate the subjects' agencies in a standardized and automated way, so to govern the subjects themselves and their behaviours.

Dispositives work and manifest themselves at three embedded levels of increasing generality. The first level is the *technological* one, about which we will talk of *devices*. The second level is the *social and micro-social* one: they regulate various experiential situations as *assemblages*. Finally, the third level is that of the more general mechanisms of *political economy*: here, dispositives appear as *apparatuses*. Let us examine how ARFs can be considered dispositives; and what types of resources they (allow to) manage at the different and interconnected levels of the device, assemblage and apparatus.

3.2   ARF as Devices

From a technological point of view, ARFs work in three steps. In the first one, that derives directly from face recognition procedures, some sensors (for example, my smartphone's camera) capture a pattern of photons (my face) and translate it into a set of data that express a model of the object portrayed (a 3D print of my face). Second, the data set that corresponds to this lens-based three-dimensional model is blended with computer-generated elements (for example, the various makeup elements that I apply to my face), according to the indications I provide through the interface: in this way, a data cube is obtained. Finally, this data cube is displayed on the smartphone screen: I see my face move, shift and change expression according to my behaviour, with the makeup elements I applied perfectly integrated into my image. Furthermore, this implies that my act of observation is in turn constantly captured by the sensors, and that the data cube is extremely dynamic, since it is reorganized moment by moment in real-time. At this point, I can observe the moving images like in a distorting mirror; broadcast live the video selfie that is being produced; or record it and make it subsequently available in my Stories.

Starting from this description, we can first observe that ARFs belong to a broader family of face-editing algorithms, which use various Artificial Intelligence tools to modify the expressions of faces within videos (face reenactment, or expression swap); replace a face with that of another subject (deep fakes, or identity swap), build non-existent faces (face synthesis); or – and this is the most typical case for ARFs – modify some features of the face (attribute manipulation) to create digital masks [5]. Consequently, the term "augmented reality" is not well applied. In fact, these algorithms are not limited to assuming a lens-based digital image and superimposing an additional digital layer on it; instead, they construct a three-dimensional digital model of the face and blend computer-based elements within it to produce a homogeneous and dynamic data cube to visualize it. Therefore, it would be necessary to speak more appropriately of "mixed reality". Virtual, augmented and mixed reality are all components of the broader meta-category of Extended Reality [6, 7] and constitute together the field of "reality media" [8]; however, it is essential to understand that, despite their naming, ARFs do not "augment" reality caught in photo-cinematographic terms: rather, they "mix" photo-cinematographic elements and computer-generated elements within the same dynamic algorithmic model before visualizing it.

To sum up, ARFs as devices (that is, as technological dispositives) regulate the connections and exchanges between three main types of resources: light, which can be measured in photons; images, quantifiable in pixels; and data, calculable in bytes. In the processes of switching between the three orders of resources, data has a central and strategic role: even if ARFs appear to be producers of images, more deeply they reveal to be dispositives to produce data, that eventually come to be partially displayed.

3.3 ARF as Assemblages

In October 2019, a few months after having introduced their Spark AR Studio, Instagram surprisingly suspended the use of ARF. Although temporary (ARFs were triumphantly reintroduced in August 2020), the decision is symptomatic of a certain unease surrounding ARFs. Effectively, social media using ARF have been accused by an increasing number of studies to promote "Snapchat dysmorphia" [9], a particular occurrence of body dysmorphic disorders (BDD), consisting in a misalignment between the desired image of one's body and the one actually perceived, due to continuous and intensive use of beautification ARF [10, 11]. In turn, Snapchat dysmorphia would lead to lower levels of self-esteem [12] and higher levels of depression [13–15]; to several disorders of nutritional behaviour [16] and more frequent use of plastic surgery [17–19]; to self-objectification [20, 21] and adaptation to stereotypical socio-cultural aesthetic standards [22] (including racial and skin-colours ones [23]); to "aesthetic labour" [24] and mutual surveillance through female "policing gazes" [25]. However, other studies have shown that beautification is neither the only reason for the use of ARFs nor the prevailing one; in fact, aesthetic motivations are flanked by entertainment, coolness, curiosity, social interaction, silliness, having fun, creativity, brand "fandomship" and so on [26–29]. Furthermore, many studies have issued the constitution of self-identity through the construction and diffusion of ARF moving images, asserting that it is a processual and inferential process involving not only body images but also body schemata (i.e., sets of sensorimotor abilities) [30]; and that it implies a constant oscillation between self-recognition and otherness in watching selfie images produced by ARFs [31]. Finally, some more theoretical interventions have proposed to consider ARFs and similar procedures in the light of a semiotic construction of identity [32], also within that particular type of identifying interaction between subjects and technological objects that has been defined as "radical mediation" [33, 34].

We can approach this literature in terms of a socio-semiotics of dispositives, by saying that ARFs as assemblages (that is, socio-psychological dispositives) are responsible for managing connections and exchanges between input resources such as energy (the labour of the user, the electrical power required for the operation of smartphones), time, attention; and output ones, such as identity, reputation and self-reputation. It is important to provide a more detailed description of how this happens, both for the importance of the issue itself and the consequences regarding the use of branded ARFs (see below, Sect. 4.2).

We can describe ARFs as identity and reputational dispositives starting from the fact that they allow and encourage the production of a discursive object (a video clip) and,

therefore, of an audiovisual utterance (*enoncé*). The identity and reputational procedures of the ARF are consequently based on processes of technologically implemented enunciation (*énonciation*) [35–38].

As the event of the enunciation unfolds in its intertwined cognitive and material aspects, two main questions arise: to whom to attribute the utterance and its contents (who is the subject and who is the object of the discourse that is enunciated?); and what value to assign to them. In particular, users must determine how much and what of the audiovisual utterance and its contents belongs to themselves, and how much pertains to other subjects or objects. Semiotics has shown how this recognition occurs through the two operations of disengagement (*débrayage*) and engagement (*embrayage*). In a first phase, enunciation implies disengagement, so that the utterance is attributed to and inhabited by non-persons (I look at the product of an ARF but without feeling that it was I who produced the video, nor giving a precise identity to the figure whose face is shown). In a second phase, the engagement takes over: within a distribution of the actantial roles among different subjects, users recognize the audiovisual utterance as their own product, therefore qualifying as Enunciators (*Énonciateurs*); at the same time, users recognize themselves in the faces modified by the ARFs, so qualifying as Narrators (*Narrateurs*: actually, I am producing the video, and that face is mine). The criterion for attributing these qualities to the selves (and therefore also for determining the belonging, proximity, distance or otherness of other subjects and objects) is the sensorimotor activity that the subjects are deploying and proprio-perceiving by materially producing the utterance. In practice, I consider "mine" everything that depends on the movements I feel I am acting while producing the ARF video clip.

Therefore, the constitution of one's own conscious self takes place through repeated acts of enunciation, hence through the constant and repeated oscillation between disengagement and engagement, in a constantly dynamic and adaptive spiral process. Furthermore, the same dynamic involves not only the actantial dimension, but also the axiological one: after a first phase implying a suspension of values, a second one takes place in which subjects make a value judgment on both the utterance and its contents (I can consider my face beautiful or ugly, and my video successful or trash). Thus, the formal dispositive of enunciation makes it possible to transform the input resources mentioned above (visual, luministic, informational, operational, energetic, temporal, attentional) into other types of output resources and, in particular, into identity and reputation. It should be noted that this model allows us to comprehend and consider at the same time both cases of beautification and relative dysmorphic drifts, and the less dramatic cases of fun, entertainment and creativity.

3.4 ARF as Apparatuses

Within a few months, two little-publicized but significant events took place in the world of social media. In June 2021 Tik Tok, which belongs to the Chinese group Bytedance, modified its privacy policies valid in the US by introducing a clause according to which it "may collect biometric identifiers and biometric information as defined under US laws, such as faceprints and voiceprints, from your User Content" [39]. In the opposite direction, in November 2021 Facebook-Meta (which owns Instagram) announced that it had started the suspension of all face recognition activities - which allowed, for example,

to automatically tag the faces of people in the photos posted on social. The two episodes are revelatory: the relief of the ARF is not simply technological, semiotic and social; they also involve an important *economic* dimension, linked both to the increase in traffic on social networks, and to the marketing exploitation – including micro-profiling of users for hyper-targeted advertisements; in turn, this economic dimension is linked to a *political* dimension relating to privacy problems and the face recognition procedures that the ARFs involve (see Sect. 3.2).

The link between ARFs and surveillance capitalism [40] through the application of soft biometrics [41, 42] is not always evident, but it is nonetheless present. The use of databases of facial images derived from social networks is increasingly used in the forensic field, to identify people responsible for crimes [43]; in these cases, if the original faceprint underlying the ARF is not available, biometric recognition adopts reverse engineering algorithms that cancel the face distortions introduced by ARFs [44, 45]. In other cases, the intent of political control is more evident. For example, the Face++ platform, implemented by the algorithms of the Chinese company Megvii, provides online ARF services for beautification. In May 2019, NGO Human Rights Watch reported that fragments of Megvii's code were being used (without the company's awareness) in the Integrated Joint Operations Platform, (IJOP), a surveillance app used by security forces of the Chinese government in the control of the Muslim community of Uyghurs in Xinjiang province [46].

Ultimately, there is a strong continuity between the strictly medial, semiotic and visual aspects of ARFs and their broader and more ramified economic and political implications. Therefore, the ARFs as apparatuses (that is, as dispositives of political economy) prove to be components of a mechanism that manages and exchanges informational, economic, financial and agentive resources.

4   From Ordinary to Branded ARF

In this paragraph, I apply the socio-semiotic analysis of dispositives to a specific type of ARF: those branded by different companies and used as a new marketing tool. As I mentioned, the introduction of ARF design software by social media platforms was also aimed at opening a new advertising market: that of branded ARFs (which I will avoid calling, with the usual use of acronyms, BARF), capable of integrating social media marketing [47] and AR marketing [48] tools. Although branded ARFs are of various types (some involve environments or entire bodies in motion), I will focus on those that manipulate users' faces.

4.1   A Typology of Branded ARF

I start by defining the possible categories of face-focused branded ARFs. The first category is that of *atmospheres*: in these cases, the user's face does not undergo substantial variations, but it is placed in an environment that refers to some values of the brand or some characteristics of the product: this is the case, for example, of the ARF that launches the new Aria collection by Gucci (2021) on Instagram: it immerse the users in a glamorous and glittering environment and superimpose the image of a heart on

their bust; I can also cite many ARFs created by Netflix for Snapchat, which plunge the users, for example, in the sinister atmospheres of *Stranger Things* (2017) or other shows available on the OTP platform.

The second category of branded ARF is that of *try-on*: in these cases, filters allow users to virtually try on cosmetic products (single makeup elements or a combination of them) or clothing accessories (glasses, hats, jewels. etc.). The try-on category has two variations. The first is the mode that I will call *gaming*: animated elements such as strange machines (*Face-o-matic* and *Eyes-o-matic* ARF created by Max Siedentopf for Gucci Beauty in Instagram, 2020) or flying pencils and brushes (Disney Cruella by Mac Cosmetics in Snapchat, 2021) intervene to apply makeup on the user's face. The second mode is that of *shopping*: once users have completed the virtual makeup or the test of a pair of glasses, they can immediately check the price and possibly order the products (as in the "Checkout" function introduced by Instagram in 2019, or in the "AR Shopping Lenses", presented by Snapchat in 2022).

The third category of branded ARF is what I call *disguise*. Here too, we find some subcategories. In some cases, the filter superimposes graphic effects on the users' faces, for example, signboards placed above the foreheads and moving with the subjects ("What should I watch on Netflix?"). In other cases, the users' faces are masked by more complex objects: for example, Netflix on Snapchat allows you to wear the Dalì mask from *Money Heist* (2018). In some cases, the masking takes place "on sight": for example, the song *The eternal struggles of the howling man* by Rob Zombie was launched in 2021 on Instagram with an ARF that, as soon as users open their mouths threateningly, quickly transforms them into terrifying werewolves. Finally, among the category of disguise, it is appropriate to reserve a specific subcategory for ARFs that turn users' faces into living logos of well-known brands. Take for instance the case of Starbucks. The company has not invested heavily in branded ARFs, but various users have created ARFs based on the Starbucks logo. For example, a filter created by the yuho account (yu_xo0) in Instagram allows you to "wear" the hair and crown of the mermaid that appears in the Starbucks logo. Even more radically, the filter created by Shin Naka (Oknaka) still in Instagram allows you to fully inhabit the face of the mermaid: in this case, the users' expressions and grimaces are immediately expressed by the character that represents the brand.

4.2 Branded ARF as Dispositives

If at this point we consider the branded ARFs as dispositives, we immediately realize that all three levels of devices, assemblages and apparatuses are present and connected in their use. For example, from a political-economic perspective, it has been observed that branded ARFs constitute a model of delocalization and fragmentation of the work of brand promotion, which assigns advertising micro-tasks to individual users on the model of Amazon's Mechanical Turk [49]. Furthermore, the technological and political issue of face recognition is by no means unrelated to branded ARFs: some studies have shown that awareness and concern about surveillance issues by users discourage their adoption and suspend the "privacy paradox" (the behaviour for which, although defending in principle the right to privacy, we do not hesitate to make our data available in online requests) [50, 51].

In any case, the main reasons of interest in the branded ARFs are concentrated on their nature of *assemblages*, that is, of social, micro-social and experiential dispositives. Research on branded ARFs (still, at the moment, fragmentary) has highlighted various aspects of their user experience: they are perceived as more original, creative, fun, interactive and informative than non-branded ARFs [27]; furthermore, they imply (particularly in the case of try-ons of cosmetic products or clothing accessories) an increase in product purchase intentions and a positive attitude towards brands [52]. Yet, more relevant research in this sector leads back to the problem of users' definition (and appreciation) of selves, in relation this time with the identities and values of brands and products. In this direction, scholars observed that the use of try-on ARFs (and more generally of "virtual mirrors") enhances the self-brand connection (that is, the process in which consumers incorporate brands into their self-concepts) [53]; that they stimulate both the sense of belonging to the products virtually tested [54] and that of the artificial image of one's own body [55]; that they produce in this way "augmented selves" [56], able to renegotiate the gap between the current selves and the ideal and desired ones, with the help of the brands and products they use in the virtual try-on [57].

This literature focuses on try-on ARFs; however, the users' identity issue that it places at the centre of attention can also be extended to other types of branded ARFs. In this regard, we can return to the model of the enunciational constitution of identity introduced in Sect. 3.3, to apply it to branded ARFs. As I explained, this model envisages the two phases of disengagement (constitution of the utterance-discourse in a non-personal form) and subsequent engagement (attribution of actantial roles and value weights to the different entities identified as objects or subjects of the discourse). In the case of branded ARFs, the brand, possibly represented by its own products, is among the entities to which an actantial role and a value qualification are to be attributed. In this regard, three main possibilities can be defined, which broadly correspond to the three types of branded ARFs I have outlined in Sect. 4.1. Furthermore, each of the three roles implies the involvement of specific value universes [58].

In the case of *atmospheres*, the brand qualifies as the Helper (*Adjuvant*) of the Enunciators: the brand provides them with the apt tools to "make a good impression", creating elegant and compelling video clips. The values of the brand are mainly those of playful and aesthetic valorization. In the case of ARFs of the *try-on* type, the brand more easily assumes the role of Addresser (*Destinateur*), that is, the agent who transmits to the subjects the value criteria of their well-appearing and well-being (for example, the type of makeup best suited to their faces); the tools to realize this ideal (the different cosmetic tricks and makeups); and finally the material products themselves (the shopping offers of the apps). In this case, the directly involved values are those of practical and possibly critical valorization: the quality of the products counts and, in particular, their effectiveness in ensuring the required effects. Finally, in the case of branded ARFs belonging to the category of *disguise*, and especially in cases where the brand logo becomes the mask that the subjects wear and which move with the expressions of their faces, the brand assumes the role of *Narrator*, that is, it replaces more or less completely the Enunciators as a figurative presence within the audiovisual utterance. The values involved are those of utopian valorization, since they concern some basic existential choices that directly affect the subjects' way of feeling and being.

4.3   From Branded Selves to Selfed Brands

In conclusion, we can evaluate some consequences of what I have just described, both on the side of users' and on that of the brands' identities. On the first front, as I said, the type of self that derives from these processes has been defined as an "augmented self" [56]. However, the technological nature of ARFs as devices is not the "additional" one of augmented reality, but rather the connective, blending and fusional one of mixed reality (see Sect. 3.2). Hence, the images of themselves that the subjects enunciate through the branded ARFs imply a real fusion and a radical and intimate connection between themselves and the brands. I will therefore speak of a "mixed self".

On the front of the brands, this new intimacy with the subjects implied by the enunciational construction of the self through branded ARFs, has at least two consequences. First, the brands' identity, although linked to mythologies and world-building operations [59], must also deal with the capillary dimension of personal situations, of intimate stories, of personal expressions and emotions crossing the face of each user. Second, the construction of the value universes of brands [60] is increasingly filtered by networks of individual, intimate, embodied trust relationships embedded in the life, in the bodies, and in the experiences of social subjects. Ultimately, the "branded selves" of the past [61] are now taking over new semiotic entities, that we could at least temporarily define as *selfed brands.*

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