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PERSPECTIVE

Deepfakes: perspectives on the future "reality" of advertising and branding

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ABSTRACT

Deepfakes are real videos with fake content. Leveraging artificial intelligence technologies to superimpose voices and likenesses, deepfakes can, quite literally, put someone's words in anyone else's mouth. Deepfakes are exploding across mass and social media, and these outlets are feverously trying to manage the proliferation of content with potentially deceitful authenticity on their platforms. This paper introduces what deepfakes are, how they work, and the potential for deepfakes' influence on advertising. We provide a conceptual model that explores the influence of deepfakes on advertising practice in a holistic context of consumer consumption and cultural influence to explore how deepfakes influence three perspective dimensions of advertising – not only the tangible ads themselves, but also how consumers perceive those ads and the greater sociocultural context in which the ads are created and consumed. Deepfakes present both threats to and opportunities for advertisers, and we leverage this conceptual model to highlight several critical areas of practice that warrant further investigation.

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Do you recall in 2019 when President Obama called Trump a "total and complete dip$!&t" in a public service announcement?[1] Or when Mark Zuckerberg admitted on Instagram that Facebook really just wanted to manipulate people into sharing their intimate data for free?[2] Neither do they. Obama and Zuckerberg are only two of many public figures, celebrities and politicians that have been impersonated in lifelike videos in the last few years. Welcome to the world of deepfakes. It all started in 2017, when a Reddit user named "Deepfake" created and shared a lifelike video in which one individual's likeness (face and facial movements) was transposed onto another's. The most popular types of deepfakes are videos that give the nearly indistinguishable impression that an individual (for example, Obama) is saying words that were actually spoken by a second individual (in this example, by comedian Jordan Peele). In the context of advertising, State Farm recently debuted a TV commercial that appeared to be recorded in 1998. The ad showed the then 38-year old ESPN SportsCenter anchor

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Kenny Mayne, making shockingly accurate projections about the year 2020 (Toews 2020), including a prediction that ESPN would release a documentary series called *The Last Dance*. The commercial, of course, was a clever deepfake.

We begin this article by opening the proverbial black box in order to demystify deepfakes. We introduce readers to the technology behind and process of creating deepfakes because it is critical, if only at a high level, to understand the plethora of ways that deepfake technology enables audio-visual media to be manipulated. Armed with an understanding of how deepfakes work, we next discuss the key reasons why deepfakes matter for advertisers. We then explore how deepfakes influence three perspective dimensions of advertising – the tangible ads themselves, how consumers perceive those ads, and the greater sociocultural context in which the ads are created and consumed – by offering a model that conceptualizes advertising in a larger context of consumer consumption and cultural influence that enables a deeper exploration of the influence of deepfakes in advertising. We conclude this article by highlighting several critical topics, both threats and opportunities, that warrant further investigation in the space of deepfakes and advertising, and raise a call-to-action for researchers to investigate how deepfakes can and will change advertising, for better and for worse. This "perspectives" article is intended to be though-provoking, and throughout the various sections we draw reference to questions and topics that, we believe, are of significant interest to advertisers.

How deepfakes work

As the name implies, deepfakes rely on a machine learning technique called *deep* learning that is used to train deep neural networks (DNNs) to create *fake* content. These DNNs are artificial, inspired by the structure and communication processes of biological brains, and can be trained to automatically merge, combine, replace, and superimpose images, audio, and video over a targeted video to create a hyper-realistic, yet fake alternative content (Kietzmann et al. 2020; Maras and Alexandrou 2019). Deepfakes can be created automatically, without the need for the artistic skill of a human. A DNN can be trained so that Obama utters the words Peele spoke, without the video being altered or edited in post-production using human effort and techniques. Consequently, deepfakes create fake content significantly differently from popular existing modification methods, including computer-generated imagery (CGI) techniques or Adobe's *Photoshop*.

To achieve this, deepfakes rely on specific network architecture known as an 'autoencoder' whose task it is to understand, *encode* and compress key characteristics of source image (e.g., how lips and eyes move, or the skin color or head orientation of a person) and then to *decode* the compressed version and create a fake face. For this training process, the encoder requires a lot of source material (e.g., videos of a person's face) to "learn" about its subject's main features. Once the original version and the copy cannot be told apart, the auto-encoder truly understands how the face "works," and with this information the decoder can now make the face in the video say or do anything at all. It can generate any image of the person it was trained on, whether such image previously existed or not. Once we understand how Obama's

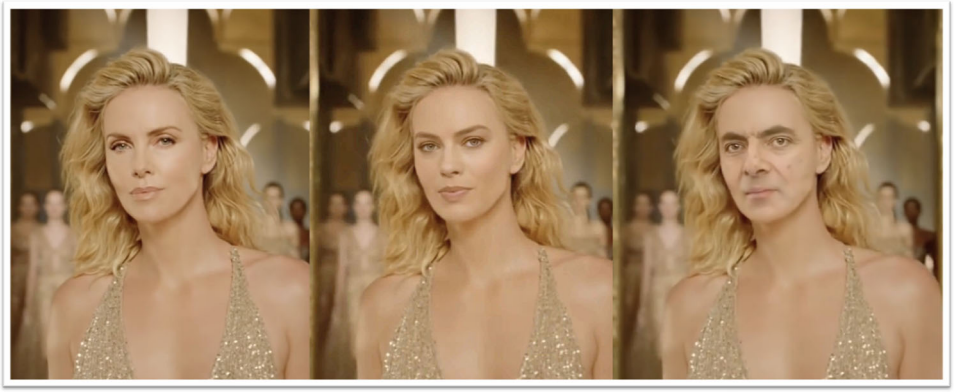

Figure 1. Deepfakes of Dior's J'adore Fragrance commercial.

head is oriented when he speaks, how his lips and eyes move, and so on, we have an "Obama decoder" with which we can generate whatever gestures and expressions we want for Obama. But, using the same technology, we can also revive celebrities from the past. The Dali Museum in Florida has an interactive installation of Salvador Dali who talks to visitors and even offers to take a selfie with them (Thompson 2019). Bringing back Michael Jackson for more Pepsi commercials is possible, and probably a very lucrative consideration. So-called "delebs" (dead celebrities) can be brought back to promote contemporary products without much difficulty now (D'Rozario 2016).

The autoencoder can also be trained on two people. Once an autoencoder understands how two faces (or voices, or bodies) work, it can make one face mimic exactly what the other one did. This type of deepfake is currently the most popular, with different individuals (not organizations) creating fake content to showcase their AI prowess and expertise in training autoencoders. For instance, in a deepfake of Dior's J'adore fragrance commercial, YouTuber Crookedpixel replaced Charlize Theron's face with Rowan Atkinson's. As a result, the once professionally-developed commercial now shows Mr. Bean's face on Theron's female body and head. The resulting deepfake was intended to be entertaining and "cringeworthy." Another deepfake of the abovementioned commercial (created by YouTuber Deepfaker), though, replaced model Charlize Theron's face with that of Australian actor Margot Robbie (see Figure 1 below[3]). The result is no longer awkward, but a genuine-looking commercial featuring Robbie instead of Theron. This example alone points to both tremendous risks and opportunities for advertising.

Deepfakes and advertising

Deepfakes, we believe, will change advertising as we know it because they are believable, accessible and novel. First and foremost, deepfakes are incredibly powerful because they are so convincingly "real." As the proverb goes, seeing is believing, thus individuals put a lot of faith in what they see with their own eyes (Granot et al. 2018; Porter and Kennedy 2012) and hear with their own ears (Brucato 2015). While we may be learning to distinguish fake news from real news (Plangger and Pitt 2020), it is

extraordinarily hard – almost unnatural – to question video "evidence" that we hear and see. This is especially true for deepfakes as individuals, over time, have developed a realism heuristic, meaning they are more likely to trust audio-visual media as it resembles the real world (Sundar 2008). This can be a fairly terrifying concept for advertisers as it would be very easy for someone to "spoof" an ad to make a brand spokesperson or character say or do something they actually did not, and in a very believable way.

Second, deepfake techniques are increasingly accessible to non-technical individuals. As with many other creative fields (e.g., graphic design, web design and photography) videography is a field where improvements in computing technology have, in an exponentially rapid and efficient way, reduced the need for human skill, training, cost and other entry barriers. Deepfakes may further remove the need for artistic talent, and today, people with little training, skill or investment can already create deepfake content with relative ease. At the time of writing, for example, the smartphone apps Zao or Doublicat provide a free deepfake face-swapping tools that can place anyone's face into short scenes from hundreds of movies and television shows. The results are still a bit rough and detectable, since these apps extrapolate facial features from a single "selfie" compared to the more convincing deepfakes that rely on volumes of video footage to train the autoencoder. However, the underlying algorithms are improving quickly, and it is inevitable that, quite possibly by the time you read this article, the technology will be available for anyone to "star" not only in high quality deepfakes of scenes from TV shows, but also in any commercial they want.

Third, deepfakes are exciting artifacts, as they are interesting, engaging and memorable to most people because of their novelty (Vosoughi, Roy, and Aral 2018). For instance, Doritos co-created an AI-powered app called Sway (Diaz 2020) that lets people visualize themselves as celebrities performing remarkable dance routines, then share their moves directly to Instagram, Snapchat, Twitter and TikTok. One of the most popular scenes in the app for users to deepfake themselves into is Lil Nas X's dance routine in Doritos' 2020 Super Bowl ad. Artifacts of this nature are extraordinarily easy to repropagate through digital networks and channels, including social media and instant messaging, which requires additional consideration of brand-related spillover effects related to social influence (Hayes, Shan, and King 2018; Baccarella et al. 2018), but also including more mainstream media outlets as well (Kietzmann et al. 2012; Mills 2012).

The realities of deepfakes in advertising

To more deeply appreciate the nuances of the impact of deepfake technology on advertising in particular, we must look beyond the obvious. Deepfakes are more than just "fake videos" that are highly believable, relatively easy to generate and very shareable – they impact the essential nature of consumers' relationship to advertising in several ways. To guide our understanding of how deepfakes change the world of advertising, we draw inspiration from the *Three Worlds* model of Karl Popper.

Popper (1978) looks at reality through three interacting, interconnected lenses that he terms World 1, World 2, and World 3. World 1 is the world of physical objects, "the world that consists of physical bodies: of stones and stars; of plants and animals"

(Popper 1978, 143). World 2 is the mental and psychological world of each individual person, comprising the personal perceptions, observations, thoughts, feelings, experiences and morality. World 3 is the world of collective abstractions and the means by which individuals make, and make sense of, Worlds 1 and 2. World 3 most closely approximates what we commonly understand as culture – the shared thoughts, experiences, expectations, knowledge, language, beliefs, values and meaning that thread the fabric of a given society.

Informed by Popper's three-dimensional perspective of reality, Figure 2 illustrates our reflection on the tripartite influence of deepfakes on advertising. We introduce each of the three nodes (artifact, perception and meaning) separately, and develop important arguments for how deepfakes and advertising will change through their interactions. Some of these points are may be controversial in nature, while others raise specific topics that will motivate future research.

Artifacts: deepfake ADS

Popper (1978) formulates these concepts in a pre-digital time, dominated by physical artifacts and analog technologies with objective affordances and constraints. As a result, by taking some conceptual liberties, we argue that to understand the shifting reality of advertising, we need to understand deepfakes and what they "afford" us to do. This includes process and outcome perspectives: how we can create ads differently with deepfakes, and how the resulting ads differ from the status quo.

Returning to the short description of the autoencoder above, we can use DNNs to auto-create fake but real-looking content, including audio and static and dynamic visual content. This allows us to rethink the agency of the consumer in advertising. With deepfakes, we have the opportunity to move from consumers-as-the-audience to consumers-as-co-creators of value in advertising. For instance, if people can already star in their favorite movie scenes, how about advertisers inviting consumers to replace models to perform in ads? In another scenario, consumers could use their personal decoder, as is illustrated in the Obama decoder mentioned above, not just for commercials, but also to enter virtual dressing rooms where they could see garments on their own bodies instead of on a model.

Taking this a step further, given the extraordinarily rich data about individual consumers drawn from online activity and social media profiles, advertisers will be able to dynamically customize ads and send signals to *individual* consumers to reflect their age, physique, hobbies and attitudes. As technology is enabling the fine-tuning of programmatic advertising and retargeting to approach the elusive "segment of one," deepfakes additionally enable dynamic audiovisual ad content to be generated for individual consumers – the ultimate in personalization. Evidence suggests that online advertising personalization is positively related to the ad's persuasiveness and perceived benefit (Ham 2017), and the increased personalization potential can lead to an increase in the desired (re)action of the consumer.

Aside from a consumer perspective, deepfake technology could potentially revolutionize the advertising industry, as it allows creators to quickly replicate—and perhaps replace—the hundreds of hours' worth of professional actors, makeup artists' work, and

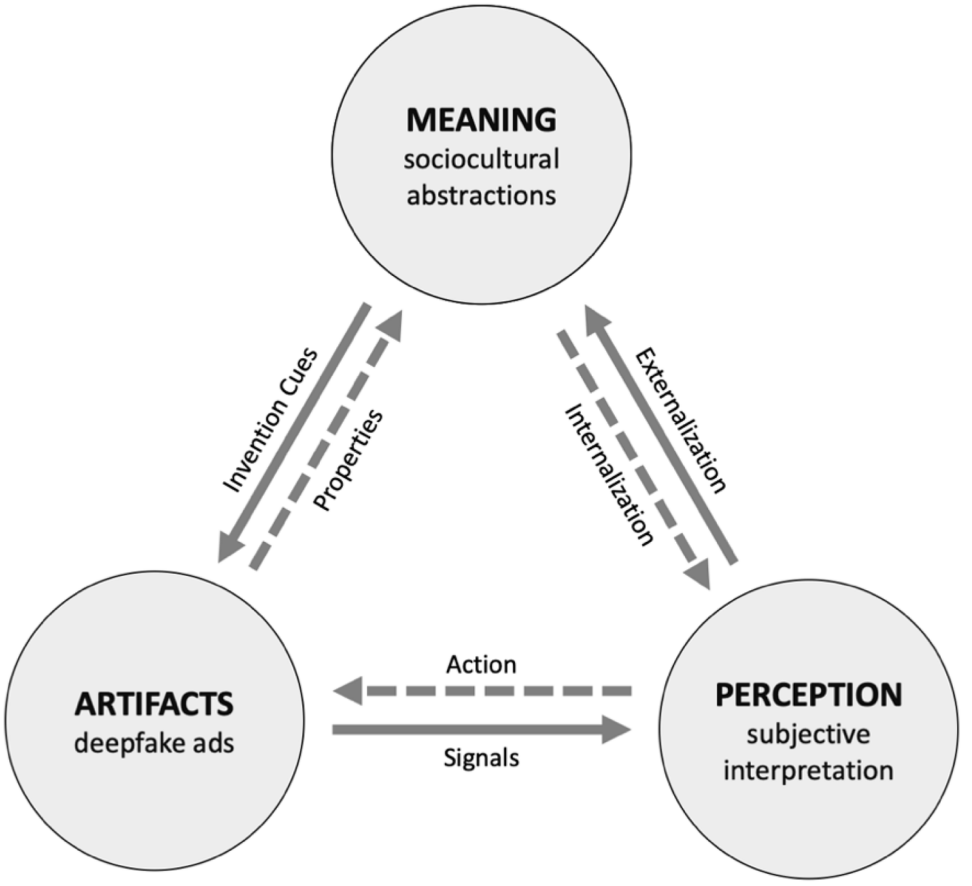

Figure 2. Conceptualizing deepfakes in advertising.

post-production efforts in mere minutes (Kietzmann et al. 2020). Models will no longer need to be flown-in for on-site shoots but can license their personal decoder to the ad agency with which ads can be auto-created using deepfake technology. Especially at times when physically co-located production is cost prohibitive or simply not possible (during a pandemic, for example), ad agencies can be creative and generate new commercials by altering previously recorded footage or creating new footage in-studio on demand. Agencies often benefit from immediate, real-time advertising response to events, as evidenced by Oreo's "Blackout" SuperBowl XLVII ad or Old Spice's "Responses" campaign, and deepfake technology opens the door to new pastures of creative possibilities. Aside from the video component of ads, translating ads into different languages for community targeting or global campaigns will take mere minutes.

Perception: subjective interpretation

The second node in our model, perception, relates to the subjective mental processes that determine how consumers *experience* deepfake ads or how they interpret, interact

with, and respond to advertised content (Mick and Buhl 1992). Advertisers have known, for at least a century, that the arousing, engaging and entertaining nuances of "soft sell" approaches to advertising (Beard 2004) are extremely effective methods of persuasion. Such appeals are those "in which human emotions are emphasized to induce an affective (feeling) reaction from the viewer" (Okazaki, Mueller, and Taylor 2010, 7), and are a particularly effective means of persuasion in deepfake ads when considering the concept of *truthiness*.

Truthiness is a consumer's attribution of validity based on how something seems or feels to them, independent from and regardless of its truthfulness (Berthon, Treen, and Pitt 2018; Berthon and Pitt 2018; Mills and Robson 2019). In the modern era of fake news it is often, and increasingly, the case that truthiness is more powerful than truthfulness: consumers experience a post-fact world that is experienced as one wishes it to be regardless of how it objectively is (Berthon, Treen, and Pitt 2018; Berthon and Pitt 2018). Rational, evidence-based "hard sell" approaches thus often fail to convince people to change attitudes or opinions due to confirmation bias, or a person's tendency to discount or ignore evidence that contradicts their existing attitude or opinion (Nickerson 1998). Repeated exposure to false information will lead to perceived truthfulness of that information, even when the credibility of the source is questionable (Roggeveen and Johar 2002). On social media, where most deepfakes spread virally, social proof underscores this effect: the perception of truthfulness is likely to be compounded by the popularity and social influence of the person or account sharing the video (Veirman, Cauberghe, and Hudders 2017; Johnstone and Lindh 2018). In other words, especially with deepfakes, truthiness can trump truthfulness leading to a range of questions advertisers will have to tackle.

In a world already preoccupied with discussions around fake news, decaying trust, and questionable authenticity (Nyilasy 2019), how will consumers respond to deepfake commercials? A recent study showed that a large percentage of viewers were confused about whether what they saw was real (Vaccari and Chadwick 2020). Will deepfake ads be seen as another way to mislead already skeptical audiences? Will everything we know about confirmation biases, selective exposure, desirability bias, repetition effects and priming in advertising (Gelfert 2018; Lazer et al. 2018; Van Duyn and Collier 2019; Weidner, Beuk, and Bal 2019) change in the context of deepfakes? Clearly, we do not yet know enough about this emerging deepfake technology and its impact on advertising audiences, and more work is certainly needed to test how established theories translate to a world of deepfake advertising.

Meaning: sociocultural associations

The third node in our model, meaning, represents how we, as a society, make sense of the artifact. The way consumers process information and their individual subjective interpretations are formed must be understood within a broader sociocultural context. The cultural lens shapes thoughts, experiences and expectations, and particularly when considering technology it reflects the adage that "we shape our tools and then our tools shape us" (McLuhan, in Culkin 1967) first individually and then collectively. In other words, when we share and externalize our individual, subjective interpretations,

over time we change how society views and makes sense of the world. As these shared sociocultural abstractions take shape, they are eventually again internalized and change how people think about the artifact. For example, as individuals become concerned with privacy and share their trepidations with each other, the overall idea of what privacy means changes. This shared view then in turn impacts our individual assessment of technology's properties and its potential to violate our rights to be left alone. Moreover, when our collective sense-making changes how we perceive the world around us, we also send invention cues that impact how future technologies are developed. With each generation of technological advancement, inventions, certainly the more successful ones, reflect and build upon the changes at the societal level. Their properties, as a result, are truly sociotechnical in nature. Interestingly, the wealth of human knowledge and other shared concepts such as fairness, trust, morality and ethics might actually matter more in the context of deepfakes and advertising, certainly in the long run, than the technology itself.

It is for these reasons that we need to study and understand our shared beliefs and sociocultural values before we race down this path, tempted by new technologies. It will be interesting to see how our individual and collective responses to early deepfakes shape the future development of deepfakes by advertisers. How will the overall social norms associated with advertising change when deepfakes appear in ads? How will the institution of advertising change? What role will deepfakes play in the future of advertisers and consumers? How will manufactured authenticity shape consumers' feelings about brands? Is the term "deepfake" itself too laden with negative connotations and meaning to allow us to move forward and view this type of technology in a positive light, such that we may leverage it for the strategic and tactical purposes of advertising professionals?

Risks and threats for deepfakes and advertising

As we can see, there are many opportunities associated with deepfakes in advertising. However, at this formative stage, each opportunity has many associated risks and threats that warrant further investigation. In keeping with the polemic nature of this article, we raise important issues, risks and threats from the perspective of the artifact (the deepfake ad), how it is perceived (consumers' subjective interpretations of the deepfake ad) and how the sociocultural meaning of advertising might change as a result of deepfake ads.

Regarding the artifact, as is usually the case with digital technologies, legal frameworks trail technological innovations. There is little legal regulation surrounding the creation and dissemination of deepfakes and the few laws that do exist vary dramatically; in the United States for example, while no federal law exists at the time of writing, several states have adopted legislation but they "vary in scope, penalties and focus" from state to state (Ruiz 2020). We anticipate that inevitable future legislation and regulation will assess the overall legality of deepfake content, the propriety of algorithms used to create the content, and data ownership – i.e., when advertisers feature customers in their ads, who owns the data, where are the data stored, for how long, and how are they protected and eventually destroyed. Some existing legislation

focuses on the individuals portrayed in the deepfakes; for example, a New York bill deals with digital inheritance and post-mortem privacy, and how to manage the rights to a deceased person's digital likeness (Howes 2018).

Often, industry leads the regulatory charge before policy-makers, in an effort to maintain competitive rights to ideas, processes and products. For instance, in 2019 Facebook ran a Deepfake Detection Challenge (Coldewey 2020), and the DeepTrust Alliance works hard to ensure that deepfakes do not disrupt the 2020 and future United States Presidential elections (Solsman 2020). Technology companies may place watermarks or digital signatures on their content in order to help identify authentic versus deepfake content. On the one hand, the lack of a clear legal landscape and the resulting uncertainty makes creating deepfake advertising potentially problematic. On the other hand, the fact that above-board deepfake ads created by agencies with the approval of all parties involved are as yet unregulated means that advertisers can, at least for now, have complete creative control over the generation and distribution of ads that leverage deepfake technologies.

Concerning the consumer perception and interpretation of deepfake ads, much more work is needed to understand the risks associated with AI-generated content. Technologists, focused on delivering instrumental value through the artifact, might miss the paradoxical impacts of digital technology. For instance, Google's efforts to create a human-like virtual telephone with its product Duplex (Chen and Metz 2019) were so successful that they spurred heated debate almost immediately after it was introduced, with people demanding that virtual assistants self-identify to let people know that they're not talking to a real human on the phone. With deepfakes, the synthetic becomes indistinguishable from the non-synthetic, and thus future research can and should assess if deepfake ads might actually be *too* eerily real-looking for consumers. Likewise, it is not yet clear how people will respond to hyper-personalized ads. When advertisers create ever-more-personalized ads for each individual consumer, how will consumers weigh the convenience and value of personalization against the perceived violation of their privacy?

As for the overall meaning that people associate with advertising, one of the biggest issues might be that misinformation, disinformation and fake news all contribute to a trend of skepticism toward information truthful or otherwise, and perhaps even a post-truth society (Nyilasy 2019). Society is so untrained to detect and respond to fake content, that human rationality and irrationality compete. The "Liar's Dividend" (Chesney and Citron 2019, 1753), for example, suggests that exposing content as fake or synthetic can actually have the adverse effect of stoking belief in the fakery. The "Sleeper Effect" (Hovland and Weiss 1951), as another example, posits that even if consumers know that they were exposed to fake content, the persuasive effects of that content still have a lasting influence on later perceptions, even when the credibility of content is shown to be questionable or even misleading. In other words, even if consumers are cynical toward AI-generated synthetic ads, messages in those ads are inherently more persuasive in the long run.

Truth skepticism arises, leading to an erosion of trust in content overall, including both real and fake content. How the perception of advertising will change when deepfakes are used more prominently remains to be seen. What is certain, though, is that

there are plenty of areas for practitioners and scholars to explore as the technology matures and makes inroads into the advertising industry.

Conclusion

Our intention in this perspectives article is threefold. First, we hope that a brief introduction to deepfakes creates an appetite to learn more about artificially generated content and its impact on advertising and the brands advertisers represent. This, we anticipate, will lead to a better understanding of the artifact and to the formulation of many important questions and deepfake ads. Second, it is our intention that this discussion highlights important considerations on consumer side of the advertising equation, such that advertisers critically consider the broader implications of using deepfakes before rushing to integrate the alluring new technology. Third, we hope that this piece serves as a stimulus for important discussions among advertisers about how this new technology might change the role that advertising plays in our society. Just in the time spent writing this piece, articles were widely shared in which The Economist discussed how deepfakes and AI disinformation might destroy society (K.N.C. 2020), The Washington Post warned that deepfakes will erode trust in news media (Vaccari and Chadwick 2020), and Forbes contemplated that we are not prepared for the havoc that deepfakes are going to wreak (Toews 2020). We hope that our short article motivates advertisers to lead similar discussions of how deepfakes can and will change advertising, for better and for worse.

Notes

1. https://www.youtube.com/watch?v=cQ54GDm1eL0
2. https://www.instagram.com/p/BypkGlvFfGZ/
3. Of course, the real impact of the deepfake versions of the original commercial are best examined in the videos. We generated and posted a side-by-side compilation at https://bit.ly/jadoredfs.

Disclosure statement

No potential conflict of interest was reported by the authors.

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