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EXPANDING THE PERSPECTIVES ON AFFECTIVE SCAFFOLDINGS: USER-RESOURCE INTERACTIONS AND MIND-SHAPING IN DIGITAL ENVIRONMENTS

1. Introduction

4E approaches[1] have brought the environment back to the center stage of our affective life after a period of pure cognitivism [Newen *et al.* 2018]. Tools and contexts are not just considered to be inputs that lead to "brain bound" affective states but elements that shape our affectivity

[1] The "4E" in 4E approaches to cognition and emotions stand respectively for *embodied*, *embedded*, *extended* and *enacted* cognition. Each of these aspects stands for acknowledging the role of the body and of the environment in structuring human cognition in a particular way. *Embodied* cognition examines how our (extracranial) bodily makeup contributes to cognition. *Embedded* and *extended* cognition focus more on the ways in which the environment impacts human cognitive abilities. They differ in the degree to which environmental structures are said to shape cognition. *Embedded* approaches claim that external props and institutions causally sustain cognition while *extended* approaches take a more ontologically demanding stance and maintain that the former are a constitutive part of our cognitive processes. *Enacted* approaches, instead, are more vocal in describing cognition as emergent from the interactions between an organism and its environment. See Newen *et al.* [2018] for an overview. More recently, the 4E approaches have also been applied to affectivity.

in deeply entrenched and pervasive ways. So far, the debate around how the environment regulates human emotions has produced two different perspectives. On the one hand, the user-resource perspective conceives of situated emotions as stepping from a conscious individual manipulating various tools to regulate her affective life [Krueger & Szanto 2016]. This perspective presents the figure of the *homo faber* as an individual whose creative material engagement with its surroundings has been crucial in developing new (cognitive) skills [Ihde & Malafouris 2019]. On the other hand, the mind invasion perspective conceives of humans and their affectivity as the products – *homo facto* – of the contexts they inhabit [Slaby 2016]. Here emotions are situated because contextual factors "reach into" the individuals by transforming their affectivity in context-advantageous ways that often are detrimental to the individuals. Authors have recognized these perspectives as two sides of the same coin – and much has been said about the mutual relationship that individuals and the environment entertain in shaping cognition and affectivity [Colombetti & Krueger 2015; Ihde & Malafouris 2019; Varga 2019; Stephan & Walter 2020; Coninx & Stephan 2021]. In particular, enactivist approaches have placed a heightened emphasis on describing how cognition and affectivity are a matter of a continuous and dynamical organism-environment coupling that keeps evolving and readjusting as changes occur in either of the party involved [Thompson 2007; Gallagher 2017; Maiese 2019; Maiese 2021a]. On the one hand, «autonomous agents […] actively generate and maintain their own coherent patterns of activity» [Maiese & Hanna 2019, 16]. On the other hand, every «social institution exerts normative constraints on minded animals that partially determines their patterns of behavior and attention» [*ibid*., 39-40]. It is their continuous entanglement that gives rise to situated affective experiences. Relatedly, the complex interdependences between individual engagements and environmental contingencies in carving affective experiences have also been systematized in taxonomies that investigate the impacts of various material and social aspects along both a synchronic and a diachronic timescale [Colombetti 2020; Stephan & Walter 2020; Coninx & Stephan 2021]. Recently, Krueger and Osler [2019] observed how affective experiences in online environments entail the joint contribution of users' actions and algorithmic infrastructure. In

their article, the authors call for a growing need to analyze the influence, dynamics and contours of internet-based affectivity. I take up their suggestion and argue that online environments exemplify an under-researched testbed to appreciate how situated affective experiences often unfold through a continuous alternation and integration of user-resource interactions and mind-shaping phases. Specifically, I contend that 1) the flexible and personalized material architecture of social media platforms, 2) the social character of online (group) interactions and 3) the smartphone-enabled notifications and permanent availability make the user-resource and mind-shaping activities fast-paced and uninterrupted. My analysis aims to highlight the increasingly intrusive mechanisms of online environments (platforms) that keep expanding their reach outward toward new domains in the form of data to package engaging experiences. Crucial to my analysis is that, compared to offline environments, platforms are much faster in integrating and recombining user-resource interactions in their mind-shaping mechanisms.

First, I introduce the paradigm of situated affectivity and the debate around the user-resource interactions, (mind invasion) and mind-shaping perspectives. Second, I present the concept of social media platform and map out some socio-material characteristics that shape users' affectivity online. Third, I elaborate on other mind-shaping dimensions of online groups using the notion of affective arrangements: relational socio-material ensembles that provide prepared occasions for affective engagements [Slaby *et al*. 2019]. Fourth, I examine the smartphone as a hybrid super-artifact that enables the alternation and subsequent integration of user-resource interactions and mind-shaping in online environments. Last, I present radical online groups (echo chambers) as a case study of such alternation.

2. Situated affectivity and its models: user-resource, mind-shaping and mind invasion

Advocates of 4E approaches conceive of affectivity as situated. What this means is that our affective experiences should not be considered only as intracranial phenomena but as involving our body and environment in pervasive ways [Griffiths & Scarantino 2009; Stephan *et al*. 2014;

Colombetti & Krueger 2015; Krueger & Szanto 2016; Maiese & Hanna 2019; Colombetti 2020; Stephan & Walter 2020; Coninx & Stephan 2021; Maiese 2021b; von Maur 2021]. Studying how the environment and our body contribute to shaping our emotional life has yielded two fruitful but debated models. The first one is what Slaby calls the user-resource model [Slaby 2016]. Considered to be the default perspective for studying how the environment and our body contribute to shaping our emotional life, the user-resource model takes situated emotions as starting from conscious individuals that use particular environmental resources to achieve an affective state. Examples of this model range from watching a movie to feel excited, taking pills to calm down and hanging out with a friend to feel happy [Colombetti & Roberts 2015; Carter *et al*. 2016]. In all of these cases, the individual is the initiator of the environmental manipulation and exploits a resource to feel a particular way. The environment, though indispensable for the affective experience, is usually examined after the individual decision-making has already occurred and is taken into account in different degrees. In some cases, like taking Prozac, there is little reciprocity between the agent and the resource. In other cases, like visiting a friend, the mutual influence between the individual and the external factor is more visible [Stephan & Walter 2020]. For example, feeling happy *through* a friend involves first the initiative to visit such a friend which later evolves into an actual meeting made of different moments of progressive adjustment between the two parties, such as chuckling to each other's jokes and telling shared moments of the past. In such cases, the affective experience is structured by the coupled system constituted by the two friends who engage in a continuous feedback loop of reciprocal attunement.[2]

Usually, the environmental resources that support our affective life – our affective scaffolds – meet two dimensions: trust and individualization [Sterelny 2010; Colombetti & Krueger 2015; Saarinen 2020]. Trust concerns the perceived reliability that a resource will have some desired effects. For example, based on prior experience, we might

[2] A complete examination of the kinds of user-resource interactions would exceed the scope of this paper. For well-elaborated taxonomies about the interaction types involved in situated affectivity, see [Stephan *et al.* 2014; Colombetti 2020; Stephan & Walter 2020; Coninx & Stephan 2021; Viola 2021].

be confident that drinking a beer with friends will wash down the stress of a workday. Individualization indicates how much an individual has tailored certain resources to her personal affective purposes and it usually goes hand in hand with trust: the more a resource is individualized, the more it is trusted. Objects and activities are all possible candidates for individualization. Consider the increasing use of personalized playlists to boost one's own workout session: individuals can choose which songs to include, in which order they come and can freely skip from one track to another [Krueger 2019].

Slaby [2016] criticizes the user-resource model as being shortsighted. According to him, analyzing affective states as departing from a conscious individual who manipulates a variety of tools does not do justice to the complex ways in which the context shapes our emotions. He reverses the perspective and argues that another profitable viewpoint to examine how affectivity is situated is to consider the «pervasive framing and molding effected by aspects of technical infrastructure and institutional realities». He calls this perspective mind invasion [Slaby, 2016, 6; see also Gallagher 2013]. In cases of mind invasion, we do not have a conscious individual coupling with a resource to reach an emotional experience, but an individual whose affectivity is modulated – from without – by the techno-social environments she inhabits. Importantly, such affective modulation can escape conscious awareness and go against the interests of the involved individuals. To elucidate his perspective, Slaby pictures a new intern at a company. In her first few weeks, all the informal interactions, practices and slang between her colleagues will seem odd and foreign. However, as time goes by, contextual pressures will push her to adjust her movements, comportments and behaviors to such foreign elements until she becomes a well-oiled gear in the company. Slaby argues that the intern undergoes a context-driven attunement process that progressively *hacks* her mind, pushing her to develop a kind of affectivity in line with the one sanctioned by the company. Mind invasion represents an important outside-in expansion of how affectivity is situated, an expansion that moves the spotlight of affective experiences from individual decision-making to normative socio-contextual pressures such as feeling rules, rituals and practices [Hochschild 1983; Scheer 2012; Parkinson 2020].

Other authors also acknowledge the usefulness of each of the two perspectives but argue that they are still underdeveloped when it comes to considering the complexity of situatedness. For example, von Maur [2021] is concerned that most situated accounts consider the import of the body and the environment in affectivity only along a here-and-now timeframe while ignoring the influence of the «broader socio-culturally and historically specific biographical context» [von Maur 2021, 2]. To obviate this shortcoming, she builds up a multi-dimensional approach that explains the concrete immediate affective engagements also in virtue of the subject's affective biography: sedimented and learned modalities of affective interaction that people acquire since childhood and that vary both in time and place. Moreover, using notions from both cultural and affordance studies, she argues that personal affective biographies are always inserted in and conditioned by a set of social practices and forms of life intended as «transpersonally shaped forms of expression with public relevance» [Jaeggi 2014, 22]. The main takeaway of her account is that analyzing situatedness considering only the physically present bodies and environmental structures during an emotional episode is insufficient and gives us an incomplete picture of how affectivity is situated. The "here-and-now" bodily movements and environmental manipulations are also the result of an enculturation process made up of skillfully acquired social practices and technological artifacts [Candiotto & Dreon 2021; von Maur 2021]. For example, analyzing the anger and annoyance of motorists stuck in traffic as situated only due to the temporary feedback loop created by the vehicles, the traffic lights and the drivers involved, leaves out an internalized "road rage" form of life that conditions the execution of specific behaviors like honking and tailgating [Katz 1999; von Maur 2021].

Her approach comes in close contact with recent enactivist attempts to detail the tight-knit connection between individual engagements and environmental pushes in shaping cognition and emotions. Enactivism-inspired accounts have tried to investigate the influence of different "mental institutions" on cognitive and affective practices – from legal systems up to educational settings [Gallagher & Crisafi 2009; Slaby & Gallagher 2014; Maeise 2021] – and pointed out that, often, the influence of such institutions on one's cognitive apparatus consists

in the internalization of a series of cultural norms that translates into specific habits [Maiese & Hanna 2019; Candiotto & Dreon 2021; von Maur 2021]. Following a pragmatist turn, habits are defined as «self-stabilizing patterns of behavior and attention that vary depending on context and what sort of activity is unfolding» and allow individuals to adapt to the socio-material environment they engage in [Maiese 2019, 4; see also Dewey 1983]. For instance, specific greeting habits based on gestures (e.g., kissing, bowing), social roles (e.g., family members vs. colleagues) and other forms of coordination (e.g., who should initiate the greeting) enable people to smoothly navigate different domains from an early age.

Some of the above authors make habit a linchpin of their analysis and the site in which user-resource and mind-shaping influences come together in scaffolding the agents' experiences. Habits, in fact, are characterized by a double push. On the one hand, as «consolidated ways of facing circumstances» [Candiotto & Dreon 2021, 2], they exhibit a recursive dimension that risks turning them into ossified (and sometimes dangerous) routines: what Maise [2021a] labels *cognitive walls*. Along these lines, she identifies racist practices in Western societies as deeply-ingrained automatic habits [Maiese 2021b; see also Ahmed 2007; Al-Saji 2014]. On the other hand, habits showcase a flexibility that makes room for an agent-based refurbishment of some previously acquired behaviors and, to a larger extent, of the institutions that subsume them [Maiese & Hanna 2019]. For instance, according to Maiese and Hanna [2019], detrimental institutional routines that forestall human flourishing could be countered by an active reflection on the kind of habits they promote.

Similar to Maiese and Hanna [2019], Coninx and Stephan [2021] develop a taxonomy of scaffolds that advances the debate by adopting the notion of *mind-shaping* [Zawidzki 2013] as a more encompassing alternative to the notion of mind invasion. The notion of mind-shaping covers cases of mind invasion but also cases in which individuals are fully aware of the context-driven affective modulations, or in which the latter are not detrimental to the former. On some occasions, individuals might recognize contextual pressures at work and even welcome them as affective regulators. Stephan and Walter [2020] describe attending psychotherapy sessions along these lines. Here the patient seeks out a

therapist to set up some mind-shaping mechanism that will help her feel better.[3] On other occasions, these contextual pressures might go unnoticed but still be welcomed by individuals.

The above-mentioned research elucidates how mind-shaping and user-resource interactions are two sides of the same coin offline, but leaves out an important area of uncharted territory where the two conflate with equal magnitude and along new temporal and socio-material parameters: online platforms. Piling on and complementing previous work [Krueger & Osler 2019], in my analysis I want to show that the design of social media platforms, their interaction mechanisms and the portable devices we use to access them – e.g., smartphones – structure affective episodes in online environments via a continuous switch between user-resource interactions and mind-shaping phases. In short, unlike offline environments, smartphone-mediated online interactions are characterized by 1) users' permanent availability and 2) a continuous flow of personalized notifications that leaves the users more in control to tailor their affective experiences to their taste while being the target of uninterrupted mind-shaping solicitations. To flesh out my argument, an in-depth analysis of some socio-technical aspects of today's digital infrastructure is now in order.

3. Social media, interfaces and personalization algorithms: users' affective engagements on platform's terms

Affective experiences in online environments are disproportionally social and distributed compared to offline ones [Krueger & Osler 2019]. Online users seldom structure their emotions on their own just by coupling with a resource. Surely they can watch a video alone to feel excited or angry but isolation, online, is rather the exception. More often, what happens on the internet is that different users come together to mutually shape their affective experiences by liking, sharing and commenting on each other's contents. For example, a default scenario for online happiness might be Mark uploading a picture of his newborn

[3] Note that Stephan and Walter [2020] initially broadened the term "mind invasion" to also cover such beneficial cases.

to his Facebook page and relatives, colleagues and friends reacting with hearts, likes, hugs emojis and congratulatory comments to which Mark will probably respond with hearts, likes and "Thank you" answers. As a result, on the internet, it seems more promising to apply distributed 4E approaches that analyze affective states not as extending from single individuals but as emerging from a loosely coordinated set of individuals adjusting to each other's moves [Hutchins 1995; Stephan *et al*. 2014]. What is more, the inherently social character of emotions in online settings becomes clear when one considers how the material infrastructure of today's internet is designed to program sociality itself [Bucher 2018]. Since 2004, the internet has undergone a platformization shift, and users now interact on platforms like Facebook and Twitter [Van Dijck *et al*. 2018]. Experts in internet studies have argued that the concept of platform gave social media companies multiple advantages in organizing sociality online. On the architectural side, platforms are delimited spaces that allow users to express their opinions and connect with different communities of interest [Gillespie 2010]. On the computational side, platforms, as infrastructures to build applications on, enable social media relations to be transferred to and resumed on other locations like webpages and apps. Thus, social media have porous boundaries by design to promote the expansion of their programmed sociality throughout the Web [Helmond 2015]. For example, new services like TikTok present a "log in with Facebook" widget: once a user clicks on it she is immediately prompted to continue her Facebook interactions with friends who also use the service. Take again Mark who just registered on TikTok through Facebook to share short videos of him "playing with the baby". Upon registration, he was prompted to add his Facebook friend Sue to his TikTok followers. Sue now (re)participates in Mark's affectivity not with a simple comment but by mimicking Mark's 30-second footage of her "cuddling her daughter". In so doing, Mark's Facebook-based affectivity continues on a new platform through resuming, in new ways, the social relations already established.

From a user-centered perspective, online platforms seem like a vast toolkit of resources to regulate emotions. There are platforms for listening to music, dating people and watching movies. However, resource manipulation can only be carried out on platforms' terms: are free to

scaffold their affective environment as long as such environment complies with the platform interaction logic. As said, a platform is an «architecture designed to organize interactions between users» [Van Dijck *et al.* 2018, 9]. As such, platforms are not simple resources enabling people to carve up one's emotions but whole socio-technical systems geared toward making people's behavior and emotions conform to platform-sanctioned participation. Put differently, just like any other institution,[4] platforms also present a strong mind-shaping side that "reaches into" individuals and turns them into platform-ready users [Slaby 2016; Krueger & Osler 2019; Mühlhoff *et al.* 2019]. To analyze the powerful ways in which platforms have a formative role in users' affectivity, I will apply the technological seduction model elaborated by Alfano and colleagues [2018] to show the internet's influence on human cognitive capabilities.

Alfano *et al.* [2018] propose that platforms reach into users' cognition and, I argue, into users' emotions through a double-sided normative movement. On the one hand, we have top-down seduction made by the choice architecture of social media developed by designers into an interface. When stepping on social media, users' free interactions are confined within the features made available by the platforms and participants are not only forced to express their affective reactions using those features but encouraged into accepting them as interaction modes. On Facebook users are forced to structure their affectivity according to an architecture divided into personal pages, groups, and commercial pages on which to act using an array of programmed social buttons: adding a friend, sharing, replying, and adopting a series of emoticons [Gerlitz & Helmond 2013]. As the frequency of use increases, Facebook's top-down seduction "reaches into" the users and becomes a natural frame to shape affectivity online. However, the mind-shaping of top-down seduction is only half of the story. The Facebook interface is just a digital variant of a mechanism we encounter in every setting from education up to grocery stores [Thaler & Sunstein 2008]. Think about how supermarkets are designed to encourage the purchase of products at the checkout points.

Top-down seduction is complemented by a bottom-up counterpart,

[4] See, for example, Maiese [2021b] for the cognitive impact of online education.

that is the capability of (some) social media to provide suggestions based on users' aggregated data [Alfano *et al*. 2021]. Bottom-up seduction is interesting because – unlike the top-down one which stays the same across all users – it prescribes tailored emotional pathways for every individual [Alfano *et al*. 2021]. On some social media platforms like Facebook and Instagram, sociality is scaffolded by personalization algorithms: computational filtering processes that contribute to determining which contents and social relationships a user is likely to consume or engage in. They do so by recording users' internet history and geolocation: visited places, exchanged messages, past likes and watched videos [Bozdag 2013]. Having algorithmic recommendations in charge of structuring one's affectivity – this appears to be the case on Youtube where 70% of watching time is platform-driven [Solsman 2018] – leaves users exposed to both beneficial and dysregulative mind-shaping [Krueger & Osler 2019; Heersmink 2021]. On the beneficial side, think about a user watching a recommended Ricky Gervais video to lift her mood and finding herself on a platform-driven comedic binge across George Carlin and Bill Hicks. On the dysregulative side, consider how personalization algorithms on Facebook have triggered sadness in users by suddenly serving up pictures of their deceased partners [Gillespie 2018].

As we will see in section five, beneficial or dysregulative mind-shaping and user-resource manipulation can alternate within the same affective experience. For now, it is important to highlight how platform-based affectivity is situated in a programmed sociality whose mechanisms partially lie outside of the control of the single users. Online, users move in porous affective spaces – platforms – in which algorithms, interfaces and other users coalesce to shape the affective states of the former. To appreciate in more detail other dimensions of the mind-shaping mechanisms of online groups on platforms and the role that individuals play in them I now introduce the concept of affective arrangement [Slaby *et al*. 2019].

4. Platform-based emotions as affective arrangements

Slaby *et al*. [2019] define affective arrangements[5] as unique constellations of heterogeneous elements related in such a way to form local affective sites of social life. Arrangements involve people, artifacts, practices and materials coalescing into a composite formation kept together by a mutual affecting and being affected. Consider a techno rave, the upbeat atmosphere cannot be attributed to any single external resource but is the result of the socio-material relations weaved by loud music, lights and people dancing [Stephan & Walter 2020]. Applied to social media groups this definition helps to flesh out the social and distributed character of affectivity online. Against the background of the notion of affective arrangement, affectivity is relational as it neither lies in single users nor in any other components of the arrangement but in the specific tangles of relations that keep them together. Following this logic, we can conceive of affectivity on Facebook groups as shaped by how the relations that algorithms, users, recommended contents and the interface interlace. For example, the supportive climate on a cancer post-treatment group comes out of the algorithmically organized relations between stories, videos and comments posted by the members.

Arrangements must be approached along a double perspective: 1) as organizational set-ups of concatenated elements; 2) as zones of affective intensity. Whether zones with a particular atmosphere or socio-technical set-ups, Slaby *et al*. [2019] point out the fundamental mind-shaping effects of arrangements. They claim that arrangements harness affective relations by orienting people's behavior through structured occasions for participation. Slaby *et al*. [2019] discuss teamwork as an arrangement, claiming that this work management system establishes a horizontal tangle of relations in which individuals cover different

[5] The concept of affective arrangement exhibits a relational perspective that comes close to the one of niche construction and affective niches [Sterelny 2010; Colombetti & Krueger 2015]. Both, in fact, highlight the importance of organism-environment entanglements in structuring affectivity. However, arrangements distance themselves from niches as they place less emphasis on the manipulative action of the agents in carving up a fit environment and concentrate more on the relational dynamics between different socio-material elements that weave together local layouts of affective intensity.

"affective roles". There will be the "industrious workaholic" who keeps the team focused, sometimes to the point of exhaustion, the "problem solver" that might reassure other members about their work, and the "go-to guy" to have a laugh after hours of productive work. The affectivity of the arrangement exudes from the internal relations they establish. Online communities can be described along similar lines. For instance, spending time in an antivax online group introduces users to a tense absorbing atmosphere created by users taking up different roles: there are "information gatherers" who keep posting a vast array of contents on vaccines' supposed dangerousness; there are "liker-commenters" who sustain the tense atmosphere by reacting to every piece of content that enters the arrangement; there are "sharers" who expand the arrangement across the Web by sharing group posts on other pages.[6] As this example shows, arrangements are delimited but open-textured [Slaby *et al*. 2019]. On the one hand, they are characterized by an immersive affective threshold – the antivax atmosphere is confined to the group page. On the other hand, they tend to expand outward and attract new people. For instance, antivaxxers can transfer their group atmosphere on other platforms like Instagram and Reddit. Open-endedness has a special magnitude online as it qualifies as a structuring feature of platforms. Platforms generate their revenue from targeted advertisement; hence they aim to turn other portions of the Web into platform-compatible environments in order to pull new users within their reach. In other words, platforms (owners) aim to widen the extent of their mind-shaping mechanisms to the whole of the internet and offline environments [Zuboff 2019]. Being an inherent feature of platforms, in cases of online affective arrangements, I would not speak of open-endedness – intended as the capability of arrangements to include new elements – but of *expandability*. Expandability is the programmed tendency of platforms to expand outward through both 1) the interface of the Web which allows the instant in-between-platform transfer of users and materials; 2) the platformization of the Web outlined in section 2.

Last, the concept of affective arrangement highlights another important dimension of online groups: the, sometimes, "messy" way in

[6] For further discussion on the epistemic and affective dynamics in online communities, see Nguyen [2020]; Osler & Krueger [2021].

which their affective dynamics come into being. On the face of it, the word arrangement suggests a well-ordered socio-material setting functioning smoothly, an organic unity of parts intended to promote certain kinds of affective relations [Slaby *et al*. 2019]. However, this is again just half of the story. Arrangements organize different elements into functioning relational compositions. Yet they do so in a fragmented improvised way. Alongside planned architectural design and sedimented cultural rules, Slaby *et al*. [2019] point out how the constellations of elements making up an arrangement are the results of historical drifts, accidental encounters and sudden changes. In other words, arrangements are strange compositions whose elements never homogenize but combine in "cranky" unforeseen fashions [Nail 2017]. With regard to this point, the value of chance encounters and involuntary mishaps is a common rule in the rise of online phenomena. The far-right movement called Alt-Right, for example, has instantiated a paradoxical *playful dehumanization* of immigrants and other minorities networked throughout an array of online platforms designed originally for image and meme sharing [Ebner 2020; section 5]. Here the "chance encounter" between a tech-savvy far-right group and the technical character of anonymous imageboards has allowed the Alt-Right to establish an affective atmosphere conducive to radicalization. Seen from the outside the *playful dehumanization* of immigrants through coded language, racist memes and doctored footage that systematically compare immigrants with animals or bodily fluids seems hardly explicable. However, such online affective arrangements have contributed to creating a well-established extremist movement which on a softer level impacted on 2016 US elections and on a harder level inspired lone-wolf attacks [Hawley, 2017].

In this section, I have shown how the notion of affective arrangement helps pinpoint the social and distributed character of affectivity online while elaborating on the mind-shaping mechanisms of digital environments. Conceiving of online groups on platforms as affective arrangements zooms in on the mind-shaping side of situated affectivity. Here, individuals cover different roles in structured tangles of relations that shape their individual affectivity according to the arrangement advantage. Moreover, the expandability of online affective arrangements makes mind-shaping particularly pervasive. Having provided an initial

examination of mind-shaping mechanisms online, it is now time to shed more light on the user-resource (interactions) side of the story and see how online mind-shaping environments are accessed and switched through a user-powered artifact: the smartphone.

5. Smartphone-accessed: Online platforms in the user's hands and back

Social media platforms have become a pervasive part of our affective life because we carry them with us all the time. The biggest difference between online and offline environments is that the former do not require our whole physical presence to be experienced. What they require, however, is specific artifacts that enable and mediate our access to them [Smart *et al*. 2017]. The dominant artifact used today to access the internet is the smartphone.

Philosophers of technology and cognitive science have started to dissect the functions of smartphones in scaffolding our cognition and emotions [Smart *et al*. 2017; Fasoli 2018; Krueger & Osler 2019; Hipolito *et al*. 2021].[7] One of their distinctive features is their inherent multifunctionality: they cannot be defined according to a closed list of functions [Fasoli 2018]. Smartphones have touched upon every aspect of our life and are used to read and send messages, navigate spaces, retrieve information and order food. Furthermore, media psychologists point out the social role played by these material artifacts, that is, individuals use them to manage their social relationships [Cumiskey & Ling 2015]. Smartphones are now mostly used to make plans with friends, exchange emails with colleagues and reach out to distant relatives. Moreover, portability allows users to carry out this emotional

[7] The analysis of artifacts as cognitive and affective scaffolds – «material objects […] that have the capacity to alter the affective condition of the agent» [Piredda 2020, 550] – favors a user-resource perspective of situated affectivity. Artifacts are examined as influencing cognition and emotions by enhancing the degree of overt control that individuals exert over environmental manipulations [Hutchins 2010; Malafouris 2013; Piredda 2020]. Partial exceptions are Heersmink [2021] and Viola [2021], who mention the possibility of examining the mind-invading aspects of artifacts and personalization algorithms.

management on a constant real-time basis. Social psychologists have found out that the smartphone-enabled possibility to micromanage one's own social life provides users with a strong sense of control over their relationships and the consequent affective life [Ling 2012]. For instance, think about organizing a football match between friends in the '80s and now. In the '80s friends had to use wired home phones, that is, a stationary technology in a fixed location. This means that the attempt to set up a multi-agent communication was quite laborious and restricted: you had to perform multiple calls to multiple friends to schedule a time and place and hope that everybody would keep to that schedule. Now you can access your social media or instant messaging services and approach all of your friends with a single text while adjusting sudden changes on the fly. In other words, smartphones allow you to govern the social media affective experiences on your own time. They help users micromanage an "always there" user-resource interaction according to their own needs. Alongside control over one's relationships, permanent availability augments also the social cohesion of these relationships making some people I choose to connect with more intimate and trusted [Cumiskey & Ling 2015]. A third characteristic of smartphones that shows the deep connections between sociality and materiality online is given by their Graphic User Interfaces (GUIs) [Fasoli 2018]. Conceived as a feature to promote smartphones' multifunctionality and switch quickly between different tasks, user-friendly GUIs enable users to fine-tune the management of their social relationships by moving frictionlessly between different social media platforms. As said, it takes a few seconds for users to share the same post on multiple social media platforms. In virtue of their limitless multifunctionality Fasoli [2018] proposes to call smartphones super-artifacts.

However, smartphones are peculiar hybrid artifacts. On the one hand, they enable a fine-grained manipulation of one's social relations. On the other hand, permanent availability comes at a cost that brings the mind-shaping and invading aspects of social media to the users. Permanent availability is a two-way street and while it certainly allows users permanent access to their social media relations, it leaves them exposed to different socio-environmental pressures: it makes users the target of other's messages [Krueger & Osler 2019]. Consider for

example, how often people get caught off guard by an unexpected sad message that changes their current emotional state. What is more, social media have designed an array of notification algorithms that instantly update the users about personally relevant goings-on on social media. For every new message, post, or like the users receive, the system immediately tries to prompt them into engaging in the updated affective relationship. In other words, social media updates seem to quench the "fear of missing out" – promoted by permanent availability – that leads users to regularly check their social media platforms [Ling 2012]. Moreover, the GUIs and multifunctionality of smartphones also fuel an absent-minded habitual use that may nudge users into spending an unintended long amount of time on social media and, as a result, they get habituated more and more to the (affective) dynamics of their own social media relationships [Bruineberg & Fabry 2021]. Having my smartphone always with me, I might just absent-mindedly check out novelties of my social relationships when engaged in a boring activity like waiting in line [Marty-Dugas *et al*. 2018].

All in all, following Fasoli [2018], the smartphone is a hybrid social super-artifact that at once allows users to execute a more fine-grained management of their affective life while enabling other users and the social media platforms to "reach into" the individuals at all times. These two opposite pushes keep alternating in structuring online affective experiences. For example, a single affective episode online might start out as a system-driven mind-shaping state to continue as a user-resource interaction and end in another mind-shaping moment. Consider the following scenario. Luka is sitting in his math class with his smartphone in front of him when a grey square pops up on the screen. It is Instagram advising him that Mia commented on his photo. Besides advising him of the comment, Instagram prompts Luka to immediately react to that comment through the blue button "Reply". Bored with differential equations, Luka takes up Instagram's suggestion and reacts to Mia with a heart and then proceeds to write her a text "How is it going?". The conversation between the two goes on for six minutes switching between personal pics and Star Wars memes at which point Luka decides to share one of these memes on the Facebook group he set up with his close friends. 10 minutes later Luka finds himself scrolling

down the Facebook page chuckling at memes while a deep shout "What are you doing?" brings him back to math.

The example shows how a single smartphone-mediated affective interaction started as a mind-shaping platform invitation to reply to a message, evolved in a user-resource conversation and ended in a mind-shaping or invasive scroll down. The scenario described presents a rather common online interaction in which mind-shaping and user-resource alternate along different phases. Furthermore, alongside alternation, user-resource interactions and mind-shaping pushes showcase a certain degree of integration as each new move on the part of the users or of the system nests in and is driven by the complex ways in which the two come together in structuring the overall affective experience online. As Bucher [2018] shows in a series of interviews, sometimes users tailor their posts both in language and time according to what they believe are the mechanisms that platforms use in promoting updates. A lot of users, for example, share and publish new statuses early in the evening as they assume the platform will champion their content, making it more relevant and visible. Likewise, systems' mind-shaping algorithmic infrastructures get continuously tweaked according to previous user-resource interactions deemed relevant. In short, the alternation of user-resource interactions and mind-shaping rests on their continuous previous integration.

Now to present in more detail the hybrid mind-shaping user-resource character of online environments, I put forward the case study of the Alt-Right that fostered far-right extremism via a *playful dehumanization* situated in a series of smartphone-accessed echo chambers.

6. Alt-Right echo chambers: 24/7 affective arrangements in the hands of the users

Echo chambers are defined as closed online spaces inhabited by like-minded individuals and consensual opinions [Sunstein 2018]. Their rise is attributed to the concurring effects of users' selection behavior driven by confirmation bias and of personalization algorithms that serve up contents with which users already agree [Pariser 2011; Barberá

2020].[8] While not per se detrimental, echo chambers have been deemed particularly dangerous when applied to political phenomena. Prolonged interaction in these insular online groups promotes polarization of opinion and attitudes [Brugnoli *et al*. 2019]. Complementarily, like in other closed groups, members of echo chambers show an emotional attunement that tends to polarize over time [Del Vicario *et al*. 2016]. Inhabited by extremist individuals,[9] echo chambers might function as radicalizing environments in which users progressively develop a radical ideology and justify violent actions [Conway *et al*. 2019]. Alongside ideology, users also develop an extremist affective style that may lead people to engage in violent actions or celebrate such actions and other discriminatory acts in general [Fielitz & Thurston 2019; Haq *et al*. 2020; Valentini *et al*. 2020].

The Alt-Right, an online far-right movement, has managed to enculture its new members in a *playful dehumanization* of minorities distributed across a networked array of online echo chambers each intended as a single affective arrangement [Ebner 2020; Valentini 2021]. The effects of such an affective atmosphere are infamously known as the Alt-Right inspired both low-key racist episodes and the Christchurch attack. I propose that the enculturation in the Alt-Right *playful dehumanization* involves a continuous alternation and integration of mind-shaping and user-resource phases that lead supporters to habituate to the affective dynamics of the arrangements. *Playful dehumanization* is a paradoxical affective style aimed at denigrating immigrants by comparing them to disgusting animals or bodily fluids through "funny" and gaming practices like meme-making or first-person shooters [Ebner 2020]. Through this supposed playfulness of dehumanization, the Alt-Right has built a potent affective pathway of recruitment. First, playful

[8] Here I present echo chambers according to their original definition provided by Sunstein [2018] and Pariser [2011]. Echo chamber is a contested concept and recent developments have either cast doubts on their existence – echo chambers users are exposed to oppositional views [Bruns 2019] – or proposed a new definition that considers the presence of oppositional views in these online spaces [Nguyen 2020]. For my purposes a standard definition suffices.

[9] For a philosophical take on emotions, extremism, and fanaticism, see Townsend *et al*. [forthcoming].

practices – like meme-making – render Alt-Right discrimination easier to digest or explain away as "just joking" [Hawley 2017].[10] Often, the sheer brutality of some radical groups works as a deterrent for new potential recruits. Second, the broad use of consolidated internet practices (e.g., reaction videos) made the Alt-Right look familiar to big chunks of young users who might have spread its materials without committing to its ideology [Munn 2019]. Third, the use of coded language enabled the Alt-Right to eschew the censorship of mainstream social media [Gillespie, 2018]. A lot of Alt-Right propaganda does not rely on explicit slurs or extremist calls-to-action, two factors that would make social media moderation remove such materials. Rather, Alt-Right propaganda is a hodgepodge of easy-to-create hateful contents covered in a supposedly funny in-group lingo designed to go under the radar of social media moderation [Marwick & Lewis 2017]. A typical example is the popular linguistic blend *rapefugee* aimed at describing refugees as naturally-born rapists. Overall, the Alt-Right has carved a flexible *playful dehumanization* that lies just a click away from the users or may "reach into" them through their smartphones. Analyzing online conversations of how Alt-Right activists got into the movement, Evans [2018] delineates a gradual pattern along which users switch between 1) mind-shaping recommended videos on YouTube; 2) user-resource meme-making on anonymous imageboards; 3) mind-shaping Discord channels where they got absorbed and habituated to an anti-Semitic atmosphere.[11] For instance, a user said he started his journey into the Alt-Right with the anti-feminist right-wing Youtuber Sargon, then, joined the more radical meme-makers on 4chan where he got habituated to the *playful dehumanization* and finally got absorbed by the Discord fascist channels [Evans 2018].

Importantly, smartphones make echo chambers qua affective arrangements permanently available to the users both along a user-resource interactions line – the possibility of users to reach out and connect to the arrangement – and along a mind-shaping line – the system-driven notifications prompting users to participate. I argue that

[10] The "playfulness" of Alt-Right dehumanization is perceived as such only by in-groups. From the outside it looks just as blunt racism.

[11] Here both mind-shaping phases can present a mind invasion structure.

smartphones accelerate the habituation of users to the Alt-Right *playful dehumanization* by establishing a 24/7 cycle of user-resource-mind-shaping affective experiences. Such *playful dehumanization* rarely leads users to take action in the real world. Nonetheless this "always there" atmosphere has proved to polarize individuals on a massive scale.

7. Conclusion

4E approaches have yielded fruitful models for the examination of environmentally scaffolded human affectivity. Individuals either initiate a situated affective experience by coupling with an external resource (user-resource interactions) or their emotions are context-driven and shaped by the surroundings they inhabit (mind-shaping). Moreover, authors have provided detailed accounts about the ways in which individuals and the environment interact and (re)combine in structuring affectivity. Material and social components were perused along both a diachronic and a synchronic dimension. However, with a few brilliant exceptions – Krueger and Osler [2019]; Osler [2021] – most investigations have overlooked the impact that internet-based technologies and environments exert on users' affective states. In this paper, I have tackled this shortcoming and argued that considering how affectivity is scaffolded online can provide new keen insights into the ways in which user-resource interactions and mind-shaping interrelate. In a nutshell, I maintain that an affective episode online comprises a continuous fast-paced alternation (and integration) between user-resource interactions and mind-shaping phases. The arguments to substantiate my analysis are to be found in 1) the features and mechanisms that constrain users' online relations according to a programmed sociality [Alfano *et al.* 2018; Bucher 2018] and 2) the character of the artifact we use to access online platforms. On the one hand, users are free to scaffold their affectivity as long as their engagements comply with the interface, the platform algorithms and the online group interactions that offer them prepared occasions for participation [Slaby *et al.* 2019]. On the other hand, smartphones are hybrid artifacts that continuously carve users' affective experiences through real-time notifications while allowing them to flexibly micromanage their affective engagements on their own

time [Fasoli 2018; Krueger & Osler 2019]. My research is a first step in calling for a thorough analysis of online environments that expand the boundaries of the 4E research paradigm. Three possible future avenues to be explored concern: 1) the beneficial or detrimental relationship individuals establish with their internet-based devices [Fasoli 2021]; 2) a taxonomy of online platforms that inspects the affective impact of different features like anonymity, personalization, and encryption; 3) the relation between offline and online environments in scaffolding emotions.

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affective scaffolds; user-resource interactions; mind-shaping; platform; smartphones

Abstract

The debate in 4e approaches around scaffolded affectivity has yielded two models: user-resource interactions and mind-shaping. The former sees affective states as the result of the active manipulations performed by individuals on their environments. The latter examines human affectivity as shaped by the pressures exerted by socio-material contexts on individuals. Despite recognizing the interconnection between the two models in scaffolding affective experiences, the existing literature has mostly sidelined how they interrelate in online environments. In this paper, I argue that considering 1) the pace and infrastructure on which online interactions take place; and 2) the socio-material character of the devices we use to access online platforms (e.g., smartphones), affectivity, in digital environments, unfolds along a continuous alternation (and integration) of user-resource interactions and mind-shaping phases. First, I present the user-resource interactions and mind invasion models adding a recently introduced mind-shaping perspective that includes and expands the limited analytical scope of mind invasion. Second, I examine the mind-shaping influence of digital platforms on which users' affective engagements are harnessed within a programmed sociality made of interfaces, algorithms, online groups and other users. Third, I present smartphones qua hybrid artifacts that allows users to permanently micromanage their interactions online while leaving them open to the mind-shaping effects of social media. Last, I examine Alt-Right echo chambers as digital structures in which affectivity is situated along an alternation (and integration) of user-resource interactions and mind-shaping moments.

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