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Engineering affect: emotion regulation, the internet, and the techno-social niche

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Abstract

Philosophical work exploring the relation between cognition and the Internet is now an active area of research. Some adopt an externalist framework, arguing that the Internet should be seen as environmental scaffolding that drives and shapes cognition. However, despite growing interest in this topic, little attention has been paid to how the Internet influences our affective life — our moods, emotions, and our ability to regulate these and other feeling states. We argue that the Internet scaffolds not only cognition but also affect. Using various case studies, we consider some ways that we are increasingly dependent on our Internet-enabled “techno-social niches” to regulate the contours of our own affective life and participate in the affective lives of others. We argue further that, unlike many of the other environmental resources we use to regulate affect, the Internet has distinct properties that introduce new dimensions of complexity to these regulative processes. First, it is radically social in a way many of these other resources are not. Second, it is a radically distributed and decentralized resource; no one individual or agent is responsible for the Internet’s content or its affective impact on users. Accordingly, while the Internet can profoundly augment and enrich our affective life and deepen our connection with others, there is also a distinctive kind of affective precarity built into our online endeavors as well.

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Introduction

For most of us, the Internet is at the center of our day-to-day life.² We conduct research, solve problems, play games, search for recipes, manage our finances, navigate our environments, connect with others, and find ways to entertain ourselves — all with the assistance of Internet-enabled technologies like smartphones, computers, smart TVs, digital assistants, and communication technologies. Most of our everyday activities are now situated within some sort of techno-social niche (Frischmann & Selinger, 2018). Indeed, our reliance on the Internet and techno-social niches is only increasing; the Internet is burrowing ever more deeply into nearly every corner of our existence.

Sometimes, this burrowing is welcome and of our own choosing. Many of us allow always-listening digital assistant devices and smart speakers into our homes; they are privy to our most intimate conversations and activities. While some may experience an occasional flicker of concern when reading about the latest security breach or unauthorized retention of user data, millions nevertheless allow these technologies to share their lives. However, sometimes this technological burrowing is not the result of an invitation but rather a covert intrusion that is performed without our full awareness or consent — with potentially significant consequences for our affective lives.

² In what follows, we will, for simplicity’s sake, follow Smart et al. (2017) and use the term “the Internet” as a catch-all term for various applications that are built on top of the Internet. Although the terms “Internet” and “Web” are often used interchangeably, they pick out different things. The Internet is a large global network of interconnected servers, computers, and other hardware devices enabling communication and information sharing. Applications built on top of the Internet are designed to make use of these capacities. They include the billions of pages that make up the World Wide Web (or “Web”); email, instant messaging, and other digital communication technologies; online gaming services; and File Transfer Protocol (FTP), which enables the exchange of files between computers and servers.

Work exploring the relation between cognition and the Internet is now an active area of philosophical research.³ Some adopt an *externalist* framework (e.g., Clowes, 2015; Halpin, 2013; Heersmink & Sutton, 2018; Smart, 2017; Staley, 2014), arguing that the Internet should be seen as providing crucial environmental scaffolding that drives and shapes cognition. A focus concerns the different ways the Internet alters our status as epistemic agents by granting persistent access to a nearly limitless pool of information. For example, Internet-enabled wearable technologies allow us to record, store, and access an ever-expanding range of information about our experience and behavior. As this technology develops, it will have important consequences for how we think about the ontology of mind and self. If portable memory technologies, for instance, soon allow us to record everything we say or do — and they grant access to these digital memories on a moment’s notice — it’s unclear that the formats, dynamics, and constraints distinctive of in-the-head bio-memory will still be salient for thinking about what kind of thing memory is and how it develops and operates.

Despite growing interest in the impact of the Internet on cognition, little attention has been paid in the philosophical literature to how the Internet and our techno-social niches might impact our *affective* life — our moods, emotions, and our ability to regulate these and other feeling states. In what follows, we argue that the Internet deeply impacts not just cognition but also affect.⁴ As we show below, we are increasingly dependent on our techno-social niches for both negotiating and regulating contours of our own affective life and participating in the affective lives of others.

³ See Smart et al. (2017) for a helpful overview.

⁴ For the purposes of this article, we will refer to cognition and affect separately, as this echoes the way in which discussions about extension or scaffolding tend to separate cognitive and affective states. This is not, however, to say that cognition and affect are neatly separable. Some contemporary 4E approaches (e.g. Colombetti 2014) and many classic phenomenological approaches (e.g. Husserl 1973) recognize that cognition and affect are deeply intermingled. While sympathetic to the latter view, we do not intend to explicitly weigh in on this debate here.

However, unlike many of the other environmental resources we use to regulate affect, we argue that the Internet has several distinct properties that introduce new dimensions of complexity to these regulative processes. First, it is radically *social* in a way many of these other resources are not. Second, it is a radically *distributed* and *decentralized* resource. No one individual or agent is responsible for the Internet’s content or its affective impact on users. Accordingly, these properties open possibilities for new forms of emotion regulation, shared experience, and sense of connectedness that can deeply enrich our affective profile in ways arguably unique to our online engagements. These properties also introduce some new challenges, too. One important challenge is that this decentralized and hyper-social tool renders us affectively vulnerable insofar as these regulatory processes involve forces, actors, and algorithms that end-users may not fully understand or control. More simply, while the Internet can profoundly augment and enrich our affective life and deepen our connection to others, there is also a distinctive kind of affective *precarity* built into our online endeavors as well.

In section 1, we provide an overview of emotional regulation, scaffolding and niche creation. In section 2, we illustrate how the Internet can become deeply integrated into our emotional regulative practices. In section 3, we focus on the ways in which the Internet allows us to engage in forms of interpersonal emotion regulation with those not physically present with us, as well as exploring how we can even use technology to sustain a sense of connection with those who have passed away. In section 4, we analyze what we take to be some unique features of the Internet that make it particularly successful at engineering affect. Having made a case for Internet-enabled emotional regulation, we conclude by outlining some ways that the Internet can also lead to emotional *dysregulation*.

1. Emotion regulation and the affective niche

Emotions and their regulation

In what follows, we use “affect” and “emotions” interchangeably. The former is often said to be a broader category than the latter insofar as it encompasses moods, emotions, and other feeling states (e.g., a felt sense of salience, purposefulness, or concern) that shape how we attend to and engage with the world (Colombetti, 2014). While the distinction between emotions and affect is taxonomically useful, nothing much we say here hangs on our maintaining it in a strict sense. Additionally, while some in the literature speak of “affect regulation”, most instead adopt the more natural-sounding “emotion regulation” — so, we will follow this convention. Nevertheless, our following discussion should be read as applying to a broad range of affective phenomena — more than just moods and emotions.

Emotion regulation consists of practices that shape *which* emotions we have, *when* and *how long* we have them, and *how* these emotions are experienced and expressed (Gross, 1998, 2014; see also Krueger, 2015). We often manage our emotions in ways that reflect our interests and ends — particularly the experience and expression of negative affect (Joormann & Siemer, 2014). For instance, if we are in a tense departmental meeting, there may be strategic value in suppressing our rising anger at a colleague’s ill-considered remark and instead following up with them in private, despite our in-the-moment impulse to respond forcefully.

Our regulative practices can include both conscious and non-conscious strategies, as well as strategies involving an array of different resources. Sometimes these strategies are “antecedent-focused” strategies that act upon emotions before they are fully formed (e.g.,

removing ourselves from a potentially anxiety-inducing situation; practicing meditation to cultivate more stable habits of mind); others are “response-focused” strategies that regulate emotions as they unfold (e.g., slowing our breathing to suppress our rising anger) (Gross, 2001). For our purposes, what’s important is that dominant accounts of emotion regulation in cognitive, clinical, and social psychological literature conceive of emotion regulation as something that occurs almost entirely within the individual (Campos et al., 2011; Koole & Veenstra, 2015). But this intrapersonal approach overlooks the extent to which many strategies for regulating our emotions constitutively involve more than just internal resources (Varga & Krueger, 2013). We often actively incorporate environmental resources — varieties of “scaffolding” as we discuss in more detail below — into our regulative strategies in order to reshape our affective profile at multiple timescales (Reeck et al., 2016). We do so because these external resources help us realize experiential, expressive, and regulatory capacities we may not otherwise have without their ongoing support.

From this relational perspective, we therefore ought to see “both the person and the environment as necessarily intertwined in the generation of affect, not unlike the two poles of a magnet in generating a field of force” (Campos et al., 2011, p. 27). Importantly, the environmental incorporations we have in mind are more complex — and dynamically iterative — than what Gross refers to as *situation selection* or *situation modification* (Gross, 1998), such as intentionally avoiding public speaking opportunities because they generate negative affect, or removing a politically-charged poster before our in-laws come over for dinner. These two categories of emotion regulation are Gross’ attempt to acknowledge the world-directed character of some of our regulative practices. However, within these practices — at least as Gross characterizes them — the environment remains a relatively passive participant. It does not

actively contribute to the dynamics of the process in question and thus plays little role in guiding its distinctive development and character. In contrast, the world-involving processes we have in mind involve a temporally extended *incorporation* of subjects with specific sociomaterial resources in their environment, or what we refer to below as their “affective niche” (Colombetti & Krueger, 2015). Without the ongoing feedback provided by this niche, the regulative process in question would have a very different character — or it may not exist at all. Hence, we cannot understand the full scope of emotion regulation without also considering the active contributions of the world and other people.

Constructing the affective niche

An organism’s “niche” is a self-styled environment reflecting the organism’s interests and ends. All organisms engage in practices of niche construction when they build things like nests, holes, paths, dams, webs, and chemical environments, and choose their own habitats, mates, and resources in order to enhance their chances of survival and modify their behavior (Laland et al., 2000). Niches are, thus, tailored to the organism. Consequently, a niche that supports one form of life may not be compatible with that of another. For example, a fish or bird will not thrive in a niche comprised of intricate underground burrow systems. However, this niche is ideally structured to support the form of life favored by ground squirrels, hedgehogs, and mole rats.

Humans also engage in various forms of niche construction. As Sterelny (2010) observes, over time, agents find ways *to adapt to their environments*. But we also find ways *to adapt our environment to ourselves*, including altering the informational structure of the environment in

order to make key features more salient and available for intelligent action. For example, we are able to deal with problems requiring quantitative assessment of our environment because we can measure it with instruments; because we have developed public representational systems with user-friendly notation for representing this information, as well as technologies for computing it; and finally, because we can park this information in books, diaries, post-it notes, and smartphones for later retrieval.

What’s important here is that niche construction involves manipulating sociomaterial resources both found and created in the surrounding environment. These environmental resources become “scaffolding” that drives and regulates our cognitive capacities. An individual’s niche is comprised of integrated networks of scaffolding; humans routinely employ an array of publicly-available tools, props, artifacts, and practices — from written language and mathematical notation to calendars, rituals, watches, maps, telescopes, computers, and smartphones — to facilitate access to forms of thought and behavior that would otherwise be inaccessible (Clark, 2008).

However, our processes of niche construction aren’t simply confined to the domain of cognition. Increased attention has recently been paid to the ways we modify our niches and use people, things, and spaces as *affective* scaffolding: environmental resources configured to set up, drive, and regulate affective experiences at multiple timescales (Colombetti & Krueger, 2015; see also Krueger, 2014; Krueger & Szanto, 2016; Maiese, 2016; Slaby, 2014). We play music to set the mood before dinner or help focus our attention while working; we manipulate the space (via colors, lighting, art, sound, etc.) of our living room, office, or place of worship not merely in ways that reflect our instrumental concerns but also to regulate our own and others’ affective

responses while we inhabit these spaces; we carry handbags, wear specific kinds of clothing, choose particular meals, or handle religious artifacts to scaffold these processes.

For our purposes, the key idea is that many of these processes of emotion regulation are *essentially world-involving*. They constitutively depend upon the ongoing input of affective scaffolding for their distinctive format and dynamics. Listening to a favorite song or playlist will regulate our mood in a qualitatively different way than, say, putting on a favorite shirt, manipulating prayer beads, drinking a Belgian beer, decluttering our workspace, seeking the solace of a quiet worship space, or instant messaging a friend to vent about relationship frustrations. Our affective scaffolding impacts us in different ways and across multiple timescales. It augments both our *capacity* to realize certain affective states (i.e., with an intensity or felt character) as well as our ability to *sustain* these states (i.e., their temporal duration). Using music to regulate our moods and emotions, for example, is a common way to both deepen and enrich an affective experience while also manipulating its temporal character (e.g., extending the duration of the experience) (Saarikallio, 2011).

The broader point, then, is that in everyday life we routinely allow people, things, and spaces to enter into and actively shape the character of our regulative practices; they help us realize an experiential and regulative character with respect to our emotions that we couldn’t otherwise realize without their ongoing input. Taken together, the rich network of scaffolding that fills up the spaces of our everyday lifeworld (workplaces; bedrooms, living rooms, and kitchens; religious and recreational spaces, etc.) constitutes our *affective niches*: self-styled environments tailored both to reflect our affective needs in that context and to constrain patterns of emotional experience and expression (Colombetti & Krueger, 2015).⁵

⁵ The degree to which we can carve out and create self-styled affective niches may well be something of a privilege. Those who have their own bedrooms, own office spaces and so on, have more control over how to organize their

There are several dimensions to our scaffolding practices and the affective niches these practices generate that will be relevant to our consideration of the Internet. First, our affective niches exhibit their distinctive regulatory power because they are niches that, by and large, we *trust*.⁶ They are populated by varieties of familiar scaffolding we are confident will elicit reliable and predictable affective responses from us, such as a favorite song, sweater, beverage, religious artifact, or person. This trust flows from the fact that many (although not all) of the affective niches we move through on a daily basis are *individualized*. They both reflect and organize our affective choices as individuals and groups. When decorating our office, for example, things like the artwork, lighting, plant selection, pictures of our family, music we play, and even the spatial layout of our chairs and desks (e.g., demarcating spaces and artifacts for meeting with students vs. those for writing) are tailored not just according to instrumental concerns but also to regulate our affective states within that space. In virtue of both this trust and individualization, our affective niches afford *entrenchment* or comfortable “settling into” as we go about our tasks within that space and let this regulative scaffolding around us (e.g., the low lights, music softly playing in the background) maintain our desired mood and attentional focus. Finally, our affective niches are adapted not just to our individual affective preferences but also those of others. Affective niches afford entrenchment at both the *individual* and the *collective* level. For example, the spatial and material configuration of a worship space, as well as the ritualistic practices that occur within it, are engineered to accommodate both solitary and corporate forms of worship, and to regulate a repertoire of affective states (again, both individually and collectively) appropriate to that space (Krueger, 2016).

spaces to engineer their affect. Not to mention that some of the resources (e.g. paintings, speakers, clothes) cost money.

⁶ These dimensions have been adapted from Sterelny (2010).

In sum, many processes of emotion regulation are essentially world-involving insofar as they involve environmental scaffolding beyond the brain and body. We incorporate these external resources into distributed processes of self-scaffolding. These are cases where “a system is coupled to an environmental item through which the system loops some kind of self-stimulating activity, and this self-stimulating activity has been set in place and maintained over time” to play specific affective roles within the user’s affective profile (Colombetti & Roberts, 2015). An important lesson for what follows is that these scaffolded processes resist an easy distinction between activity and passivity. On one hand, our affective experiences are elicited and transformed by intentionally manipulating the scaffolding that comprises our affective niche; on the other, we have often “actively and iteratively created, modified, cared for, assessed, and reassessed just those features and just those interactions” that are distinctive of that niche, and set them up to do their regulatory work in the background without our explicit intervention (Sutton, 2018, p. 186). So, we not only incorporate — but are also incorporated by — our affective niches.

2. Internet-enabled emotion regulation and the techno-social niche

How does all this relate to the Internet? First, we routinely use the Internet as a resource for the synchronic and diachronic regulation of moods and emotions. This is possible because the Internet is now so ubiquitous, portable, and readily accessible via smartphones, digital assistants, and wearable devices that it can be fluidly incorporated into the suite of everyday practices we use to regulate emotions. Second, using the Internet as part of our affective scaffolding results in the creation of techno-social niches that involve both online and offline space. Internet-enabled

practices usefully problematize our thinking about the *spatial* dimensions of our regulative practices, in that they *blend* both physical (offline) and digital (online) spaces — to a degree, and with an experiential intensity, that may ultimately render this distinction increasingly untenable. Third, the hyper-social and hyper-portable nature of the Internet gives us increased (if not near-constant) access to *interpersonal* forms of emotion regulation. As we can now interact with others online, interpersonal emotion regulation is not limited to face-to-face encounters or even, as we shall explore, to the living. This means that we can bring our interpersonal scaffolding into multiple niches, as well as construct online we-spaces which sustain a general sense of sharing space and togetherness with others. In the following sections, we unpack how the Internet plays a role in engineering affect in these ways.

Constructing the techno-social niche

In our characterization, techno-social niches are affective niches. They harbor affectively-salient resources — affective scaffolding — that we incorporate into our regulative practices. However, we’ve chosen to use the term “techno-social” to draw particular attention to the way that, in light of the distinctive technological and informational affordances of the Internet, the blended spaces of these niches is permeated by the physical and/or virtual presence of others. In ways we explore in more detail below, techno-social niches are *hyper-social*: others are often intensely present within the real-time dynamics of our regulative practices within these niches; and our practices, in turn, directly feed back into the regulative practices of others.

At this point, one might object that all affective niches as we’ve described them are techno-social niches. The forms of scaffolding that collectively make up these niches (clothing,

music, artworks, tools and other artifacts, etc.) are rarely of our own creation. Most of these things are technologies designed and made by others, and thus (at least implicitly) bear a social imprint. Moreover, we first learn to use this scaffolding *as scaffolding* from others; acquiring the relevant skills to scaffold affect is itself a socially supported process (Greenwood, 2015). Finally, our niches are, for the most part, publicly accessible, embedded in a shared world. We can craft and manipulate them on our own if we choose, as part of our solitary practices. But often we do so with others — particularly in the service of generating shared experiences (e.g., playing music with friends in order to set the right group mood before going out for the evening).

We do not reject this characterization. There is indeed a sense in which all our niches can be understood as kinds of techno-social niches. Nevertheless, we argue that the Internet — and the niches that spring up around it — affords a distinctive set of regulative practices that set it apart from other forms of affective scaffolding, and which therefore generate unique forms of niche construction worthy of further philosophical scrutiny.

To make this point clearer, consider an initial example: listening to music to regulate emotions. Music is a powerful — and common — form of affective scaffolding (DeNora, 2000; Krueger, 2019). From birth, we perceive music as something we can do things with, as a resource for actively modulating our moods and emotions, coordinating actions both solitary and social, and sharpening our attentional focus. For most of human history, music was a predominantly social affair largely confined to public spaces. So, in order to listen to music, listeners needed to travel to the musical source — whether in a public square, space of worship, or formal performance space. This meant that listeners had little control over what they listened to or how they listened to it. However, with the advent of listening technologies like gramophones, record players, handheld cassette players, and now MP3 players and smartphones,

listeners’ relationship with music — the sort of listening practices it affords — has changed dramatically. Music is now *portable* in a way that it was not previously. Listeners can play music wherever and whenever they want to hear it and create on-demand soundworlds that can be used to dynamically reconfigure their affective profile and their connection to the world and others (Bull, 2007; Skånland, 2013). Additionally, portable listening technologies introduced a new dimension of *personalization* into listener’s musical practices, in that listeners can manipulate things like the order of the tracks, create playlists ranging across multiple genres and styles of music, or even play with properties of the music itself via equalizer settings — all to shape their real-time affective profile.

Now consider how *Internet-supported* listening practices have once again changed how listeners perceive and respond to their musical soundworlds. By shifting online (e.g., streaming services like Spotify), music now affords hyper-social forms of listening practices not previously possible, social practices that construct affectively saturated we-spaces blending physical and virtual space. Via the Internet, spatially distributed listeners can become co-DJs, manipulating one another’s listening experience and musical agency in real-time via their own devices. They can adopt expressive avatars during their joint listening experience; generate real-time commentary via chat apps; supplement these experiences via emojis; live-stream their listening experiences to add a visual dimension; move through different physical environments while maintaining their connection with others and further manipulating the shared listening experience; simultaneously co-inhabit other online spaces (e.g., online video games, virtual reality environments) while preserving their connection in shared digital-musical space; or even play with the active-passive dialectic at the heart of our listening practices by allowing the musical app’s algorithm — perhaps soon to be facilitated by sensors receptive to what’s

happening in the listeners' body and immediate environment — to auto-generate an *ad hoc* playlist manipulating the affective profile of all listeners and the shared digital-musical spaces these listeners co-inhabit.

Since this technology is still relatively young, other forms of Internet-enabled joint listening will soon become possible and enable even more immersive forms of shared musical experience. The point is that by bringing the Internet into the affective niches of our musical practices, we've introduced new dimensions of blended space and digitally-mediated social presence that, in turn, open up new degrees of phenomenological complexity to the experience of listening to music — as well as new possibilities for regulating our own emotions and participating directly in the regulative practices of others. We now turn to a case study to illustrate how the Internet provides numerous forms of affective scaffolding within a techno-social niche.

Inhabiting the techno-social niche: a case study

Consider the following scenario: after a long day at work, Stella comes home, takes off her coat, and drops her keys in a tray by the door. Checking her smartwatch, she sees that she's exceeded her goal of 10,000 steps and smiles as a “Congratulations!” banner lights up her screen. She swipes away an invitation to share this achievement with her social media followers and heads to the bedroom to change her clothes. Along the way, she speaks to Cyra, her Internet-enabled digital assistant. Cyra resides in several small speakers positioned discreetly throughout the house. “Hi Cyra, I'm home!”. Cyra cheerily responds, “Hi, Stella — welcome home!”.

Immediately, the lights go on at a pre-set level, the front door locks, Stella’s flat starts to warm up, and music from her favorite band quietly streams from her wireless speakers discretely distributed throughout her home. A moment later, the music pauses and Cyra says, “Stella, remember to call your mother about her doctor’s appointment tomorrow morning. Also, the smart fridge tells me that we’re out of milk and carrots. I’ve added them to your grocery list”. The music resumes. Stella responds, “Cyra, add eggs to that list. And skip this track and turn the volume up”. As Stella changes out of her work clothes, she flops down on her bed. “Cyra, play some ambient music and turn the lights down”. Fifteen minutes later, Stella is newly refreshed. She gets up and goes to the kitchen. “Cyra, do I have any messages?”. Cyra responds, “You have three WhatsApp messages from Doug and a voicemail from your mother. Also, there are eleven comments on your last Facebook post, and forty-two “likes”. You’re popular!”. After skimming her messages, Stella says, “Cyra, message Doug: “Need a mellow night, will call tomorrow”, and then call Mom”. Stella proceeds to chat with her mother (who resides in another country) via an Internet-enabled smart speaker in the kitchen while preparing dinner, assisted by occasional voice prompts from both her mother and Cyra as she works through a new recipe.

Thirty minutes later she heads to the living room, dinner in hand, and sits down on the couch. “Cyra, play Can you believe they did that?”, and immediately Stella’s favorite guilty pleasure, *Can you believe they did that? Celebrities at their absolute worst!* lights up her smart TV. In between bites — and with one eye on the TV — Stella periodically checks her mobile phone for new instant messages and scans her social media accounts, “liking” and leaving comments on others’ pictures and posts. A few minutes later, Stella’s phone lights up with a video chat invitation from her friend, Charlie, who shares her love of *Can you believe they did that?*. Stella and Charlie watch the show together — each in their respective flats in different

cities — and provide a running commentary. At one point, a third friend, Jane, briefly joins in before signing off to put her kids to bed. Charlie soon must abruptly hang up, however, when she receives an out-of-hours call from one of her employees. This prompts Stella to glance down at her smartwatch and skim through the contents of her own work email account. She finds that twenty-three new messages have accumulated since she left the office a few hours ago, so she makes a mental note to respond to some of them before bed — and begins planning her carefully-worded response to an important email from a member of her management team while continuing to watch TV.

Later, once she’s in bed, Stella begins a nightly ritual: speaking to a chatbot (embodied in smart speaker on her nightstand) impersonating her beloved grandmother, Jean, who died last year. This chatbot uses predictive analytics to replicate Jean’s conversational style and tone. Drawing upon a dataset of past communication (email, chat messages, voicemail transcripts, scanned handwritten letters), the chatbot automatically generates appropriate real-time responses replicating Jean’s idiosyncratic way of conversing — an effect further enhanced by audio drawn from recordings of Jean’s voice (family videos, phone conversations, video chats, etc.). This nightly ritual is very important to Stella. She uses this time to talk about her day, share secrets, cultivate a sense of security at the sound of Jean’s soothing voice, and feel as though she’s preserved a continuing connection with her dead grandmother.

This scenario is not some futuristic techno-fantasy. While this description has been slightly embellished, these technologies are available right now. In fact, many of us have already welcomed them into our homes and incorporated them into our day-to-day routines. What is particularly salient is not the powerful information-processing role these Internet-enabled technologies play — which, once again, have typically been the focus of most philosophical

work on cognition and the Internet — but rather how they actively regulate Stella’s affect at multiple timescales.

As this example shows, Stella has set up her techno-social niche to reliably manipulate her affective profile. This happens *synchronically*, such as when she chats with Jean, asks Cyra to play ambient music as a background soundtrack for a brief nap or a more upbeat tune to help animate her dinner-preparation routine, or when she video chats with Charlie to enrich their shared enjoyment of a TV program. But Stella’s techno-social niche also scaffolds her emotions *diachronically*, too. This is because her niche is set up to predictably organize, drive, and regulate her affect — in multiple ways via multiple perceptual channels — as she moves through and interacts with the affordances of this space. As she walks through the door and greets Cyra, automated routines come online and set a calming ambience and a sense of security. These resources will continue working in the background, without Stella’s explicit input, allowing her to focus on other tasks. As a result, Stella’s “bodily-affective style” (Colombetti & Krueger, 2015; Maiese, 2016) — her habitual ways of experiencing, expressing, regulating, and sharing affective states — will be actively regulated by the security, predictability, and familiarity of the techno-social niche she’s engineered for herself. The dynamics of this bodily-affective style flow from Stella’s comfortable entrenchment within this niche.

Stella’s techno-social niche in this way satisfies the criteria for affective scaffolding discussed previously. First, this niche is one that she *trusts*. She knows what to expect as she enters this niche, what impact it will have on her affective profile. This is because Stella’s techno-social niche has been *individualized* to reflect her affective needs and desires. Stella has chosen the specific Internet-enabled technologies, and set up specific automated routines, to create a regulative space in which predictable patterns of affective experience are reliably

elicited and maintained by these technologies and routines. In virtue of these dimensions of trust and individualization, Stella’s techno-social niche affords deep *entrenchment*. As she navigates this space and performs various tasks (cooking dinner, chatting with her mother, etc.), Stella allows the regulative scaffolding around her to help maintain her desired mood and attentional focus. Importantly, Stella’s entrenchment within this niche also means that she can also exploit this regulative scaffolding to *recalibrate* her affective profile as needed. For example, if Stella finishes chatting with her mother and is upset by something she says, Stella can use different forms of affective scaffolding within her niche to down-regulate her negative affect — take several deep breaths; pound angrily on the counter; throw back an extra-large gulp of wine, etc. — including resources offered up by her techno-social niche (“Cyra, play some videos of puppies and kittens”). Stella’s deep entrenchment within this techno-social niche means that the regulative resources available to her are *transparently* available, much the way that the regulative resources of her body (clenching and unclenching her fists; deliberately slowing her breathing, etc.) are transparently available to her as resources for regulating affect. When entrenched within her techno-social niche, Stella experiences the niche and its regulative resources as an immediate array of felt possibilities — affectively-salient possibilities — that alter not only how Stella experiences the unique features of that niche but also, crucially, how she experiences her body (and its regulative possibilities) *within* that niche, or better, her body in relation to her techno-social niche and the regulative possibilities it provides.

A key lesson from this case study is that Stella has engineered her techno-social niche to shape her affective profile when she inhabits that niche. In virtue of the dimensions of trust, individualization, and entrenchment, Stella can “offload” (Risko & Gilbert, 2016) regulative

functions she would otherwise be responsible for onto her niche and let it do some of the emotional work on her behalf.

3. Interpersonal emotional regulation and the Internet

As we have highlighted, the Internet is *hyper-social*. It offers numerous ways in which we can engage in *interpersonal* emotion regulation even when we are not physically present with other people. The Internet allows us to engineer affect interpersonally in niches which previously did not afford such practices (e.g., Stella can bring in Charlie, Jane, or her mother into her home niche even though she lives alone). In this section, we take this interpersonal aspect as our focus, elaborating on: how the Internet forms part of our interpersonal affective scaffolding; how the Internet gives rise to techno-social niches that straddle our online and offline spaces; how we-spaces are experienced on the Internet; and, finally, how new technology allows us to experience a continued sense of connection with the dead.

Internet-enabled interpersonal affective scaffolding

There are several ways that other people form part of our emotion regulation strategies. Stella, for instance, when feeling sad can go to her favorite café to get caught up in the happy buzz of the people there. Through emotional contagion, being in the presence of happy people lifts her mood, helping her upregulate her affective state. Alternatively, having had some bad news at work, Stella can talk to her colleague Connor.

To understand the case with Connor, it helps to think about how, when we communicate our emotions, we are not just taking an internal feeling and communicating something ready-

formed through language. By talking through her sadness with Connor, Stella is not simply venting her emotions (though she may also be doing this as a form of regulation, too); she might, through the act of communication, be properly-speaking *realizing* her affective state in a way she would not have been able to do on her own. What is more, the questions that Connor asks might prompt Stella to explore her feelings in more detail or from a different perspective that shapes her affective profile. Thus, Stella’s interaction with Connor can be understood as being incorporated into Stella’s regulatory loop here.

Interpersonal emotional regulation also occurs in shared experiences. Shared experiences are experiences had by two or more individuals that are best articulated as an experience had in the first-person plural, as an experience that ‘we’ have (e.g. Stein 1989; Szanto 2017; Zahavi 2015). Take, for instance, a case where Stella visits her sister Blanche. Imagine that they get a call from their mother letting them know that she has got her results back from the hospital and received the all-clear from a cancer scare. After the call, Stella and Blanche experience a shared emotion of happiness that they have *together* as sisters relieved that their mother is in good health. They are not simply having coinciding happy emotions; rather, their happiness reinforces, shapes, and influences one another. Neither of them could have had this experience of *we-happiness* apart, as it necessarily involves the other. As such, in cases of shared emotions, we can say that an individual is able to realize a type of affective experience that they could not have had alone; the other person is part and parcel of that experience.

When such cases of interpersonal emotional regulation meet the requirements of trust and individualization mentioned above, we can sensibly talk not only of emotion regulation that involves other people but of interpersonal affective scaffolding. Interpersonal scaffolding can

also form part of a niche; think for example the choir in a church forming part of an affective niche for worship.

Many of our Internet-enabled practices involve other people, whether this is scrolling through reddit comments, liking photos on Instagram, having video calls or chatting on platforms such as WhatsApp. It seems clear that such practices can be used to regulate our affective states and become part of our affective scaffolding. For instance, talking to Connor or celebrating with Blanche could now happen through online platforms, be it over video link, instant messaging platforms, and so on.

Various Internet-enabled interpersonal affective scaffolds can also form part of an affective niche. Crucially, the Internet brings others into affective niches that they previously were not present in. Stella’s home niche includes, through her laptop and her phone, access to her friends and family who are not physically present with her. Scrolling through reddit looking at memes and comments posted by others leads to Stella ‘catching’ the upbeat emotion of other users. Chatting to her mother via Skype can involve the same kind of emotional realization and regulative feedback loop that Stella experiences when talking to Connor face-to-face. Watching *Can you believe they did that?* with Charlie gives rise to a shared experience of watching the show *together* that Stella could not have had one her own (Osler 2019).

Part of what the Internet allows for, then, is for one to feel a sense of togetherness with those who are not physically present within our affective niche. Thus, Stella’s home niche is able to encompass a feeling of durable connection with others, such as Charlie and Jane — that is, a persistent sense that others are *perpetually accessible* via chat apps, video feeds, online video games, etc., with an immediacy and accessibility such that these online spaces are experienced as blending with the physical spaces of Stella’s techno-social niche. What this observation reveals

is that, via the Internet, we can construct techno-social niches made through a collection of hybrid scaffolds; scaffolds that are both material object or physically present individuals and Internet-enabled scaffolds. Moreover, due to the portability of the Internet, we can take our Internet-enabled interpersonal scaffolding with us everywhere we go. By freeing interpersonal emotion regulation from situations where we are physically present with others, we now have significantly more access to interpersonal forms of emotion regulation than ever before.

We-spaces online

We now want to explore the idea that not only can the Internet provide us with interpersonal scaffolding that can be incorporated into our affective niches but that we can experience a more general sense of togetherness with others in the form of a *online we-space*. Online we-spaces do not just engineer specific affects but create a deeper sense of sharing space and being connected with others, even though they are physically apart.

The notion of we-space is intended to capture how “practical space is reconfigured as social space” (Krueger, 2011, p. 644). A we-space arises when individuals interact with one another in ways that create a felt sense of a shared space of possibilities. Typically, we-spaces are used to describe emotion rich, action-orientated social spaces in face-to-face settings. Stella, for instance, experiences a we-space with Blanche when they dance around the kitchen. This we-space offers Stella and Blanche a variety of action possibilities: dancing, of sharing their happiness, of celebrating. The we-space is created through their coordinated bodily movements, expressive gestures and joint attention.

The notion of we-space emphasizes how certain interpersonal interactions are permeated by a sense of sharing a space with another. What marks a we-space is a sense of connectedness with the other. This is perhaps most salient when we experience a we-space that *excludes* others. For example, if Blanche’s housemate Jake comes into the kitchen, grumpy as always, the sisters experience Jake as being outside of their we-space, even though he is physically in the room with them. Jake’s surly demeanor is out of step with their happy gestures and movements. The sisters experience Jake as ‘outside their world’, in some sense, even though he is also in the kitchen. This underscores that mere physical presence does not determine a we-space.

A we-space is a kind of affective niche; a felt sense of shared space which opens new possibilities, actions, interpersonal understanding, feelings and connection for those involved. It has been supposed that as we-spaces are founded upon bodily interaction and co-presence, that we-spaces can only occur in face-to-face encounters. We think, though, that they can also be established on the Internet. Some might think this an odd claim, for we do not share the same physical space with those we encounter on the Internet. When Stella and Charlie are video calling one another, they are doing so from different cities. While we speak of online ‘space’, it is not a physical, geometric space; it cannot be measured, stepped into, it makes no sense to talk of WhatsApp being to the left of Instagram. How, then, can we say that Stella and Charlie experience a shared we-space when they are spatially located in different places?

Limiting we-spaces to situations where we are physically present with others is, we argue, to use the wrong concept of space. For a we-space does not refer to physical, geometric space. Rather, we-spaces refer to a felt sense of sharing a space of possibility. While I cannot physically walk into online space, an array of actions are offered to me there: I can enter certain websites, I can connect with certain people, I can type words, I can upload pictures, and so on.

What we have online is not a physical, geometric space but a space of *action-possibilities*.

Moreover, through interactions with others we can experience this online space of possibilities as shared.

Even though Stella and Charlie are not physically together, they can still bodily communicate with one another, still have access to one another’s expressive gestures; Stella sees Charlie’s happy smile, hears her laughter, attends to her pointing at something happening in the show. Moreover, Stella’s own expressive behavior is coordinated with and shaped by Charlie’s. This coordinated interaction creates a we-space that spans the two of them. Stella shares a we-space with Charlie while she is, in one sense, at home alone.⁷ We might imagine that where there another person in Stella’s living room, not watching along, that even though they are in the same physical space as Stella that Stella would not experience them as being in the we-space she shares with Charlie.

While Stella and Charlie’s joint TV watching serves to illustrate a nice example of an Internet-enabled we-space, we want to extend this notion even further. A huge number of our social interactions online take place primarily over text-based mediums, such as Messenger, WhatsApp, Telegram and so on. While one might be comfortable allowing that coordinated bodily movements and expressive gestures are available over live video feed, what about text-based interactions? On the surface, it seems that we cannot have coordinated bodily movement or expressive gestures when we are texting because we do not have access to the other’s physical body.

⁷ This is not to say, though, that online we-spaces offer the *same* shared possibilities as offline ones. Stella and Blanche, for instance, experience a we-space in Blanche’s kitchen that includes the possibility of touching one another. This is not part of the shared possibilities that Stella and Charlie experience in their online we-space.

However, there is evidence that we *do* coordinate our interactions when on certain text-based platforms. Texting closely echoes our face-to-face conversational styles, involving turn-taking, informal language, synchronous interactions and reciprocity (Baym, 2015; Ben-Ze’ev, 2004; Garde-Hansen & Gorton, 2013). What is more, platforms such as WhatsApp have features that promote a sense of sharing a space with others. For example, it signals when you are online (and when you were last active), it shows that messages are delivered and when they are read, you can tell when someone else is typing. Users of WhatsApp, for example, report that the platform allows for immediate, fluid conversation and creates a sense of connection with the others involved (Church & De Oliveria, 2013).

Texting is also expressive: “even text-based media afford many ways to express emotion. We use emoticons to signal friendliness, we use punctuation and capitalization to insert feeling, we use informal language and talk-like phonetics spellings to create an air of conversationality” (Baym, 2015, p. 13). While Stella cannot see Charlie’s facial expressions and gestures on WhatsApp, a text-conversation between them is not devoid of expressivity. Their messages have an informal tone, they convey warmth through their use of language and their attentiveness to what the other is saying and when the other is talking. Emojis are also used in interesting ways to convey gestures (e.g. indicating that one finds something funny by sending a laughing emoji) and to give a certain inflection to how messages should be read (e.g. adding a winky emoji at the end of a message to indicate that it is said in jest).

These features allow us to experience the other in an interactive, present, expressive manner, even over text. This, we think, allows for a we-space to arise. Indeed, being blocked from a group can leave one feeling a sense of being shut out from that space, being on the outside, of having certain social possibilities taken away — a felt absence of interactive

possibilities that not only diminishes one’s social world but which also removes a trusted resource for interpersonally-scaffolded emotion regulation. As we see next, the felt presence of these social possibilities and the regulative resources they offer can be extremely important in negotiating difficult periods of our lives.

Mourning, memorialization and chatbots in the techno-social niche

The Internet not only allows for interpersonal emotion regulation to take place online. It also offers new forms of interpersonal practices and interaction that increasingly blur the distinction between online and offline spaces and practices. Consider the changing nature of our grieving practices as we increasingly move aspects of these practices into the online spaces of our techno-social niche. It is now common to engage in public practices of mourning and memorialization via social media, especially Facebook. This practice, and these shared spaces, are changing how we think about death, memory, and possibilities for relating to and interacting with the dead (Kasket, 2019).

Before the rise of social networking, memorializations on the Internet mainly occurred within online cemeteries (e.g., <http://www.cemetery.org>) where users could create open-access memorials of loved ones using text and images. Like offline cemeteries, these online cemeteries are relatively static: their content is fixed by the individual who sets them up, and possibilities for others to interact with or modify them are limited. However, with the rise of social media, the informationally-rich digital footprints left by the deceased on websites such as Facebook — and the manner by which these legacies remain a durable part of the techno-social niches of those still living — offer more personalized and robustly *collaborative* possibilities for maintaining

continuing bonds and a sense of tangible connection with the dead than offline forms of mourning and memorialization (Kasket, 2019).

It is now common for Facebook users to have legacy profiles of deceased family members and acquaintances in their “friends” group. In addition to leaving comments, users can also return to this profile in order to manage the intensity and duration of their grief. They can regulate their emotions by scrolling through digital traces found in historical comments on the individual’s activity feed; explore vast troves of pictures or videos; post new pictures or videos; or leave new posts such as a birthday or anniversary message knowing others will respond. Via ongoing engagements with these digital traces, the dead can in this way remain a vital presence in the techno-social niches of those still living, actively shaping their emotions at multiple timescales.

Legacy profiles in social media spaces are an increasingly wide-spread and durable part of our techno-social niche. Many now have a sense that the person they’ve lost is, in some sense, still tangibly present in their offline world: the informational abundance and richness of their digital footprint offers new possibilities to both *relate to* and *be affected by* the dead. For some, this may initially be a source of distress. It may be upsetting to see photos, videos, or other reminders of a life once shared, for instance, or to leave comments on a Facebook page that will never receive a response from the person meant to read them. However, with time, this durable techno-social presence may eventually begin to provide comfort and a welcome feeling of continuing connection.

Note that by moving our practices of mourning and memorialization into online spaces, they become *hyper-social* in a way offline practices are not (Kasket, 2019). This hyper-social character not only introduces new possibilities for collective mourning (e.g., comment threads

that are sustained for months or years; shared pictures, videos, or music reminding mourners of the dead, which invite further engagement). It also impacts the affective character of what sort of regulative possibilities these spaces are felt to offer for individual users such as parents, siblings, or partners. This is because social media profiles such as Facebook are *co-constructed*. An individual’s digital legacy is intertwined with others (e.g., shared pictures, comments, tagged photos, etc.).

Internet-enabled technologies offer increasingly rich possibilities to cultivate and maintain relationships with the dead. Text chatbots emulating the speaking style of the dead are already possible (Newton, 2016). Such chatbots use the vast datasets that we leave behind (from texting, to social media, to emails) to collate a conversational algorithm that enables them to respond in a way that sounds like the deceased individual. It will likely soon be possible to enrich these chatbots with audio and video. Our depiction of Stella having a nightly conversation with her dead grandmother Jean is close to hand.

One reason this is relevant to emotion regulation is that there is growing consensus in clinical psychology that urging the bereaved to simply let go and move on is no longer best practice. Instead, it is now recognized that enduring imaginal relationships with the deceased can be healthy and have a highly therapeutic value in terms of emotionally coping with loss (Klass et al., 2014). While speaking to an avatar of one’s deceased grandmother might be jarring for some, others may find it comforting — one part of a broader repertoire of grieving rituals that provide concrete structures for organizing and balancing their emotions as individuals work through the contours of their grief. As Elder (2019) observes, “The right structures can help us to experience and express grief and sorrow fully without getting stuck. And these structures can include ways of interacting with the dead as if they were alive” (Elder, 2019, p. 9). The Internet, by providing

dynamic, on-going interactions with chatbots offers a novel form of engineering the affective contours of our grief processes.

4. Unique features of Internet-enabled emotional (dys)regulation

What our exploration has shown is that we use the Internet in a variety of ways to engineer affect and that the niches we inhabit are increasingly techno-social niches. However, the Internet is not simply a tool among others in our emotion regulation toolkit. There are certain features of the Internet that make it unique in the ways we use it to engineer affect. In this section, we draw out several features that make the Internet particularly successful for emotional regulation practices, but also open us up to specific forms of emotional *dys*regulation.

Portability, stability and possibility

The Internet is an extremely portable tool. Not only do many of us have near-constant access to the Internet through our phones, which for lots of us follow us everywhere, even when our personal devices are unavailable to us, we can use other devices to log on to online space. In many ways this renders Internet-enabled emotion regulation, scaffolding, and we-spaces extraordinarily reliable and easily accessible.

This portability is particularly interesting when we come to think about how we bring our Internet-enabled affective scaffolds and we-spaces not simply around with us but *into* other affective niches. Our electronic devices are not simply brought into *specific* affective niches but the *majority*, if not *all*, of our affective niches. Smartphones, for instance, are used in our home niches, on our walks to work, in our office niches, even, for some of us, brought into our beds at

the end of the day. The Internet is a notably pervasive tool, burrowing into many overlapping areas of our lives. This pervasive access provides us with a uniquely stable and reliable form of emotional regulation that flexibly fits into a wide range of affective niches.

When Stella takes her phone around with her all day, for example, she is carrying a persistent we-space (i.e., her group WhatsApp chat with Charlie and Jane) with her everywhere. This we-space might either form part of the scaffolding of a wide variety of her affective technological niches or potentially nestle within other niches, as a kind of sub-niche within a wider niche. This means that even on a stressful day at the office, Stella still has access to her WhatsApp group with Charlie and Jane, who send her messages ensuring that she feels supported and not alone during her crisis. This highlights the *porous boundaries* between our Internet-scaffolded affective niches: both in terms of how others can now easily enter, shape and influence our niches even when they are not physically present with us, and also in relation to how Internet-enabled scaffolding can sit within and interact with multiple niches. We should, therefore, not conceive of our affective niches or we-spaces as sealed off environments but as overlapping, porous, and soft-edged.

Additionally, we want to emphasize the diversity that the Internet offers us in terms of engineering affect. For convenience’s sake we have fallen back on the classic way of referring to ‘the Internet’. However, the Internet is vast, supporting numerous platforms, spaces and forms of interpersonal connection. Tools such as our phones and laptops should not be mistaken as a *single* tool. Rather, they are a portal or a gateway to a whole realm of tools. To fully appreciate the role that the Internet plays in our affective lives involves recognizing that the Internet is not one homogenized space but has its own complex topology with different roles to play with regards to affective states. Through her phone, Stella has access to a plethora of scaffolding: Spotify playlists,

reddit threads, group chats, communities for mourning and so on. When we carry the Internet around with us, we are carrying around a pocket full of possibilities that would not otherwise be available to us. While our devices are quite often unassuming objects, the space of affective and regulative possibilities they open us to is enormous.

Emotional dysregulation and the Internet

Due to its hyper-portability, hyper-sociality, and multi-functionality, the Internet is both a powerful and, for many, very prevalent form of emotional regulation. However, it would be remiss of us to focus solely on the positive ways in which the Internet impacts our affective lives. In this final section, we sketch several ways that the Internet might *dysregulate* our affective states. Namely: (i) where affective niches come into conflict with one another; (ii) by highlighting the ways in which others shape our online spaces and thus leave us open to manipulation; and (iii) considering how the continual presence of Internet-enabled affective scaffolding and we-spaces might lead to over-reliance and over-regulation.

i) conflicting affective niches

As highlighted above, affective niches are not always neatly separable from one another. Internet-enabled affective scaffolds and we-spaces can move from one niche to another, e.g. by taking our phones around with us, we can take our Spotify playlists from a home niche to an office niche. However, there might be an incompatibility between our Internet scaffolding and we-spaces and the niches into which we take them. Say Stella has constructed her office niche in order to allow for minimal distraction: she has her office door closed, listens to music through headphones to shut out extraneous noise, and she has an internet blocker enabled on her laptop so she cannot browse the web while writing. However, if she takes her phone into her office niche, she brings

her interpersonal we-spaces with her (unless she turns her phone off or disables the internet connection); her group WhatsApps can still ping away, she is no longer alone. When Stella is in her office niche, which is constructed to scaffold calmness and concentration, the presence of her Internet-enabled we-spaces might *destabilize* her office niche and impact her attention and affect accordingly.

Rather than thinking of the Internet as just bringing in additional scaffolding and sub-niches into our other niches, the Internet’s perpetual presence can taint our other affective niches. For instance, the kinds of affective states that the Internet might engineer well (e.g. entertainment, distraction, connection with others) are not always the kinds of emotion-shaping that we desire. Niche-creation involves crafting an environment to support and enable specific affects by way of limiting and tailoring the kinds of possibilities that that environment offers us. The Internet, though, magnifies the number of action possibilities we have available to us in a unique way.

Our Internet-enabled devices, by virtue of being a pocket full of possibilities, do not simply bring in additional possibilities to a niche. They may also bring in possibilities that actively *undermine* the purpose of the niche-construction in the first place. The problem is that, when engineering affect, more is not always better. When we have highly portable emotion regulation tools, we see a blending of boundaries between spaces; environments that intersect and interact. The Internet, through its hyper-portability, therefore, not only reveals the porous nature of affective niches but exacerbates them; sometimes to our advantage but sometimes in ways that may come to dysregulate our emotions. While the Internet is a *pervasive* tool for emotional regulation, it can also be experienced as *invasive*.

ii) agency

Our Internet-enabled scaffolding and techno-social niches can be highly individualized: systems like Cyra learn our habits; we choose who to include in our WhatsApp groups; we select which platforms to access, and so on. It is important, however, not to overemphasize our own agency when we go online. To do so would be to ignore the extent to which we are vulnerable to the agency of others when we use Internet-enabled emotional regulation and scaffolding.

When using the Internet, we might think that we are customizing our emotional regulation practices. And to a certain extent we are. But we are also *being acted* on by other people and their choices. On the Internet, there are numerous background agencies at work that are not our own. Think of how the platforms we use online are typically not constructed by us. Take Instagram for example: while we carve out features of this environment in terms of who we follow, who follows us, what we choose to upload and interact with, the material interface of Instagram — and its impact on our attention and affect — is largely out of our control. It is others, namely big corporations, who shape the material components of Instagram, for example, the liking system, the posts that are put on our feed, the people my account is suggested to, and so on. What is particularly important about acknowledging these features is that the people shaping these features of my Instagram environment, as well as the emotional responses they elicit, have certain purposes in mind. While I might go onto Instagram to be entertained, to feel a sense of connection with my followers, those who have designed Instagram have done so in order to create a platform that makes money. They are motivated by creating a platform that is addictive and is geared towards marketing products to me. Indeed, the changing of the Instagram feed from chronologically ordered posts to posts shown based on an algorithm is a clear example of this, as it is designed to get users to spend more time on the app so that they are exposed to more adverts, thus generating more revenue for Mark Zuckerberg.

There is evidence that the kinds of posts that users are exposed to influences their affective states (Kramer et al., 2014). Handing over agency of what posts we are exposed to a money-making algorithm, then, has its emotional risks. Especially as some of the features of my online environments do not positively regulate my emotions but also actively *dysregulate* them. For example, consider how Stella might use ‘beautifying’ filters on Instagram. These are filters that allow users to take selfies and manipulate, in potentially dramatic ways, features of their image: e.g., skin tone, the size of their eyes, the length and width of their nose, etc. Stella can use these features as a tool for emotion regulation; they might help upregulate her mood, which is further enhanced by the affirmation she receives when she shares the manipulated results with her friends, solidifying a sense of connection with them throughout her work day as they express their affirmation and approval. However, beautifying filters can also feed into unrealistic ideals of beauty, thinness, and femininity (e.g., manipulating cheekbones or eye size to anatomically impossible configurations), and therefore lead to or feed insecurities that Stella has of her body and appearance. While Stella may think that she is using this scaffolding for a particular purpose, the scaffolding is also *acting upon* Stella in ways that might have a negative emotional regulative effect and that she may not even be aware of. By adopting certain Internet-enabled scaffolding, Stella is also opening herself up to be emotionally dysregulated in ways that might nudge her towards forming unhealthy narratives about femininity and practices of disordered eating (Krueger & Osler, forthcoming).

In sculpting her affective niches, Stella deliberately offloads part of her agentic control onto the techno-social resources she’s set up. As Feenberg (writing before the current proliferation of Internet-enabled in-home devices) notes, “we are operated on by a whole panoply of devices. From the user of tools we become the object of tools” (Feenberg, 2003, p. 125). What this re-

emphasizes is that we not only construct our spaces in ways to regulate and scaffold our affective lives but that we are also regulated and scaffolded by our environments and when we do not have control over our environment this can leave us affectively vulnerable and open to manipulation.

iii) over-reliance and over-regulation

Easy access to the Internet and the emotional resources it provides can also lead to what we call *over-reliance* and *over-regulation*. We might describe Stella as over-reliant on her office niche if she were unable to work in any other environment. Here, Stella relies upon her scaffolded niche in a way that may have a detrimental effect if that niche is not available, for example, if she is travelling or the office is closed.

Clearly over-reliance can occur in cases that don't involve the Internet. However, given the hyper-portability of the Internet, we can take individualized scaffolding and niches with us wherever we go. Moreover, the Internet, because we use it so transparently for so many purposes, is *deeply entrenched* into our lives; we do not just use it for one form of emotional regulation, as one type of scaffolding, for one particular we-space, in one particular niche. We use it in multiple ways for multiple purposes in multiple places with multiple people. This results in a uniquely pervasive and precarious form of over-reliance; if our access to the Internet is disrupted then it is not just one style of emotion regulation, one affective scaffold, one online we-space or one affective niche that is threatened but swaths of them. By increasingly using the Internet as *the* tool for all manner of emotion regulation, we risk putting all (or at least many) our eggs in one basket.

We can find some initial indication of this in cases where, during political unrest, governments shut down access to the Internet to quell protest (e.g., the recent near-total shutdown of the Internet in Iran). In such scenarios, individuals report feeling distressed and emotionally cut

off from the rest of the world without reliable Internet access.⁸ While this represents an extreme form of losing access, there are other ways we lose access in more banal situations: e.g., from simply misplacing one's phone, to becoming physically unable to access the relevant resources such as during injury, illness, or being on a flight or in the countryside.

The term over-regulation is meant to pick out how the Internet, by allowing us constant access to highly tailored and individualized scaffolding and niches, make us reliant not just on specific forms of emotion regulation but upon emotion regulation itself. This is related to over-reliance, but attempts to highlight specifically how an increasingly fine-grained, individually tailored world may arise when we use the Internet to affectively engineer all areas of our lives. When we are habitually used to this near-constant ‘individualized-worlding’, this could render us vulnerable to circumstances where we do not have these resources to hand. By offloading affective work onto the environment all the time, this could leave us requiring constant world-involving regulation. This can have a negative impact when access to such resources is cut off, not just in relation to a specific affective scaffold or niche, but more generally.

Stella, for instance, uses her phone and laptop for engineering a huge number of her affects, in ways that are specifically tailored to her. This may make her more vulnerable to being emotionally dysregulated when these are unavailable. For instance, imagine that her headphones have broken, and she must get on the bus without the scaffolding of her music. As she habitually emotionally regulates her stress through these playlists, not only is she cut off from this emotional regulation but the noisy children in front of her, who she does not usually hear, are a more pronounced source of anxiety. She may, then, be rendered less emotionally resilient in situations

⁸ We are grateful to Moujan Mirdamadi, who has collected and translated posts from Instagram accounts following the week-long Internet blackout in Iran in November 2019, for raising this point.

where she cannot engineer her affects in a desired way. To be clear, we are not endorsing a luddite-type view of the Internet here, but noting how the Internet’s pervasive presence in our lives might leave us affectively vulnerable in certain circumstances, in ways that are either unique to or intensified by Internet-enable emotion regulation.

Conclusion

We have argued that not only does the Internet offer us a multitude of ways to engineer affect but also that, for many of us, it forms a deeply entrenched kind of affective scaffold that runs throughout a variety of our techno-social niches. We have emphasized that the Internet, as a hyper-social forum, gives us near-constant access to forms of interpersonal emotion regulation, as well as supporting online we-spaces that engender a continual sense of connection with others. By liberating interpersonal emotion regulation from face-to-face encounters, people can play an ever-increasing role in the engineering of our affects — even, as we have argued, from beyond the grave.

What particularly interests us is not simply that the Internet is a tool among others in our emotion-regulation toolkit but that certain features of the Internet make it unique for engineering affect. On the positive side, its hyper-portability paired with the huge number of possibilities that the Internet offers us, makes the Internet a highly flexible, reliable, and stable resource. However, these features also have potentially disruptive impacts, too. For instance, that the Internet houses worlds of possibility and its continual presence in our lives may lead to the disruption of our niches. We have also emphasized the role that background agencies have in shaping what the Internet offers and promotes to us, as well as the potential risk of over-reliance and over-regulation when we use such deeply entrenched forms of emotion regulation.

We want to close by raising a few additional points for further consideration. While we have provided a broad-brush account of engineering affect via the Internet, it is crucial to highlight the complex topology of online platforms. These platforms all have their own designs and, consequently, will engineer affect differently. A comparative analysis of these online platforms would be extremely interesting and useful. Another aspect that we have been unable to consider here is how we do not just inhabit overlapping affective niches but how we might be said to toggle between them, and how this toggling impacts our ongoing practices of emotion regulation (e.g., toggling between multiple social media platforms, instant-messaging platforms, and content-creating platforms as we simultaneously negotiate offline spaces at work, home, and play). An analysis of what it is like to inhabit online space, how we experience our blended worlds and move between them would add an extra layer of richness to the account we have presented. Finally, while we have outlined how the Internet, in the form of Cyra and our chatbot of Jean, allows us to interact with AI, there are many open questions about how (and if) we experience AI in interpersonal terms. Investigating our relationships with AI potentially complicates the interconnection between our understanding of interpersonal experience and the dynamics of emotion regulation in fascinating ways.

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