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Feeling and thinking on social media: emotions, affective scaffolding, and critical thinking

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ABSTRACT
It is often suggested that social media is a hostile environment for critical thinking and that a major source for epistemic problems concerning social media is that it facilitates emotions. We argue that emotions per se are not the source of the epistemic problems concerning social media. We propose that instead of focusing on emotions, we should focus on the affective scaffolding of social media. We will show that some affective scaffolds enable desirable epistemic practices, while others obstruct beneficial epistemic practices, or enable hostile epistemic practices. Particularly, we will show that emotions play a crucial role in the epistemic practice of critical thinking and that the affective scaffolding of social media can support, or hinder, online critical thinking. The upshot of our argument is that affective scaffoldings of social media can harness emotions to support beneficial epistemic practices, like online critical thinking.

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1. Introduction

Almost two decades ago, social media platforms became popular as a pass-time activity and a way to connect with people. However, since then the world has also witnessed a rapid rise in problematic epistemic behaviors, such as sharing of misinformation and a rise in disinformation (Fallis 2016), political polarization based on incomplete information (Bakshy, Messing, and Adamic 2015), widespread use of hate speech (Cocking and van den Hoven 2018), self-radicalization due to algorithmic recommender systems (Alfano et al. 2021), and widespread isolation of

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users into epistemic bubbles whereby they are not confronted with diverging information (Nguyen 2020). These problematic epistemic behaviors are neither new nor specific to social media (Sullivan et al. 2020), but the online environment has exacerbated them. It seems that there is a systematic way in which the design of social media platforms subverts our epistemic agency and makes us behave collectively in ways that are detrimental for our epistemic goals, like knowledge and understanding. For a while, explaining this systematic effect has been a significant quest for social epistemologists (see, among others, Zollman 2013; Alfano et al. 2018; Alfano et al. 2021; Sullivan et al. 2020). In this paper, we will examine whether insights from the philosophy of emotions can provide additional tools and novel concepts for tackling this problem in an insightful way.

Looking towards the philosophy of emotions makes sense given that it has been shown that social media platforms are emotional environments (Wahl-Jorgensen 2018), where users habitually engage in rapid, knee-jerk reactions to the information they see online. These reactions are often emotionally colored and can lead to emotional contagion, where emotions spread from one person to another (Ferrara and Yang 2015; Steinert 2021). *Prima facie*, it could seem that the fact that social media platforms are emotionally charged is the reason for the problematic epistemic behaviors of users (Weeks 2015; Greenstein and Franklin 2020). However, we think that this approach to emotions on social media misconstrues emotions: it is not that emotions per se are problematic, nor are emotions the sole cause of problematic epistemic behaviors. Rather, we propose that we should focus on how emotions are scaffolded on social media. In this paper, we suggest the concept of *affective scaffolding* as the missing link that can explain why emotions seem at odds with desirable epistemic behaviors on social media, in particular how it is at odds with online users' critical thinking (CT) behaviors. We aim to show this by focusing on how online emotions are scaffolded by design and by the user's appropriation of designed features. We need to understand what kind of scaffolding critical thinking for online social environments needs in order to foster epistemically conducive behaviors. We will argue that, while some affective scaffolds do not contribute to or even thwart epistemic behaviors, other scaffolds can be epistemically beneficial.

Problematic epistemic online behaviors have multiple causes, most of which are systemic – ranging from platforms ruled by profit and competition, political actors aiming to influence social groups, gaps in

legislation, etc. However, there is also an individual level to this problem: users cannot be fully exonerated from their responsibility in contributing to the problem through their daily acts of sharing and posting. When describing this epistemic problem at the individual user's level,[1] the epistemic problem has often been described as a failure of users to engage in critical thinking (Frau-Meigs, Velez, and Flores Michel 2017; Grafstein 2016; Alfano et al. 2021). While the lack of critical thinking on social media platforms seems obvious, we need to be careful when describing what exactly is missing, as this can depend on how one defines critical thinking. Furthermore, approaches to critical thinking will explicitly or implicitly presuppose a specific account of emotions.

In what follows, we briefly outline our approach to critical thinking, and we explain how it differs from existing approaches, specifically because of the way we think that emotions are an important aspect of the phenomenology of critical thinking. Based on our account of critical thinking, we will build our argument for affective scaffolding of critical thinking in the next sections, specifically in online contexts. Furthermore, we aim to conceptualize in more detail what exactly is missing from the user's epistemic behavior when it is said that they are failing to engage in critical thinking and to show that this lack of critical behavior has an emotional component thus far undertheorized. But first, we need to explain what critical thinking amounts to.

2. Critical thinking and the grounding problem

The many definitions available for critical thinking make it difficult to settle on a single correct one (Van Woerkom 2010; Johnson and Hamby 2015). Nevertheless, there is some conceptual overlap in understanding 'critical thinking [a]s careful goal-directed thinking' (Hitchcock 2018). In other words, critical thinking is a way of thinking well (Bailin and Battersby 2016). For the scope of this paper, we will focus on epistemic accounts of CT[2] given that the problems that critical thinking is often called to address are epistemic problems related to social media users' behavior. For epistemic purposes, critical thinking is usually understood

[1]We are aware that there are other ways of describing the individual behaviours online as epistemic failings, such as lack of digital literacy skills, failures in intellectual virtues, or as intellectual vices (Bhatt and MacKenzie 2019; Alfano 2021; Meyer, Alfano, and De Bruin 2021; MacKenzie and Bhatt 2020). We chose the problem of critical thinking because it is widely recognized, yet, as we will show, not enough conceptualized for the case of social media platforms.

[2]In addition to epistemic accounts of CT, which are dominant, there are political, social, educational and moral aspects of CT that have been analyzed.

as an intellectually virtuous mode of behavior whereby the epistemic agent is willing to inquire further and examine new information (Hamby 2015). For example, on social media, an intellectually virtuous agent is expected to evaluate the information found online by tracking its source, assessing its credibility, looking for alternative sources of information that can corroborate, and reflecting on what this new information entails for one's previous beliefs. We do not need to engage in critical thinking all the time. However, critical thinking is crucial when we are confronted with information that we cannot evaluate straightforwardly and when important sources, like trustworthy expertise, are not readily available (Kary 2013).

Of course, one could argue that it is just as responsible, perhaps even more so, to defer to expert opinion or to remain skeptical rather than engaging in critical thinking (Huemer 2005). The discussion concerning what the responsible epistemic agent is supposed to do – think on one's own or trust others – cannot be solved here. However, whether we should engage in critical thinking or not depends primarily on the context, our own expertise and skills, and on how important the matter at hand is or should be to us. Take democracy as an important topic here. A democratic understanding of critical thinking would require any responsible citizen to engage in critical thinking about information that is relevant for their choices (primarily choices related to politics, such as voting) because delegating to experts in normative matters is simply not possible (Kary 2013), may be too demanding and, above all, may not be desirable in the first place.

When are we supposed to engage in critical thinking after all? The goal of critical thinking as a social practice is to avoid that collective decision making relies on propaganda or ideology. As epistemic agents, we cannot possibly sift through all the information that reaches us and be critical about each statement, but when certain problematic statements are endorsed by others, it becomes our responsibility to challenge these statements with reasons based on evidence and moral considerations, because silence about these issues might contribute to pluralistic ignorance or encourage a false feeling of consensus (Miller & McFarland, 1987; Sullivan et al. 2020).

Drawing on the common approaches concerning the value of critical thinking, our working account of critical thinking will be as follows: Critical thinking is the practice of attempting to align one's beliefs with the evidence 'out there' based on sound epistemic standards (such as responsiveness to reasons, justified beliefs, using only accurate information).

Critical thinking works both ways: one's preexisting beliefs, but also goals and values, are open for revision and need to be carefully reevaluated when new evidence appears, and vice-versa, new evidence is assessed carefully when it conflicts with one's beliefs or with some other piece of information that was taken for granted.

Our account of critical thinking could be charged with making critical thinking too demanding and with over-intellectualizing it[3] because we focus on intellectual reflection over knee-jerk reactions to new situations, or what has been called 'unreflective instrumentalism' (Eigenberger and Sealander 2001, 388) – a reliance on expedience and pragmatic considerations concerning information about a new situation. However, we do not think that critical thinking is necessarily opposed to unreflective instrumentalism. There are times for being reflective and times for taking swift pragmatic action, and discerning between these moments is a matter of trained intuition and epistemic virtue.

While most authors surveyed will define critical thinking as a *process* of thinking, we prefer to analyse it as an epistemic *practice*. Our reason is that while CT can be understood as a process that is supposed to be truth conducive for the individual thinker, its value has been primarily justified as a societal practice of groups and societies (Kary 2013). For instance, one of the main values of the practice of critical thinking is enhancing democracy. Critical thinking and democracy are said to be closely intertwined because the strength of democracies significantly depends on how information is accessed and processed by citizens: more access to sound information is said to translate into more democratic decision making (König and Wenzelburger 2020). As Eli Pariser put it, democracy requires that its citizens agree on what counts as facts (Pariser 2011, 5), hence filter bubbles or anything that threatens to close us off in 'parallel but separate universes' (Pariser 2011, 5) is a direct threat to democracy. Engaging in critical thinking becomes important in a democratic context because citizens who are critical thinkers will not fabricate their own version of reality that could inform collective action (for example, statements such as 'our nation is the best, chosen by destiny', 'all others are out to get us', 'there was a conspiracy behind event X happening'). Critical thinking, so the idea goes, enables citizens to spot when politicians or mass-media are trying to manipulate them, refuse this kind of discourse, and then sanction it by their voting power or civil actions, like boycotts (Paul and Elder 2009).

[3]We would like to express our gratitude to an anonymous reviewer for pressing us on this issue.

Extant critical thinking scholarship explains how an individual is supposed to think, what virtues, skills and dispositions lead to this critical mode of thinking. However, this seems to suggest that it is merely the decision of the agent alone when to be critical or not. This leads to what we call the problem of *grounding of critical thinking*, because practices do not happen in one's head. General epistemic practices emerge within epistemic cultures, which are 'amalgams of practices, material arrangements, environmental scaffoldings, and social mechanisms' (Candiotto 2022).

To our knowledge, the approach to critical thinking as an epistemic practice grounded in social practices has not been developed thus far in existing scholarship. A similar problem was the transfer problem (Bowell and Kingsbury 2015) which has been documented systematically: students who perform well in classes of critical thinking can still fail to exercise their critical skills in real-life situations (ibid., p. 2). The problem of transfer has been framed in terms of the endurance of skills, dispositions and virtues for critical thinking – namely asking why these do not endure in individuals. Yet, we think that this individualistic perspective is misguided. If critical thinking were to be reframed from a mental capacity of the individual to a social practice, then the question of transfer becomes a problem of grounding in a certain context. Why is it that certain contexts allow critical thinkers to flourish while others stifle any critical disposition? We think that looking at social contexts for practicing critical thinking is just as fruitful as looking at individual traits of individuals making up the critical thinker and perhaps even more. The grounding problem is the transfer problem reframed. Thus, we move the focus from the individual traits of the critical thinker to the context in which critical thinking is supposed to arise. Hence, we do not ask what dispositions or psychological traits make someone a critical thinker that reliably uses these traits, but what features of the context are favorable to someone exercising critical thinking?

Existing scholarship on critical thinking has already identified several problematic assumptions concerning how critical thinking is typically described: critical thinking is seen as rationalistic (Mackenzie 2002), individual-focused (Bailin and Siegel 2003), and with too little weight given to the context in which critical thinking is supposed to unfold (Mackenzie 2002). These assumptions amount to an image of CT as somewhat disconnected from day-to-day practices, material contexts and from social relations. Here, critical thinking appears to be an individual trait and a free-floating process, called for whenever the epistemic agent feels like

it. Thus, we think that accounts of critical thinking have a fundamental problem with grounding: embedding the thinking practice in a particular context is neglected.

Using the existing accounts of critical thinking, we will not get a full picture of online critical thinking and how it gets grounded in specific epistemic contexts such as social media platforms. When we say that more critical thinking is needed on social media, it remains unclear how this would look like as concrete practice: perhaps it would be about users asking each other questions of clarification; or it could be about users changing their mind or engaging in deliberation in the sections of comments. In order to understand how the practice of critical thinking can be grounded in the context of social media, we need to explain how exactly an epistemic practice is embedded in a context, and what constitutes its glue. For this purpose, we turn next to the philosophy of emotions and investigate the concept of *affective scaffolding* as providing an appropriate and nourishing ground for this practice of critical thinking. The role of emotions within critical thinking has been discussed and acknowledged by several scholars (Thayer-Bacon 2000; Mackenzie 2002; Bailin 2006; Béres and Fook 2019). However, it still remains unclear from these accounts if emotions are a mere add-on to critical thinking or something essential to it, and whether all emotions can contribute to critical thinking, or if some emotions are undermining critical thinking. This conceptual unclarity, in turn, ripples and distorts the discussions about how to build epistemically optimal environments, either online or offline. Our aim, in the next section, is to reconstruct the role of emotions for critical thinking as a context-grounded practice. We do so by also considering the emotional phenomenology of critical thinking as a lived experience supported by affective scaffoldings.

3. Critical thinking, emotions, values, and existential commitments

All too often, emotions are seen as contrary to rationality and critical reflection. We see that for example, in metaethics, where sentimentalists as well as rationalists, take reason as a source of objective insights and emotions as subjective feelings (cf. Roeser 2011). We also see that in empirical decision theory where so-called ‘Dual Process Theory’ takes emotions and feelings as part of our unreflective ‘system 1’ and critical reflection of our rational ‘system 2’ (Kahneman 2011).

However, philosophers of emotions and psychology researchers have provided alternative approaches to emotions that challenge these dualistic approaches. For instance, so-called cognitive theories of emotions argue that emotions have affective as well as cognitive aspects (e.g. Frijda 1986; Lazarus 1991; Solomon 1993; Nussbaum 2001; Roberts 2003). Neuropsychological research shows that without emotions, people lose their capacity for decision making, 'practical rationality' and context-sensitive moral insights (Damasio 1994). Various philosophers have argued that we need emotions for moral judgments and reasoning (Solomon 1993; Nussbaum 2001; Roberts 2003; Roeser 2011; Furtak 2018). These ideas also have predecessors in ancient philosophy, in the West (Aristotle; cf. Sherman 1989) as well as in the East (Mencius). For example, the Confucian philosopher Mencius argued that by deliberating with our emotions, we develop the 'sprouts' of moral virtues (Van Norden 2004/2019). Despite these longstanding insights from philosophers who argue for the importance of emotions for critical reflection, many mainstream approaches in philosophy and other disciplines take a dualistic opposition between reason and emotion for granted. We also see this in the literature on critical thinking, particularly in what aspects of critical thinking most scholars choose to emphasize.

While the role of emotions has been acknowledged in some of the critical thinking scholarship, it has been somewhat downplayed in the definitions and descriptions of critical thinking. For example, Barbara Thayer-Bacon (1998), argued that dominant conceptions of critical thinking put too much emphasis on reason alone, to the detriment of other sources of insight, such as emotions. Thayer-Bacon describes emotions as 'tools' that work together with imagination, intuitions, and reason in enacting critical thinking. Furthermore, she also emphasizes that these do not work separately and that social context is essential – for example, some social or cultural contexts discourage one from publicly expressing one's emotions and intuitions, thereby limiting the sources of insight available. The growing body of research that argues that emotions should play a more significant part in CT usually focuses on epistemic emotions as contributing to critical thinking, thus singling them out from the other emotions. For example, Sharon Bailin (2006), drawing on the work of Peters (1972), calls the critical thinking conducive emotions 'rational passions' such as 'love of truth, repugnance of distortion and evasion, and respect for the arguments of others' (Bailin 2006), which are needed for engaging in critical thinking. Some emotions can trigger the critical thinking process or support it (Bailin 2006), and the

emotions themselves can become the object of scrutiny (Elgin 2008; Bailin 2006). For example, a social media user, upon reconsidering their views about nationalism, may realize that there is no need to be outraged at those who are skeptical about patriotic commitments, and may possibly become disengaged from the topic because they find the emotions expressed by others problematic.

This emotion-centered research on critical thinking has some practical recommendations, for example by showing that, if one wants to become a critical thinker, one should also try to achieve some emotional flexibility (Mackenzie 2002), or to acquire emotional literacy and awareness (Winans 2012). However, these recommendations are rather generic and do not consider the variety of contexts (both material and social) in which critical thinking and emotions appear. Thus, these are not conducive to tackling the grounding problem of the embeddedness of critical thinking in social practices. What emotions do for critical thinking seems to be not significantly different from what emotions do in general for reasoning processes, yet critical thinking is more than reasoning, and in spelling out this difference also lies the challenge of precisely understanding the role of emotions in critical thinking.

Emotions are important for practical reasoning, because emotions orient the epistemic agent to morally and practically salient features of situations (cf. e.g. Nussbaum 2001; Roberts 2003; Zagzebski 2003, Roeser 2011 for moral reasoning, and Frijda 1986, Damasio 1994 for practical reasoning). If this is the case, then it makes sense to say that emotions are important for critical thinking, given that CT is about applying one's practical reasoning capacities in day-to-day life in order to decide what to believe or do (Mackenzie 2002; Dunne 2015). Yet, what is still in need of explanation is to what extent are emotions important for the *critical* part of critical thinking, i.e. for what goes beyond mere practical reasoning. For this, we need to look at the role of CT for belief revisions. Practical reasoning may be used instrumentally, to achieve one's purposes, be they nefarious or generous. However, what makes critical thinking distinctive from instrumental practical reasoning is that these purposes are also up for scrutiny. What makes critical thinking distinctive from instrumental practical reasoning is an implicit commitment to the results of one's thinking. Someone engaging in critical thinking is open to the possibility of changing their beliefs, but also their values and goals, if they find them defective in the light of new evidence or upon further reflection. Thinking as an alignment of reasoning with actions and beliefs deserves to be labeled 'critical' when the judgment is non-

standard (Dewey 2007; Hendricks 2006), e.g. when it is not about applying a general rule to a case or about whether it is appropriate to apply a general rule to a case.

Because of this potential of critical thinking to overturn values and goals, critical thinking may be uncomfortable, and this experience of discomfort reflects the signature feature of critical thinking, which is the connection between existential commitments, practical rationality, and emotions. This is a unique phenomenological dimension that has not yet been fully acknowledged in the literature on critical thinking. In what follows we will elaborate on this aspect. We will argue that critical thinking is not only outward-focused on external information and evidence but also inward-focused as a form of practical reasoning that has the potential to destabilize one's beliefs, norms, values, and ways of life. Critical thinking involves a felt experience of a position where one is willing and able to question one's previous beliefs and existential commitments.

There is a strong link between our beliefs and our existential commitments to values and norms. Attacks on or doubts about these existential commitments are sometimes experienced as a uncomfortable 'sting'. For instance, when a person who thinks of themselves as pacifistic and peace-loving, harbors belligerent thoughts. These thoughts call into question what kind of person they are and whether they really endorse pacificist values. This experience can be highly disruptive and potentially requires a readjustment of existential commitments.

Existential commitments have a strong connection to one's personal identity and sense of self. People usually have an existential commitment to their personal values and to beliefs that are connected to these values. What it is to be a particular kind of person, like a good friend or honest colleague, involves endorsing certain values. In contrast to existential commitments, non-existential commitments have only a weak link to personal identity. For example, I may be committed to the belief that it is raining in Amsterdam right now, but this belief has no deep connection to my beliefs about who I am as a person, so, no connection to my self-image. Thus, learning that I am mistaken about the weather in Amsterdam has no repercussions for the sense of who I am as a person and will not shake my self-image. Another feature of existential commitments is that they are more tightly linked with other commitments. Take the commitment to a particular political framework, like liberalism. This political commitment is linked to many other beliefs and values, like beliefs about what is central to human flourishing, beliefs about political economy, and values like individual freedom.

We would like to stress that we are not proposing a narrow view of the role of emotions in critical thinking where emotion's role is merely to indicate threats to values or goals. Emotions are an indicator that values are implicated in a situation or event, and the phenomenological experience of a threat or potential change of existential commitments certainly plays an important epistemological role. However, critical thinking also requires an open-minded treatment of this experience of discomfort and a willingness to constructively engage with it as a sign of a potential change of existential commitments. Our account of critical thinking requires a broader affective disposition of intellectual openness, particularly where one's existential commitments and values are concerned (more on openness below and in the section on affective scaffolding).

Existing accounts of critical thinking also highlight the disruptive potential of critical thinking for one's way of thinking, the most well-known being that of Richard Paul's idea of *strong critical thinking* (Paul 1981) where one comes to question one's own modes of thinking. In strong critical thinking, suddenly the background of normative commitments is experienced as less obvious, and as such open to being challenged. For the critical thinker, this may be a shattering experience: one's worldview is about to break down and needs to be reconstructed. We would like to emphasize that this kind of experience of thinking critically is typically entangled with strong emotions.

Being a critical thinker is not merely about belief revision but also about the openness to revise deeper existential commitments, which is fundamentally a moral stance. Because this openness goes beyond challenging empirical facts and also covers values, a genuine critical thinker is not only open to new empirical evidence but also actively seeks out perspectives that could destabilize their values and norms. A critical thinker takes into consideration testimonies and experiential accounts of others, such as first-person narratives. For example, a white person who genuinely believes she is not a racist and that the social institutions are impartial to all citizens, no matter their race, may seek out testimonies of people of color concerning how they experience the interactions with law-enforcement institutions in order to challenge and refine her viewpoints. This requires emotional capacities in several ways. For instance, it requires an openness to sympathize with another person's perspective, and imaginatively engaging with their experiences. This can require conscious effort, steered by emotions of compassion and care. The emotional phenomenology of critical thinking is in contrast with dualistic approaches to emotions which reserve effortful thinking to rationality and reduce

emotions to spontaneous gut reactions (such as e.g. Kahneman 2011, Haidt 2001; Greene 2003).

We acknowledge that this element of destabilization of values and norms of the practice of critical thinking may be demanding for some people, because it may be existentially burdensome. In terms of capacities, however, our proposal of reframing critical thinking puts only modest demands on epistemic agents. After all, no special capacities are needed and the emotional capacities that are required, such as compassion and openness to other's perspectives, are capacities and skills that are needed to participate in society and social discourse.

While we acknowledge that we need rigorous empirical studies to establish if emotions are necessary for or if they are only aiding critical thinking, we leave this question open to future researchers. Given that practical rationality is a constituting element of critical thinking and given that emotions are central to practical rationality, emotions are central to critical thinking. Based on our description of the phenomenology of CT (i.e. the existential commitments, the authenticity and vulnerability entailed by critical thinking) we take it that a subject engaging in critical thinking is suspending their beliefs and is in principle, willing to revise their commitments. In that sense, critical thinking can be a form of throwing oneself into the existential unknown. Because this process of suspension involves existential commitments and values, this decision to suspend or revise commitments should not be taken lightly by any epistemic agent. Also, because critical thinking involves the assessment of values that are at stake in a situation, and because values are crucially linked to emotions, emotions play an important role in critical thinking.

The undermining of one's previous convictions can also be facilitated by an event that is taken as evidence against one's beliefs and that shatters one's previous existential commitments. This can be a profound and demanding emotional experience, because it involves existential comittments to which one may be deeply attached. A critical thinker will choose to examine these emotions and explore the challenging evidence and perspectives, whereas a non-critical thinker will close themselves off to these emotions, dismiss any divergent thoughts and carry on with their worldviews. There can also be a clash of emotions: emotions related to one's previous existential commitments versus emotions that are triggered by the new evidence. A critical thinker will engage in 'emotional reflection' (cf. Roeser 2010). For example, second-order emotions, that is, emotions about emotions, can help to critically assess first order

emotions (Lacewing 2005). Engaging in deliberation with others, listening to their testimonies, watching a movie or reading a story about someone else's experience can be crucial in this assessment. In other words, critical thinking, although it can happen in solitude and often does, is often facilitated if it is exercised in a social context, which can also be mediated via works of art. As we have tried to show in the previous section on the democratic value of critical thinking, the epistemic value of critical thinking is typically increased when it is embedded in a social and material environment. Furthermore, social context can facilitate the existential and emotional dimension of critical thinking, as we have argued in this section. In the next section, we will make the case that these aspects are intertwined: the emotional aspects of critical thinking are also related to specific features of our environment, called affective scaffolds. We will introduce the concept of scaffolding next and then delve deeper into how critical thinking can be affectively scaffolded.

4. Affective scaffolding

We influence our environment but our environment also has an influence on us. Sometimes the environment has an influence on how we behave and it can allow or restrict certain behavior. For instance, the material and the shape of the road has an influence on how we ride or walk on it. The environment can also have an influence on how we think. For example, a whiteboard enables people to write things down, also for others to see, and to engage with more complex problems because one can use it to visualize and write things down without the need to retain everything in memory.

The concept of scaffolding has emerged in the literature to describe the environment's influence on our behavior and on our processes of the mind. A scaffold is an environmental entity that supports, enhances, or regulates some behavior or capacity, such as the abovementioned road or whiteboard (Coninx and Stephan 2021, 43). Capacities here include skills and cognitive processes. It is important to note that scaffolds are not just any environmental structures that enable our bodily or mental activities. What is required is that the agent engages with the scaffold. So, the metabolism of the body, although it enables actions and thinking, should not be considered a scaffold in this sense.

An agent can seek out a particular scaffold as support or the scaffold can influence and regulate activities unbeknownst to the agent. To take the example of the road again: the shape of the road often regulates

how the driver commands the car. Although the driver actively engages with the road by steering the car, the driver need not be conscious about the influence of the road on their driving.

The example of the whiteboard illustrates that our mental competencies often depend on, and are supported and regulated by, the environmental resources and the tools we use. This cognitive scaffolding can take many forms. For instance, students manipulate all sorts of devices, ranging from calculators to pen and paper, to help them solve complicated problems. Another well-known example is the notebook, which was introduced by Andy Clark and David Chalmers in their seminal paper on the extended mind (Clark and Chalmers 1998). Or, some people arrange items in a particular order or place them at a particular spot so that they do not forget them.

Affective phenomena, such as emotions and moods, can also be structured, enhanced and regulated by environmental resources (Roeser 2018). *Affective scaffolding* designates those resources or elements of the environment that evoke, enable, support, enhance, regulate, sustain, and constrain affective experiences (Coninx and Stephan 2021; Saarinen 2020). As Joel Krueger (2020, 598) puts it, affective scaffolds are 'beyond-the-head resources that drive and regulate our affective states'.

The focus on affective scaffolding is important because the emphasis on the environment gives us the full picture of our affective lives. Our environment directly impacts our emotional experiences and we would miss a crucial element if we were to ignore how the environment is connected to our affective experiences. Although we focus on emotions and their relation to critical thinking in this paper, affective scaffolding may cover non-cognitive affective states, such as moods.

There are many resources that humans can use to manipulate their environment to influence their affective lives or to achieve some affective effect. Hence, affective scaffolding comes in different varieties. For instance, following Krueger, we distinguish between bodily, social and material scaffolding (Krueger 2020). Bodily affective scaffolding refers to the role of the brain and the body in the regulation of affective episodes. Social affective scaffoldings are the behaviors and expressions of others that can influence how we affectively relate to the world around us. This can lead to a 'socially distributed feedback loop' (Krueger 2020, 599) where people are affected by others and then their behavior, in turn, affects other people. The behaviors and affective responses of different people can be integrated. For instance, in a

crowd of soccer fans, the members' feelings can align because the members influence each other's emotions, thereby keeping up the general emotional atmosphere of the crowd.

Items of material culture, foremost artifacts, can function as an affective scaffold. For instance, one may choose to wear a particular piece of clothing to boost feelings of self-confidence. A picture of a friend or a wedding ring can also function as an affective scaffold, with both potentially deepening the feelings one has for the friend or spouse (Colombetti 2020).

As we will show in the following section, affective scaffolding is a relevant tool for understanding critical thinking as a practice. We will then argue why certain environments, like some social media platforms, are detrimental to critical thinking because of the way they are affectively scaffolded.

5. Critical thinking and affective scaffolding

Critical thinking scholarship has a long history of describing critical thinking in agent-centered terms (Marabini 2022), for example, by focusing on the individual traits that an agent needs to have to qualify as a critical thinker, such as skills, dispositions or intellectual virtues. However, this agent-centered view makes for an insufficient explanation of what the critical thinker is supposed to do in a societal context where, as many have argued, the critical thinking practice is truly needed. There seems to be a consistent gap between how critical thinking is conceptualized, namely individualistic or agent-centered, rationalistic and devoid of context, and how critical thinking actually takes place. Recall that we take these assumptions to depict an image of a free-floating critical thinker as someone who can think critically regardless of one's circumstances and without any need for help from the outside. This free-floating image of critical thinking makes it hard to operationalize the concept and to explain why critical thinking emerges in some situations and not in others, such as in the case of some social media platforms. Thus, scaffolding as the embedding of critical thinking in a material and social context is almost non-existent in scholarly discussions.

Critical thinking is a practice that is socially and materially embedded, which means critical thinking can be scaffolded in more than one way. That is, various ways of scaffolding can sustain and maintain the practice of critical thinking, while other ways of scaffolding may be detrimental to it. What is crucial here, connecting to what we argued for in the previous sections, is not only cognitive scaffolding that matters for critical thinking,

but affective scaffolding is relevant as well. Specifically, resources of the environment can be used to sustain and regulate affective experiences in epistemic environments, which can in turn support or hinder critical thinking. As we argued above, contrary to what some authors believe, emotions are not contrary or inconsequential to the practice of critical thinking. If we combine this with our discussion of affective scaffolding in the previous section, this allows us to explore the idea that the right kind of affective scaffolding can utilize the power of emotions and affective experiences for critical thinking. We will first discuss how affective scaffolding can shed new light on traditionally discussed epistemic environments for critical thinking which are typically focused on formal education settings. In the next subsection, we will zoom in on what this means specifically for the context of social media.

Critical thinking can be scaffolded in a material and non-material way. As an example of the latter, consider how critical thinking and transformative learning can be socially scaffolded in education by creating an open climate. One way to create this climate is to establish social norms of critical inquiry and to normalize the making of mistakes in the classroom. An example of a particular social scaffold for critical thinking is the Socratic dialogue (Sharma and Hannafin 2004, 184). A Socratic dialogue entails asking the student questions in view of clarifying their ideas, and getting them to realize their own potential inconsistencies or fallacies. It is a guided dialogue where the teacher does not provide the answers, but the student comes to realize them. It has to be acknowledged that emotions can play an important role in such an educational context. In order for critical thinking to be successful, the emotional climate of the classroom needs to be encouraging, students need to feel comfortable with not knowing or making mistakes, and the attitude of the teacher and of the colleagues needs to be friendly and open. In the case of the classroom climate, the social scaffolding has a strong affective component.

Affective scaffoldings can contribute to changes of the individual that are aligned with critical thinking. For instance, affective scaffoldings, such as particular norms and emotional climates in the classroom, can support, or hinder, affective self-transformation (Maiese 2017). What affective self-transformation refers to is a change in the sense of what is true or a change in what counts as an acceptable view of how the world is, or how we should interact with people. An environment that supports being receptive to alternative viewpoints and new information could facilitate an affective self-transformation towards more openness and

self-critical awareness. A different affective scaffolding, particularly one that rewards shutting off diverging viewpoints, could facilitate the opposite, namely an affective transformation towards more close-mindedness. As we will show below, affective self-transformation is an important lens when we address social media, because social media often rewards a way of interacting with opponents, particularly political opponents, that construes them as enemies and not as partners in a discourse.

Furthermore, there can be social affective scaffolding that supports an emotional climate and epistemic culture that motivates openness and co-inquiry, characterized by a participatory process that aims at truth (Candiotto 2022). Co-inquiry can contribute to critical thinking by making individuals receptive to the perspective of others and by fostering a willingness to re-evaluate our own worldviews and beliefs and thereby supporting critical thinking.

Furthermore, affective scaffolding can facilitate self-understanding and self-reflection, which are crucial components of critical thinking (Scriven and Paul 1987; Bailin 2002). An individual may, for instance, have the affective habit of being self-aware and self-critical, which includes the affective components of doubt and feeling that one could be wrong. This affective habit of being self-critical, which can be scaffolded by education, can bring about the high epistemic good of self-understanding when emotions direct our attention toward our existential commitments and values. The affective habits of self-awareness and of being self-critical can thus contribute to the epistemic practice of critical thinking. These and other affective habits can be supported by other forms of scaffoldings, like social norms of open-minded exploration of one's beliefs, which may lead one to judge and potentially dismiss some beliefs. As far as affective scaffolding supports self-awareness and insights into one's emotions, values and beliefs, it contributes to critical thinking.

Critical thinking can also be materially scaffolded by resources that are reliably available to the individual. As a simple example, take a post-it notes that sticks to the screen as a reminder to be critical of one's beliefs and assumptions more often. A digital equivalent would be reminders on the mobile phone or computer that regularly pop up. Another form of material scaffold are pictures, which can function as powerful representational scaffolds (Colombetti 2020). So, to remind oneself to strive towards becoming a better critical thinker, one could have a picture on the desk of a famous critical thinker, scientist, or philosopher, who is a representative exemplar of critical thinking. While this would be a more intellectualist scaffolding, a more directly affective scaffolding could be

a picture of someone from an underrepresented group to remind ourselves to remember their viewpoint when thinking about a challenging societal issue. Other affective scaffolds can be works of art, such as narrative presentations of other perspectives that can challenge our own viewpoints (Roeser 2018).

6. Social media and affective scaffolding

Current proposals to foster critical thinking online focus on promoting a mode of reasoning that is rational, analytical, slow and deliberate. For example, Lutzke et al. (2019) tested whether priming for CT would help users better recognize fake news. The authors described critical evaluation of fake news in terms of thinking 'more deeply' (Lutzke et al. 2019, 2) by spending more time in evaluating the criteria for fake news. In a similar study, Pennycook and Rand (2019) found a correlation between users sharing fake news and how (low) they scored in analytic thinking. These studies are representative of a wider trend to see critical thinking as somewhat synonymous with analytic thinking or the so-called system 2 in dual-process theory (see Kahneman 2011). System 1 is supposed to be fast, intuitive, emotional, and heuristics-based, but unreliable. System 2 is taken to be more reliable but slow; it involves deliberate and analytical processes, which these authors understand to be rational, not emotional. While CT is not identical to analytic thinking, there is significant importance attributed to reflective thinking in the critical thinking literature, whereby most definitions of critical thinking mention the slow and careful manner in which it is conducted, with an emphasis on rationality (see for example, Siegel 1989; Moore and Parker 1986; Battersby 2016; Hitchcock 2018; etc.).[4] Meanwhile, several psychology studies have found a negative correlation between system 1 and critical thinking (Klaczynski and Lavallee, 2005; West, Toplak, and Stanovich 2008). These psychological studies, which emphasize how CT includes analytical and rationalist thinking processes, are indicative of the overall tendency in critical thinking research to disregard the role of emotions for critical reasoning because of a limited, dualistic understanding of emotions as fast and instinctive gut reactions, belonging to system 1. As we have proposed above, if we aim to overcome the rationalistic bias of critical

[4]This trope of the careful, deliberate manner of thinking is inspired by John Dewey, the godfather of the concept of critical thinking, who initially described it as 'Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends.' (Dewey 2007, 9).

thinking and find a place for emotions in critical thinking, the question of affective scaffolding online becomes fundamental.

Social media can be considered a form of affective scaffolding, albeit one that often interferes with and obstructs the practice of critical thinking. But while other authors think that this interference is due to the appeal to emotions per se, we argue that this is due to the fact that these scaffolds appeal to epistemically inappropriate types of emotions, such as unreflective gut reactions, instead of more reflective, deliberative, cognitive emotions.

As we have introduced above, critical thinking as a practice and competence depends on an environment that supports and nurtures it. To illuminate how critical thinking is shaped (or mis-shaped) by social media, we think it is helpful to think about social media as an affective niche. Colombetti and Krueger (2015) propose that people create *affective niches* for themselves by modifying their environment so that it fits their affective needs, and to enable some affective experience but constrain others Without the interplay between agent and niche, and without the feedback by the niche, the affective experience would take a different form or it would not occur at all.

Like other digital technologies, such as music platforms and video streaming, social media can be used to bring about or maintain emotions. For example, looking at cute animal pictures on social media or connecting with friends can be uplifting. Social media, we propose, is a particular affective niche, which could in principle support but actually often hinders critical thinking. Drawing on Joel Krueger's and Lucy Osler's (Krueger and Osler 2019) notion of techno-social niche, we propose that social media is a *techno-social-affective niche*. A *techno-social affective niche* is characterized by the integration of technological resources, and social and affective scaffolds. Please recall the distinction between material and social affective scaffoldings that we discussed in the previous section. On social media, material, social and emotional aspects are intertwined and integrated. The way that social media scaffolds at the material level, that is how it is designed and what actions it makes possible, contributes to specific forms of affective scaffolding, which in turn can sustain, support, or hamper the practice of critical thinking.

Techno-social-affective niches can be modified, and a different techno-social-affective niche may thus be contributory to the practice of critical thinking. For an affective niche that can support critical thinking, please recall the example of the classroom with an open emotional atmosphere.

With social media, however, the opposite is often the case. Furthermore, whereas some affective niches can be modified by the agent, the power to modify social media is very limited, and users are to a large extent at the mercy of developers and designers of the platforms.

Social media is a *techno-social-affective niche* that can hamper the practice of critical thinking. Inspired by C. Thi Nguyen's work (Nguyen 2020) on echo chambers and epistemic bubbles, we propose that the techno-social-affective niche of social media, or more precisely, certain areas of social media, can be characterized as an *affective bubble*. This bubble is a zone where it is unlikely that epistemic agents are confronted with discordant voices and where specific affective experiences, such as empathy for opponents' viewpoints, are not rewarded. The affective niche on social media rewards divisive behavior, and when opposing viewpoints are addressed, it is often in a hostile tone which caters to specific emotions, such as anger and hate, usually directed at diverging viewpoints and opponents. The affective bubble is thus characterized by a specific affective atmosphere or affective tone that makes openness to other perspectives and self-critical assessment less likely. Because emotions engage and sustain our attention (Brady 2013) and because they guide our attention towards specific features, particular affective niches on social media guide attention and can contribute or hamper critical thinking. Positive emotions, such as joy or happiness, broaden the scope of attention and can support the expansion of the thought-action repertoire (Fredrickson 2004; Fredrickson and Branigan 2005). Joy and curiosity, for instance, facilitate the urge to play and explore, and they can support creativity. Other emotions, such as fear, can restrict the mindset and focus the attention on perceived threats. An affective niche that is predominantly characterized by negative emotions towards others can make a different contribution to critical thinking than an affective niche where positive emotions towards others prevail.

Narratives of social groups can function as affective scaffolds which are created and maintained by members of the community, and which function as a resource for feelings of self-worth and being part of a group (Coninx and Stephan 2021). Affective narratives, we would like to suggest, have implications for epistemic practices. For instance, an affective narrative that paints certain epistemic agents in hostile colors, will function as a resource for feelings of mistrust, which in turn will not motivate epistemic cooperation or openness to other people's viewpoints. In contrast, an affective narrative that promotes trust and openness can contribute to epistemic behavior that contributes to critical

thinking by motivating people to at least consider diverging ideas from epistemic agents outside the group.

Our proposed lens of social media as *techno-social-affective niche* allows us to see how technical, social and affective components work together to enable or constrain the epistemic practices of critical thinking. On social media, we can observe the proliferation of hostile narratives loaded with negative emotions that are ultimately counter to critical thinking. For instance, consider well-known conspiracy theories that are peddled by QAnon followers, such as the existence of a deep state. A crucial affective component of these narratives is a strongly polarizing sentiment of us vs. them, where opponents or dissenting voices are considered enemies. These affective narratives also include a strong element of mistrust and dismissal of certain sources of information, such as traditional news outlets and scientists.[5] Instead, adherents to the narrative gather information from alternative sources, like message boards and so-called alternative media, in which they have a high degree of confidence because these sources subscribe to the narrative. All of this amounts to a picture where negative emotions towards others, such as mistrust and an us vs. them mentality, feed a particular epistemic practice, including evaluating evidence in a biased way or complete dismissal, and vice versa.

We suggest that this kind of affective scaffolding, and the epistemic practices it facilitates, does not promote critical thinking. Critical thinking requires an openness and willingness to revise existential commitments. The polarizing affective narrative described above is almost prohibitive in this regard because it presents the worldview as the only truth and criticism as invalid from the get-go. A huge part of narratives like these include fear-mongering and negative emotions towards others which, as we mentioned above, can close the mind.

Hence, if we want to fully understand the relation between social media, critical thinking, and people's affective lives, we need to consider the interplay between design features of social media and how these features make the emergence of specific interactions, affective atmospheres and affective experiences more likely. That is, we need to think about social media as a *techno-social-affective niche*. Social media platforms, including the underlying algorithms, often reward a particular kind of behavior, like sharing a specific type of emotional content, which contributes to the maintenance of affective bubbles and affective niches,

[5]Affective narratives like this are at the same time *epistemic narratives*, because mistrust in particular epistemic agents or ways of knowledge acquisition entail views about acceptable epistemic practices.

including affective narratives. As the above brief description of one of these affective narratives shows, some narratives do not contribute to critical thinking. But as we have argued, the problem is not emotions per se, to the contrary, some affective scaffolds, including affective narratives, can contribute to critical thinking.

Emotions are mediated on social media platforms in particular ways that affect their expression and perception. Social media platforms tend to limit the communality experience of felt emotions, for example, by hindering users from mirroring or acknowledging each other's emotions, but also from seeing the direct effect of their words on others (Marin and Roeser 2020).

Online critical thinking would be strengthened if it would involve genuine deliberation with others. Deliberation is not a purely rational endeavor but also has an important emotional dimension, for example, by engaging with sympathy, compassion, and care with other people's viewpoints contributing to understanding of their viewpoints and moral values (Roeser 2011; Roeser and Pesch 2016). As we argued in the preceding pages, the same holds for critical thinking. Critical thinking itself can be socially and affectively scaffolded. By partaking in a public deliberation that is conducted with openness, we learn that it is OK to be intellectually humble in front of others, to admit one does not know it all, that one may have been mistaken, and that it is normal to change one's mind. These affective skills need a social setting to be developed because one cannot learn this in solitude. However, because of the frequent failure of debates on social media, where everybody sticks to their guns and is often more persuaded about their own point, users do not get the chance to develop these affective skills properly. In other words, online debates are not appropriately affectively scaffolded, and this leads to users not feeling safe enough to be critical (which also includes being self-critical) in these online spaces. To achieve proper online deliberation requires a redesign of social media in order to provide for affective scaffolding that fosters emotional deliberation rather than knee-jerk gut reactions. Hence, the problem are not emotions as such, but the emphasis on affective states that lead to closing oneself into one's own bubble and thereby also to polarization and 'uncritical thinking'.

7. Conclusions

In this paper, we elaborated on the role of affective scaffolding for critical thinking, particularly in online contexts. To establish the link between

emotions and critical thinking, we proposed an account that takes critical thinking to be a social practice of attempting to align one's beliefs with the evidence 'out there', based on sound epistemic standards while also taking seriously the possibility that one's network of beliefs and one's values are challengeable. Based on our account of critical thinking as something deeply affective, as an experience that 'stings' and destabilizes, we pointed out that emotions need to play a crucial part in this experience. We argued that the phenomenology of critical thinking reveals the crucial role of emotional engagement with the issues being evaluated.

Our account is in contrast to extant accounts of critical thinking, because these accounts tend to see CT as a 'free-floating' individual cognitive process that happens in one's head, and is devoid of emotions. These accounts of critical thinking cannot explain why critical thinking is so hard to foster in certain epistemic environments such as social media platforms. We advanced the idea that we need to ground the practice of critical thinking in social practices, in material environments, by looking at how it is scaffolded. We showed that affective scaffolding plays an important role in whether or not people are successful critical thinkers. In the realm of social media platforms, forms of affective scaffolding prevail that foster the wrong kind of affective states, because the platforms are designed for maximum user engagement and clicks, which is often achieved by divisive emotions. In effacing affect, social media platforms inadvertently also hinder critical thinking since users do not arrive at a point of being vulnerable and authentic enough as to experience self-doubt, self-reflection and self-improvement in debates with others, and sympathy, care and compassion that can lead to a better understanding of divergent viewpoints that can challenge one's own.

Our findings open new avenues of philosophical exploration. In social epistemology, more attention needs to be paid to conceptualizing how emotions are scaffolded and how this can help to explain problematic epistemic practices. Clearly, if emotions such as arrogance, contempt or pride are scaffolded, these should be in principle hindering agents from engaging in critical thinking. Not all affective scaffolding is conducive to critical thinking, there are better and worse ways of doing it. In any case, the problem with online critical thinking is not emotions per se but the wrong kinds of affective scaffolding, based on very limited and manipulative views of emotions. Rather, we propose further research into how affective scaffolding can contribute to critical thinking, in general but also specifically in online environments.

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