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Emotions and Digital Technologies:

Mapping the Field of Research in Media Studies

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Emotions and Digital Technologies:

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Javier Serrano-Puche

Emotions have become increasingly important in our time, in all realms of social reality. This active presence of the affective dimension of the person is revealed in its common presence as the subject of research in many fields of knowledge. This is reflected in Media and Communications studies, and specifically in relation to the use of digital technology, where a keen academic interest in emotions can be observed. This paper maps the field of study where emotions and digital technology converge. An overview is presented of research conducted in two main areas: On the one hand, emotions linked to the use of technology (especially mobile phones) and, secondly, the Internet as a space in which emotions are activated and expressed. I conclude that technology not only arouses emotions in users and serves as a channel for the expression of affection, but also influences the way in which this affection is modulated, played out and displayed. This configuration, I argue, has consequences for the construction of identity of a person.

INTRODUCTION

During the last few decades great advances have been made in research on emotions and the affective, not only in disciplines in which that interest is something to be expected (such as psychology, medicine or neurology), but more generally in the realm of the humanities and social sciences (González, 2013a). Although throughout the Western tradition the reflection about the nature of human affection has always been present—from the writings of Aristotle, and more recently in Descartes, Spinoza, William James or George Mead and others (Solomon, 2003)— emotions have become lately the object of study of different scientific disciplines (such as anthropology, economics, linguistics, etc.). In this regard, some of the most fruitful theoretical approaches are those developed from the psychology (particularly the social psychology) and the ‘sociology of emotions’ (Turner and Stets, 2007).

There are, therefore, various theoretical frameworks on emotions, which are conceptualised and explained both from neurobiological and sociocultural perspectives (Lewis, et al., 2008). Moreover, emotions are not simply a subject matter of research but rather the perspective for a new epistemological turn (Clough and Halley, 2007). Conversely, the complex reality of this facet of human nature makes it an object of interdisciplinary study, albeit one about which there is still no comprehensive vision, capable of bringing together and integrating all these different disciplines. There is also no conceptual and terminological consensus about phenomena covered here, such as affection, emotions, feelings or passions. Although this is a debate that transcends the objective of this paper (see Batson, et al., 1992; Shouse, 2005), it suffices to note that affection is related to pre-individual and unintentional aspects, while emotions are considered personal, but conditioned by social and cultural conventions, and therefore, very likely to be subjected to control and emotional labour strategies (Hochschild, 1979).

This increasingly interest in emotions in academia it’s strongly related to the rise of the affective dimension in social life, where it can be identified relevant transformations in the expression of affect in the private and public arenas (i.e. the growth of the emotional culture in the realms of education, health care and management, the proliferation of self-narratives, the changes in consumption practices...). Parallel to that process, we have also witnessed the growing social acceptance of Information and Communications Technology (ICT). Technology is fully integrated into our daily lives, to the point that it is no longer possible to separate the media from daily activities, because they have become ‘a necessary and unavoidable part of our existence’ (Deuze, 2012: xi). But the adoption, pervasiveness and ubiquity of digital devices is not a mere quantitative issue, due to their ‘wide distribution,

customisation, and the possibility of permanent connection that they create, contribute to reconfigure various aspects of everyday life and of processes of contemporary subjectivation and socialisation' (Lasén 2014b: 7).

There is no doubt that today people relate in both offline and online environments; furthermore, social relations are already hybridised. As Lasén (2014b: 10) notes, what is interesting is to identify how

new mediated practices resume past performances, speeches, values, interactions and situations: We do what we used to do (flirt, gossip, coordinate, stay, harass, etc.) but with new participants (phones, computers, apps, smartphones...) and in this reconfigured environment, different ways, different times, places, meanings and subjects emerge, involved in similar activities, relationships and interactions

Therefore, there is a process of 'remediation' by which 'new media technologies refashion prior media forms' (Bolter and Grusin, 2000: 273). At the same time, the digital realm has undoubtedly its own peculiarities, which come from its electronic nature, and that in turn affect the emotional dimension of the person. The traditional social life, which is slower and localised, coexists with the (faster and uprooted) digital social life. Thus, these are two space-time regimes; and each is accompanied by a corresponding emotional regime. The technological emotional regime is primarily a regime of emotional intensities, in which the amount of emotion matters, while in the traditional regime is primarily a regime of emotional qualities. It is clear 'that the coexistence of both emotional regimes generates interference between emotional logic of each system' (González, 2013b: 13-14). Such coexistence, moreover, makes the field of analysis of digital technology and emotions broad and complex, as it is to address the implications derived from it both in physical and in the digital world.

HYPOTHESIS, OBJECTIVES AND METHODOLOGY

The co-existence, on one hand, of the growing importance of the affective dimension in social life with, on the other hand, of the role acquired by technology and the digital realm in everyday interactions, has allowed the field of research at the intersection of both to become very abundant and varied. This is true both in terms of theoretical frameworks and methodologies, and in the issues, emotions, social groups or specific technological devices that are the subject of the various studies and publications to this day.

My hypothesis is that in everyday use of digital technology the importance of emotions in our society is made manifest in a clear way, and how they, with help of digital technology, influence the way in which the 'self' of users is configured and expressed. Based on this hypothesis, the goal of this paper is to provide, within media and communication studies, an overview of the field of research on digital technology and emotions, showing the different areas of study and the most relevant publications in each of them.

Through a comprehensive literature review, I will map this field of research in the following pages. To do this, we will take as reference the academic literature that has explicitly explored emotions in relation to digital technology, whether they focus on user contact with electronic devices, or in the new field of socialisation and emotional projection that is the Internet. Although the distinction between the plane of physical reality and the plane of digital reality is questionable (since people and their emotions flow from one to the other continuously and are manifested at both levels simultaneously), for taxonomic purposes, it seems the most operational categorisation to understand the object of study. Hence, we shall examine two main areas of research:

- 1) Emotions that users of digital technologies experience when they use (or do not use) various technological devices. Within this field, we pay special attention to the emotional investment that people place in digital technology and in the different devices they use to access it (and the consequences this entails for the configuration and expression of personal identity).
- 2) Emotions mediated through content and applications transmitted by digital technologies. In other words, the Internet and the online realm as a space in which emotions are activated and expressed.

It should be noted that we are not advocating technological determinism, since we consider the relationship between technology and society as one of mutual shaping. From this perspective, technological change is a dynamic process in which technology and society influence each other and they are mutually constituted (Bijker, Hughes and Pinch, 1987; MacKenzie and Wajcman, 1999).

EMOTIONS WHEN USING DIGITAL DEVICES

Emotional investment in technology

From a historical perspective, we can say that the relationship that the western world has had with technology has always been highly emotional. Since technology is always in the realm of novelty, its emergence opens the question of how the new flows into the old. This process, as noted by Fortunati and Vincent, 'is played in a binary way between the pole of curiosity, rarity, new risk and uncertainty on the one hand, whilst on the other it includes old habits, stability certainty, security and safety' (2009: 6). Additionally, there is the series of meanings, symbols, values associated with technology. Therefore any technological innovation, especially in the beginning, raises a debate between enthusiasts and sceptics or, to put it in terms of Umberto Eco, between 'the apocalyptic and the integrated' (Eco, 1964).

If we focus on the subjective plane, we can note as well that the use of digital technologies—through any of the various devices that embody them (mobile phones, tablets, wearables, desktops, media players, etc.)—can arouse emotions in people: more or less intense, more or less positive or negative. Given the popularity of its use, it has become a constant presence with the person; so much so that the sensory contact is the first step to elicit an emotional relationship between the user and the device: 'ICTs and media technologies are more than ever touched, felt, held, worn, caressed, pressed, thumbed, dropped, scratched, protected, stolen, remembered, and forgotten within the affective economy of pervasive and ubiquitous computing' (Garde-Hansen and Gorton, 2013: 42).

They enable the fixing of emotions, transforming them into 'digital inscriptions' (Lasén, 2010a), into objects that can be stored, managed, viewed, compared, shared, etc. By becoming 'archives of feelings', i.e. 'repositories of feelings and emotions, which are encoded not only in the context of the texts themselves but in the practices that surround their production and reception' (Cvetkovich, 2003: 7) the device awakes an affectionate response in the owner, usually characterised by attachment or dependence.

Emotions and mobile phones

Within the array of technologies, the device with the highest emotional load attached to it is the mobile phone; and it is therefore the device that has inspired the largest amount of literature in this field. Thanks to its ubiquitous connectivity, the possibility to be customised in different features, and its omnipresence, the mobile phone has become 'a personal

compendium for the life of the user' (Vincent, 2013). This device is strongly related to daily activities and even the personality of its owner; their way of presenting themselves to others (Fortunati, 2005). On the one hand, the wide range of models available in the market and the ability to customise many of their features, both external and internal (cases or covers, ringtones, notifications, wallpapers, downloaded applications etc.), make them not only an instrument that reflects the user's identity, but also an artefact with an aesthetic value and subject to fashion demands (Katz and Sugiyama, 2006; Sugiyama, 2009; Zoetewey, 2010; Juhlin and Zhang, 2011; Fortunati, 2013). Moreover, as pointed out in research (Oksman and Rautiainen, 2003a/2003b; Richardson, 2007; Campbell, 2008), mobile phones are increasingly assimilated by people as extensions of their body, on which the devices project possibilities but also coercions. By having in their design certain usage patterns, they in turn create patterns in the body: postures, gestures, habits. The bodies react and acquire new skills, while others are delegated to such objects (Lasén, 2010b). It is, ultimately, a particular type of association, an assembly, which gives rise to an entity ('Me and my mobile') whose study and characterisation emerges as one of the most interesting realities within the field of research on digital technology and emotions.

Among the publications on emotions related to use of mobile phones the work of Vincent (2003/2005/2009/2010a/2010b) is very important. She has have researched the sociocultural practices associated with the use of this device in the UK for over a decade and the results of her research (where she uses a repertoire of qualitative methods including focus groups, interviews, and diaries written by study participants) shows a wide range of emotions among users, both positive and negative. Given its wide penetration among the population, ubiquitous and continuous expectations of use have been consolidated (Ling, 2014). This 'perpetual contact' (Katz and Aakhus, 2002) can lead to emotional dissonance, because:

when we send an SMS, we hope that the recipient is 'connected' permanently, and thus, a delay in response may be considered as a personal disaffection. The mobile phone 'frees us' (giving us mobility) but becomes also a tether, as it is expected from us to be always reachable, always 'on call' (Hjorth, 2009: 129).

Another of the most common emotions is panic at the prospect of having to distance oneself from the phone or when its battery dies. Obviously, emotions depend on the person and their particular circumstances, but as permanent connectivity is an increasingly common feature, other authors suggest that intensive use often generates tension between the desire to be linked through technology, and at the same time, feeling trapped by it (Hall and Baym, 2012). The concept of Fear of Missing Out—and also of becoming invisible to their contacts, if they

fail to update their status on different social networks—makes users become unable to disconnect themselves from the digital plane (Przybylski et al., 2013; Collins, 2013; Moeller, Powers and Roberts, 2012).

From the point of view of the domestication of digital technologies at home, the family culture around rules of use—often negotiated among the different family members—gives rise to upwelling of emotions (or emotional labour, to control them) where such agreed upon rules are not complied with or are put into question (such as checking the mobile during meals, for example) (Schofield Clark, 2014). It is a process that demonstrates that technology plays an increasingly important role in the emotional and moral economy of the household (Silverstone, et al., 1992).

It should also be noted, however, that the use of the mobile phone is also a source of frequent and diverse emotional gratification. By allowing contact with family and friends more easily, it is a useful resource for maintaining emotional balance to cope with everyday stress (Licoppe, 2003; Ling, 2006), also for the coordination of everyday activities and the rearticulation of intimacy between couples (Cantó-Milà, et al., 2014; Lasén and Casado, 2012; Hjorth and Lim, 2012). As material and bodily link that mediates other interactions, the mobile phone has thus acquired a crucial role in contemporary sentimental education (Lasén, 2014a). It acquires an emotional value especially in the case of those groups for which this device symbolises the link with their families in the distance, such as the case of immigrants or refugees (Fortunati, et al., 2012; Harney, 2013).

In the specific case of women, according to Fortunati and Taipale (2012) after a survey in 2009 to more than 3,000 women from five European countries (Italy, France, the UK, Germany and Spain), their emotions towards their mobile phones are predominantly positive (to a much greater degree than found in a similar study carried out in 1996. This perhaps indicates that domestication and technological appropriation have a positive effect on the attitude of the user). One reason for this might be that carrying their mobile phone gives women a sense of security when they are in public spaces. Its potential to access known others (and the police) means that the device is viewed as a more effective weapon of self-defence than pepper spray (Cumiskey, 2010; Cumiskey and Brewster, 2012).

Public spaces are an environment where many of the emotions associated with the use of mobile phones emerge, which are helping to redefine the boundaries between public and private spheres, because, with their use, private information and feelings become public. In

fact, among the mobile phone users surveyed by Vincent (2010), a recurring emotion is excitement when receiving text messages or calls of an intimate nature in a public setting.

Furthermore, given the ability of digital media to split the presence of people, they can be in two places at the same time: in the context in which they are physically present, and also in the technologically mediated environment that is accessed through the screens. The complexity of social interactions when both planes—physical and digital—converge is even greater when they occur outside the domestic sphere. When receiving a call in public, the person has to decide to focus on either space of interaction, which triggers emotional reactions either in the users (who have to manage their emotions in two contexts simultaneously) and the people in their contexts (who may feel distressed if their companion answers a call or talks for too long). Hence, as Höflich (2009) concluded, receiving a call in a public space or an inappropriate moment sometimes creates a feeling of stress.

DIGITAL REALM AS AN EMOTIONAL SPACE

An overview of recent research, key issues and methodological challenges

Within the field of research on digital technology and emotions, there is a second area, devoted to the analysis of the online realm as a space in which emotions are activated and expressed. Comparatively, it is far more extensive and complex than the first area, as it encompasses many different phenomena and congregates studies from different theoretical perspectives and disciplines. As Benski and Fisher (2014: 6) indicated in the introduction of their book *Internet and Emotions*, the Net is a unique laboratory for the analysis of emotions for two main reasons:

First, the Internet is a fertile ground for a huge diversity and amount of communication of all sorts and from a large and diverse group of people. Much of that communication is emotional, reflecting immediate feelings, sometimes as they occur – most use of social media such as Facebook and Twitter is now occurring on mobile devices. Second, these communication acts are all registered... When communication data become available, it is relatively easy to analyze since it is likely to be relatively complete and includes meta-data such as time and location, and at times other pieces of important demographic information about the authors of the data such as gender, education or online behaviour.

This unique character of the Internet as an object of study in relation to emotions has produced abundant and varied literature. Without taking into consideration the studies on

the search for affective relationships through Internet (love, as the emotional state par excellence, has been examined in the digital dimension by Ben-Ze'ev, 2004; Illouz, 2008; Kaufmann and Macey, 2011, among others), some studies focus on the analysis of a particular emotion, such as:

- **empathy** [sympathising with the tragedies of others, producing videos on Youtube, see Pantti and Tikka, 2014]
- **annoyance** [which children and adolescents admit to experience when they find inappropriate content on the Internet, see Livingstone et al, 2013).]
- **envy or jealousy** [when reading Facebook status updates of contacts, see Muise, Christofides and Desmarais (2009); Krasnova et al. (2013); Sagioglou and Greitemeyer (2014)]
- **resentment** [of workers in precarious job, who let off steam in the forums, see Risi (2014)]
- **hope** [that fosters interactions on dating websites, see Fürst (2014)]
- **hatred** [often under anonymous cover that the Net can provide: see Perry and Olson (2009); Micallizzi (2014)]
- **grief or mourning** [see Walter, et al. (2011/2012); Jakoby and Reiser, (2014)]

There are studies that focus on the expressive capabilities of a particular channel of communication such as Skype (Chiyoko King-O'Riain, 2014) or email (Kato, Kato and Akahori, 2007; Byron, 2008); while others focus on specific groups whose activities have a strong emotional charge, such as feminists (Reestorff, 2014; Shaw, 2014) or political activists (Knudsen and Stage, 2012). From the point of view of disciplinary traditions, digital emotions have been approached from Cultural Studies (Karatzogianni and Kuntsman, 2012), Screen Studies (Garde-Hansen and Gorton, 2013), Digital and Information Literacy (Power, 2013), Risk Studies (Roeser, 2010) or Queer Studies (Cefai, 2014), among others.

As noted above, the aim of this paper is to map the state of the field within Media and Communication Studies. Therefore, we will not dwell on studies that research the subject from other approaches such as Engineering and Computer Science. It suffices here to simply stress the importance and relevance of 'Affective Computing,' where computer science, psychology and cognitive science converge, and which studies how to design computers that are able to recognise, interpret and even simulate emotions in order to improve interactions between people and computers (see Picard 1998/2003). There is therefore a continuing attempt to progress in the imitation of the human, not only making devices and interfaces increasingly 'smarter', but also—albeit as an illusion—more affective and emotional. 'This process of anthropomorphisation to which machines are subjected is the proof of how much human beings invest symbolically and emotionally in them' (Vincent and Fortunati, 2009: 2). Also from an approach of computational linguistics, 'sentiment analysis' is increasingly

gaining importance, that is, the type of sentiment (positive, negative or neutral) that a person might feel or try to express when writing some information, and which in the digital realm is applied especially in social networks like Twitter (Pak and Paroubek, 2010) or Facebook (Ortigosa, et al., 2014).

Two of the key issues that mark the debate about emotions in the online realm, in Media and Communication Studies and related disciplines, are: first, how emotions can emerge and be measured in the Internet (Boehner et al, 2007; Küster and Kappas, 2014) and, second, the differences, and similarities between the expression of emotions in face-to-face relationships and relationships mediated by digital technology (Derks, et al., 2008 ; Boyns and Loprieno, 2014). Regarding the first, there are:

three areas of emotions measurement, each requiring its own unique methods, and each revealing a different facet of the intersection of the Internet and emotions. First, we can investigate large amounts of emotional content readily available online (through qualitative or quantitative content and data analysis). Second, we can inquire into the subjective emotional experience of users (using self-reporting, through interviews or questionnaires). And third, we can record bodily responses indicating emotional states in real-time Internet use (Benski and Fisher, 2014: 8)

In terms of emotional expression in computer-mediated interactions, we must start from the realisation of the peculiarities of the digital environment, where there is no corporeality to accompany physical relationships, and the communication between participants is not necessarily synchronous. Since affection has a bodily foundation and it is more difficult to control emotions face to face, the absence of both factors might lead one to believe that the digital realm is emotionally colder, and that it impairs or restricts the expression of emotions. However, in an extensive literature review on this issue, Derks, et al. (2008: 780) conclude that

CMC is not characterized by a lack of emotions, on the contrary, [...] positive emotions are expressed to the same extent as in F2F interactions, and that more intense negative emotions are even expressed more overtly in CMC.

When interaction mediated by technology is textual and not visual (and therefore there are no nonverbal cues, which are certainly an element of richness in the expression and interpretation of the affective dimension), Internet users can offset such absence by using emoticons (Derks, et al., 2007; Baron, 2009; Jibril and Abdullah, 2013). If the digital interaction is through video, and there is therefore mutual facial recognition, expression and

interpretation of emotions becomes - in principle, at least - easier (Kappas and Krämer, 2011). Indeed, each technological device, application or communication channel (video call, instant messaging, etc.) carries with it a particular 'affective bandwidth' (Lasén, 2010a), i.e., they allow certain amount of emotional information to be transferred. In this sense, the Internet in turn encompasses different socio-technical environments that allow emotions to surface to varying degrees; therefore, the affective dimension is not revealed equally in all interactions and communicative situations taking place in the Net. There are, therefore, some 'emotionality factors' (Gómez Cabranes, 2013: 219-223), such as:

- the expressive possibilities of each of those environments (it is not the same if it is a blog, a chat, a social network etc.)
- themes and topics around which the interaction revolves
- the context and purpose of use
- the degree of anonymity or self-revelation in interactions
- the investment of time or frequency with which users connect to the digital domain.

Thus, although the digital emotional regime is primarily a regime of emotional intensities, these do not occur equally in all applications and contexts of the digital environment, but they are conditioned by the above factors, among others. Next, we will explore in more detail the expression of emotions in social networks, both at micro level (of interactions between users) and macro level (the phenomenon of emotional contagion).

Emotions in Social Networking Sites

Becoming aware of the capabilities of the digital realm as a space and channel for the expression of emotions involves considering the Internet and its applications not as an instrument that we use, but as a place of experience and subjectivity. Rather than a means of communication, it is a space that we inhabit (Lasén, 2014b). This is especially evident in, but not limited to, social networks, which are specifically designed to create and maintain links with others, making these sociability platforms one of the most representative examples of Web 2.0. The way in which this design is realised is not an emotionally iniquitous decision, but it conditions the expressive capacity of the user. Such is the case, for example, of Facebook and its single 'Like' button, not giving users the option to express more negative feelings (dislike, anger, grief, etc.) as easily (Wahl-Jorgensen, 2014). The implications of this 'emotional architecture of social media' transcend this context, because (as clearly argued by Peyton, 2014), the notion of 'liking' has experienced a semiotic change through the Facebook like button, moving from the intimate and emotional realm of the individual into the public

realm. Rather than a feeling, it is now an action, since ‘instead of being tied to an internal sensation that reacts tacitly to an external stimulus, to ‘like’ now becomes a conscious rationalized action that connotes an external tag of connection between an individual, a discursive element, and a social stance’ (Peyton, 2014: 113).

Within the digital realm—similarly to what we saw in the first major field of research, when we discussed the use of technological devices—the emotional dimension is closely linked to the configuration of the identity of the person. In social networks, it is worth noticing in the processes of recognition and status negotiation, because as Svensson (2014: 22) points out

the more someone links to you, likes you, thumbs up your postings, and comments on them, etc., the higher you will be ranked and listed in the different SNS, news feeds, and tables of suggested links and readings... That increase in status is linked to feelings of satisfaction and well-being. Indeed, positive emotions emerge when individuals are able to reaffirm their self-conceptions.

Emotions online are in this way used as resources in the identity work of the user; in a digital medium, marked by interconnectivity and where the person cannot reaffirm self-conceptions and negotiate emotional energy (Collins, 1990) without being visible for others. In this regard,

Leaving multiple traces of yourself on socially networked media sites is seen as a necessary goal –and interacting with such sites is made pleasure or desirable in part because they work to produce and maintain positive affective relations with their users, to set up affective feedback loops that make on want to proliferate one’s media transactions (Grusin, 2010: 4-5).

Moreover, if we consider the habits of news consumption, it is easy to observe that there is an emotional basis to the act of sharing content and news in the digital environment (Hermida, 2014). There is no doubt that the emotional component has always been present in the use of mass media and how people process different media messages, whether news or fiction (Döveling, von Scheve and Konijn, 2010). However, given the aforementioned process of remediation operated by new media, the novelty is that today, on platforms such as Twitter, the timeline on certain events of political or social nature is a mixture of information, opinion, interpretation and emotions, repeated and amplified by the network itself, giving rise to what Papacharissi (2014) qualifies as ‘affective news streaming’.

As seen in the case study of the resignation of Hosni Mubarak as president of Egypt in February 2011, ‘prominent and popular tweets were reproduced and endorsed, contributing

to a stream that did not engage the reader cognitively, but primarily emotionally. Frequently, the same news was repeated over and over again, with little or no new cognitive input, but increasing affective input' (Papacharissi and Oliveira, 2012: 278).

Emotional contagion

As noted above, the Internet allows researchers to investigate the huge amount of content readily available online. Since sharing emotions is essential for creating and maintaining social ties, the status of social networks revolves around the emotions and feelings that users express about themselves, but at the same time find resonance among their circle of contacts. Therefore, other areas of abundant research and growing importance are those related to the study of emotional contagion through social networks and the viral spread phenomenon.

Recently, in a controversial experiment carried out by researchers from the University of California and Cornell University with the assistance of Facebook programmers, the feed of 690,000 users were manipulated for a week. A user group received positive news, while another group were given news full of negative connotations. One of the conclusions was that people who watch less negative stories in their feed are less likely to write a negative post (and vice versa): 'When positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred' (Kramer, et al., 2014: 8788). The study indicates that emotions expressed by others through Facebook influence the emotions of the user; and that for emotional contagion to occur, face-to-face contacts (with non-verbal cues that accompany such interaction) are not essential.

Other research analysed the status updates on Facebook of about one million users over a period of two years; also noting that both negative and positive posts had some impact on other members of their social circles. The peculiar characteristic of this research is that, starting from the premise that atmospheric phenomena can influence mood, they analysed the correlation between weather reports from different cities and the status updates of users who live in them, and confirmed that on rainy days the number of Facebook posts containing positive expressions declined 1.19%, while the negative posts increased by 1.16%. According to the authors, '[f]or every one person affected directly, rainfall alters the emotional expression of about one to two other people, suggesting that online social networks may magnify the intensity of global emotional synchrony' (Coviello, et al., 2014). Ultimately, the research on this subject concludes that the decision of users to update their status is influenced by what happens to their contacts in their social circle.

Large-scale emotional contagion in the digital realm has another focus of interest in the viral spread of content. This is one subject that has been researched especially in the field of advertising and marketing (Dobele et al., 2007; Eckler and Bolls, 2011; Teixeira, 2012; Dafonte, 2014) where the authors agree that generating emotions—and among these, especially surprise and joy—is a requisite so that a video can be shared in the digital realm. As explained by Dafonte (2014: 202):

The decision to share a viral video is caused, on the one hand by motivations that have to do with the psychological or emotional needs of the user potentially sharing the clip, and on the other, with the motivations related to the viral video itself. The decision to share a viral video ad stems from the meeting of both these spheres in the individual.

Beyond the strictly advertising realm, there is increasing attention being paid to the phenomenon of memes, that is contagious images, videos and ideas that circulate virally on the Internet, mobilising the emotions of users both horizontally (through blogs or sites such as YouTube, Facebook and Twitter) and vertically, when traditional media (television, radio, newspapers) also echo the emotional resonance they acquire. Understanding and attempting to predict the dissemination process of this type of content has been analysed by scholars (Sampson, 2012; Shifman, 2013; Spitzberg, 2014).

CONCLUSION AND FURTHER RESEARCH

The popularisation of digital technologies and their relevance in everyday communicative interactions is a reality that has aroused the interest of the scientific community. An approach from the point of view of emotions, understood as a predominant value of contemporary society, allows us to map, as I have done throughout these pages, a vibrant, broad and complex field of research as part of Media and Communications Studies, where different theoretical and methodological approaches converge. Two major areas of study are noteworthy in this field. On the one hand, there are emotions related to the use of technological devices (including the mobile phone, which is the most emotionally charged, and consequently, has been analysed in greatest depth by researchers). On the other hand, there is the digital sphere—the realm that is accessed through screens—as a space where the affective dimension of technology users emerges and is expressed.

Upon reviewing part of the most important research on the subject, we can conclude that the technology not only serves as a channel for the expression of the affections of the people, but also contributes to model these affections. The everyday use of digital technology clearly reveals the dominant role of emotions in our time, and how these—by using such technologies—influence the way in which the identity of their users is configured and expressed.

The convergence of the face-to-face and digital realms (with their respective time-space and emotional regimes), socio-cultural practices associated with the use of technology (along with the technical, legal and market-based conditions), the variety of technological devices (with different emotional potential) or the peculiarities of computer-mediated interactions versus face-to-face contact are just some of the issues that have inspired studies on this subject, and still require research that will shed light on them. From the methodological viewpoint, the challenge of combining qualitative and quantitative techniques to measure and compare emotions in the offline and online worlds still remains.

Finally, the recent emergence of wearable devices - which is a step closer towards the bodily adaptation and integration of technology into the user - advances in the design of social robots (facilitating a more 'natural' interaction with humans) and the growing expansion of the so-called 'Internet of things,' making the presence of technology in daily life more ubiquitous and immersive. These are some of several future lines of research that emerge as subjects of interest in the study of emotions in the use of digital technology.

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