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Susan Currie Sivek
Linfield College

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Chapter 16

Ubiquitous Emotion Analytics and How We Feel Today

Susan Currie Sivek

Emotions are complicated. Humans feel deeply, and it can be hard to bring clarity to those depths, to communicate about feelings, or to understand others' emotional states. Indeed, this emotional confusion is one of the biggest challenges of deciphering our humanity. However, a kind of hope might be on the horizon, in the form of emotion analytics: computerized tools for recognizing and responding to emotion. Technologies containing this capability—such as market research tools using webcams, and apps for mental health—are becoming commonplace, even though they are unfamiliar to much of the public. Major technology companies are working to endow their devices and platforms with the ability to understand emotion. While humans struggle to master this skill throughout their lives, the increasingly ubiquitous nature of emotion analytics may mean that our devices will soon be better equipped to understand feelings than we are.

Though shifting this emotional facility to technology could seem potentially liberating to humans, the soon-to-be-ubiquitous use of emotion analytics carries complex implications regarding humans' experience of emotion in our society. As Dourish and Bell argue (2011, 46), ubiquitous computing is "already a sociocultural object, both in its artifacts and its practices." In other words, even before we can examine the likely consequences of emotion analytics' usage, we can look closely at what the implementation of these tools says about our interactions with technology today and our contemporary regard for emotion. Our willingness to accept the growing ubiquity of emotion analytics suggests that in today's technologically saturated society, we now trust in the superiority of technology as a tool not only for recognizing emotion, but also for managing it.

This analysis explores how emotion analytics may reflect the current status of humans' regard for emotion. Emotion need no longer be a human sense of vague, indefinable "feelings," instead emotion is in the process of becoming a "legible," standardized commodity (Scott 1999) that can be sold, managed, and altered to suit the needs of those in power. Emotional autonomy and authority can be surrendered to those technologies in exchange for perceived self-determination. Emotion analytics promises a new orderliness to the messiness of human emotions, suggesting that our current state of emotional uncertainty is inadequate and intolerable.

About Emotion Analytics

Emotion analytics gives order to emotion by using a variety of computerized methods to gather, analyze, and respond to human users' expressions of emotion. Sensors—such as front-facing cameras and heart-rate monitors–that are embedded in users' devices and environments can collect information on facial expressions, voices, word choices, social media input, physiological status, and other details. They then send those data to powerful cloud-based analysis software that match the data to established profiles of human emotions. When emotional states are identified, the software can offer appropriate responses to suit the user's feelings at the moment, such as media content suggestions or targeted advertising.

Currently, emotion analytics tools may operate with or without the user's active involvement. Emotion analytics can be implemented in ways that are passive (from the user's standpoint), meaning that they gather information from the normal device usage and daily activities of the user. For example, smartphones collect a great deal of data that can contribute to the analysis of their users' emotions, such as app usage, touch pressure, and physical movement; sensors in retail or education environments can do the same. Alternatively, emotion analytics can actively involve the user in the generation of useful data.

For example, the use of emotion analytics to examine the effectiveness of advertising is usually conducted with volunteer test subjects who agree to watch ads while their expressions of emotion are monitored. Additionally, tools are emerging that engage the user in analyzing emotion for health applications or for human resources purposes. These users are knowingly engaging in the production of emotion data.

Overall, it is possible for emotion analytics to be at work with or without the user's active involvement or conscious awareness. However, as I have addressed elsewhere (Sivek, forthcoming), emotion data are among some of the most private kinds of information about users that might be gathered, and they should be kept private and collected only with consent. Users should be informed of and specifically consent to this potential use of their information when they use devices or software with this capability.

A number of technology companies are developing emotion analytics tools. Some companies are household names; others are small startups, often spinoffs of academic research labs like the MIT Media Lab. Each company offers its own suite of emotion-related products, focusing on their own methods of emotion recognition (e.g., facial expressions, voice analysis, sentiment analysis for text) and/or a specific application (e.g., call center customer service, advertising research, media content testing). In the two case studies that follow, I will examine how one startup and one major technology company are contributing to the ubiquity of emotion analytics tools.

Affectiva

Affectiva is a Massachusetts company founded in 2009 by Rana el Kaliouby and Rosalind Picard. Both of whom had previously conducted research at the MIT Media Lab in affective computing, which is the branch of computer science concerned with helping computers understand and respond to human emotion. Kaliouby originally sought to develop what she

called an "emotional hearing aid" for people with autism, a device that could recognize and assist in responding to interlocutors' expressions (Khatchadourian 2015). Similarly, Picard was interested in the health-related applications of affective computing.

Today, however, the company they founded looks very different. Picard apparently left the company after four years when she felt its focus shifted too much toward advertising and market research (Khatchadourian 2015). Kaliouby has emphasized Affectiva's use of Affdex, its emotion analytics suite, to refine and target advertising and media content. CBS, Unilever, and candy manufacturer Mars are among the most significant clients listed on its website. Unilever and Mars both use Affectiva software to analyze test subjects' emotions upon viewing prospective advertisements. They also use the emotion data to refine the content and place ads in the most effective media. CBS tested how its ads and primetime show content generated emotional responses among viewers. Therefore, Affectiva essentially sells a computerized interpretation of emotion, and media producers can then respond by shaping their products accordingly. These uses of emotion analytics reveal that—though consumers are largely unaware of these tools' existence—the media content and ads they view have potentially been tested and altered to effectively evoke specific emotions and generate sales.

As Khatchadourian's (2015) *New Yorker* account tells it, Affectiva's founders were driven apart by their disagreement about the best use of these tools. Emotion data could be used to improve consumers' health, though some might problematize that usage for its encouragement of detachment from users' awareness of their physical bodies. However, Affectiva currently uses these data primarily to increase its clients' profits through the refinement of the emotional states evoked by marketing and media messages.

Apple

While Affectiva is a relatively new technology startup, Apple has billions of dollars in cash to spend on promising twists in its products. Apple's range of consumer technology devices and services now includes desktop and laptop computers, the iPhone, Apple TV, the Apple Watch, iTunes, and Apple Music. According to some reports, there are over a billion Apple devices currently in use around the world (Statt 2016).

The incredible success of Apple products means that their many users are now available as sources of emotion data. The webcams built into computers, the front-facing camera on the iPhone, the heart rate and Force Touch sensors in the Apple Watch—all of these could potentially provide information about users' emotional status. Apple has patented a method of using emotion data to offer targeted content (probably ads, though this could also refer to other media content, such as music or movies). Apple's approach would use this "mood-associated characteristic data collected over a period of time to produce at least one baseline mood profile for a user," and comparisons thereunto would allow for the interpretation of the user's current emotion (Greenzeiger, Phulari, and Sanghavi 2015).

In this patent, Apple argues that other methods that rely on targeting through demographic or interest information data are incomplete, because "there are many other factors that can affect an individual's responsiveness at a particular point in time. For example, if an individual is pre-occupied or unhappy, the individual may not be as receptive to certain types of content" (ibid.). Apple doesn't appear concerned with shifting the user toward a less preoccupied or happier state of mind. Instead, the goal seems to be offering the right marketing message to suit that negative state.

The ease with which Apple could likely gain an emotional awareness of each of its devices' users is remarkable. Apple can intimately know the consumers who "live within the Apple ecosystem," so to speak, through their interactions—passive and active—with these devices. Sitting still could be a data point for emotion analysis; so could the impact with

which a user taps on the screen of a phone (detected by Apple's Force Touch sensors). Apple's patent for emotion analysis includes a lengthy list of data points (shown in Table 16.1) that can be synthesized to understand a user's emotional status (ibid.).

Table 16.1. Gathering Emotion Data: User Characteristics Included in Apple Patent

Physical characteristics	Heart rate; blood pressure; adrenaline level; perspiration rate; body temperature; vocal expression, e.g. voice level, voice pattern, voice stress, etc.; movement characteristics; facial expression
Behavioral characteristics	Sequence of content consumed, e.g. sequence of applications launched, rate at which the user changed applications, etc.; social networking activities, e.g. likes and/or comments on social media; user interface (UI) actions, e. g. rate of clicking, pressure applied to a touch screen, etc.; and/or emotional response to previously served targeted content
Spatio-temporal characteristics	Location, date, day, time, and/or day part
Media consumption characteristics	Music genre, application category, ESRB and/or MPAA rating, consumption time of day, consumption location, subject matter of the content

Source: Quoted from Greenzeiger, Phulari, and Sanghavi 2015

In sum, at any given moment, a user might share through device and/or media usage at least 24 data points that Apple has identified as emotion-related. And, in addition to its own patents, Apple also recently acquired the startup Emotient (Winkler, Wakabayashi, and Dwoskin 2016), which specialized in emotion analytics by way of facial expression recognition. Therefore, it is likely that Apple will integrate Emotient's software into its own tools in the near future.

In addition to Apple products available at the time of writing, the company's new wireless earbuds, the AirPods, could (now or in the future) include some of the "psychological or biometric sensors" that the company has previously patented for use in headphones or earbuds (Prest and Hoellwarth 2014). With these developments, it seems we are moving closer to the fulfillment of what technologist Chris Messina (2016) notes about Apple: "Apple is securing its future, and to do that, it must continue to shrink the physical distance between its products and its customers' conceptions of self." The devices the company produces are becoming more attached to their users' bodies and more integrated with the data those bodies generate—including their emotional status, as inferred through emotion analytics. Emotion is no longer an unknown realm of human experience, but one that has been made accessible for business. (On a related note, German technology company Bragi is collaborating with IBM and its Watson supercomputing system to offer a similarly souped-up earbud system for businesses, promising "a powerful audio and sensory interface that fits inside the ear[,] opening up a myriad of new opportunities for transforming the workplace" [Chang 2016].)

In sum, living in the Apple ecosystem means that the company potentially gathers data on one's body and activities in all locations and at all times, thereby enabling its monitoring of and response to emotion. Apple users become not only purchasers of devices and subscribers to services, but also constant generators of emotional data. They exude a trail

of emotional data points that reveal their responses to their daily lives in potentially profound, personal ways. Apple can use these data to better market their own products and others' products to their devices' users. In addition, those emotional data become themselves a product that Apple can sell to any interested party seeking to understand consumers' behavior and responses to the everyday world.

The Coming Ubiquity of Emotion Analytics

In addition to Affectiva and Apple's uses for emotion analytics, many companies are exploring the use of these tools in other domains of human life. For example, the company Cambridge Cognitive is developing apps for wearable devices that collect patients' expressions of mood and send them to their doctors or psychiatrists; the apps are intended to circumvent patients' tendency to be less than forthcoming in face-to-face conversations with caregivers (Curry 2016). Honda and SoftBank are collaborating on emotion recognition for robots and self-driving vehicle software, "to harmonize mobility with people, so that drivers can feel a kind of friendship with their vehicles" (Kageyama 2016). The startup Gyana is attempting to analyze the moods of large-scale populations, combining satellite and aerial imagery; sentiment and emotion analysis of social media data; and demographic, traffic, and weather information (Gyana 2016). Amazon's Alexa, a digital assistant for shopping, smart home devices, and media, now includes emotion-recognition capability for its voice-based interactions with users (Farrell 2016). And in education, students working on computerized lessons may soon notice their computers responding to "facial cues of boredom…in an effort to motivate or boost [the students'] confidence" (Dodd 2016). Health care, transportation, robotics, governance, shopping, and education: All are potential realms for the further implementation of emotion analytics, suggesting that these tools will soon be truly ubiquitous in technology users' lives—even though their operation may not be known or noticeable.

Making Emotion Legible

The operation of emotion analytics tools requires the creation of standardized categories for emotions. No matter which kind of data a particular algorithm uses, it ultimately must decide which specific emotion is best reflected by the user's condition at that moment. For example, the facial expression recognition tools typically are based upon a typology of "basic emotions" developed by Paul Ekman (1999). Ekman argues that across cultures, emotions consistently correlate with specific movements of the face, making it possible to "code" faces for emotion (Paul Ekman Group 2016). Ekman's work is the basis for the methods underlying Affectiva's tools; he and other scholars are cited in the company's white papers (e.g., McDuff et al. 2013). Similarly, companies that use voice analysis (such as Cogito) identify users' emotional states based on "dynamic variations in voices, rate of speech, whether there's good participation and flow, and signs of vocal strain" (Underwood 2014).

However, human emotion is notoriously difficult to define and measure. For example, when we are upset, it can be difficult to decide exactly what mixture of emotions we're feeling; someone who is crying could be profoundly sad, or could be feeling a mixture of sadness, anger, and shame. Yet the promise of emotion analytics is that computers can more effectively tell what emotions are being expressed at a given moment. Emotion analytics companies portray their software as better able to understand and address human emotion than humans themselves. The company nViso addresses "the perceived inability of researchers to measure and interpret emotional response. 3D Facial Imaging revolutionizes how we collect and interpret data on advertising material.…No complex questions or dials are required—emotional response is measured directly" (nViso 2016).

Similarly, another company, Emotient, argued (prior to its buyout by Apple) that facial expression analysis is "a profound improvement" over humans' attempts to test

advertising. Emotient argued that "direct measurement of emotional state derived from facial expressions is the only way to get to the unspoken truth of how customers really feel" (Emotient 2015). Even more dramatically, Realeyes's commercial director has stated that facial expression analysis "is richer and more pure" than data gathered through other research methods (Adgully 2014). Emotion analytics are alleged to provide true, unsullied emotional perception; human interaction simply confounds the search for understanding.

The growing ubiquity of emotion analytics in market and media research, public spaces, and personal computing suggests that we have easily accepted these assertions of computers' superiority in understanding emotion. This acceptance reveals much about how our understanding of human experience is shifting as new technologies develop. As Picard and Klein (2002, 161) note, affective computing (of which emotion analytics is a small part) raises serious questions: "[I]ssues include how humans may use (or abuse) such devices themselves; how such devices might change the nature of human-computer (and human-human) interactions; and *how humans will define themselves* in a world where such devices are regularly used" (emphasis added). Picard and Klein's final item could include the question of how humans understand their own emotions in a world where computers are thought to have a "richer" and "purer" comprehension of emotion than people do. Accepting this alleged superiority suggests a kind of surrender of emotional agency to technology. This acceptance assigns the scrutiny of emotion to tools thought to garner insight into our myriad feelings more easily and effectively.

This acceptance of technological superiority in the interpretation of emotion has consequences not only for individuals, but also for the way in which those with various forms of power may seek to control them today and in the future. The enticing promise of emotional clarity also offers what Scott (1999) calls "legibility." Scott describes how the modern governmental state imposes various means of measurement, mapping, and classification onto

otherwise unruly phenomena (people, natural features, and so forth). For example, Scott examines at length the effort to make German forests "legible" at the beginning of professional forestry, around the turn of the nineteenth century. He concludes:

> The controlled environment of the redesigned, scientific forest promised many striking advantages. It could be synoptically surveyed by the chief forester; it could be more easily supervised and harvested according to centralized, long-range plans; it provided a steady, uniform commodity, thereby eliminating one major source of revenue fluctuation; and it created a legible natural terrain that facilitated manipulation and experimentation. (18)

Instead of a formless mass of muddled trees, underbrush, and animals, the forest became a clearly defined entity that could be known to humans with the help of mapping and planning technologies. Along the way, though, folk understandings of these phenomena were ignored in favor of a more "rational," consistent, revenue-protecting strategy.

Emotion analytics provide legibility to those seeking similar clarity regarding emotion. Emotion analytics' legibility would allow (to give some hypothetical examples) market researchers to assert that 76% of subjects evinced happiness upon viewing a prospective advertisement; educational software designers to provide easier questions when a student demonstrates a score of 5 out of 5 for "frustration"; and retail stores to offer promotions on wine at 5:30 p.m. when the after-work crowd reads as "stressed" to in-store sensors. Legibility removes the uncertainty of humans' assessment of other humans' emotional states, neatly removing the blurry edges of human experience as it is placed in the most fitting category.

Making emotion legible through emotion analytics also suggests that emotions—like Scott's legible forests—could be subjected to further efforts toward the commodification and management of emotion. Emotion analytics make messy human emotions into a

recognizable, manageable resource. Impure, untrustworthy human observations of emotion are less easily salable than "emotion data," tidily graphed and mapped with sophisticated software, particularly in an age when "big data" promises higher profits and better lives (e.g., Buckley 2015). Those with an interest in swaying emotion in a particular direction might also be enticed by freshly legible emotions, and could seek to manage the emotions of others for their own benefit.

Emotion neatly analyzed and classified through emotion analytics constitutes a product that can be bought and sold. The data that results from the application of emotion analytics could be sold to a variety of parties, including: users themselves, seeking to improve or alter their mental states; companies that manufacture consumer software and technology, such as Apple and Google; marketers and those who sell advertising space, such as manufacturers and media companies; political and issue groups, wanting to test the impact of their candidates and messages; government entities, seeking to monitor individuals or public spaces; and employers, wanting to check employee morale and improve productivity. Each of these uses of emotion data has either been documented or tested in restricted settings at the time of writing (Thomas 2015).

This commodification of emotion effectively turns the human experience of feeling into labor. Well before emotion analytics existed, Andrejevic (2002)—and many others to follow—observed the potentially exploitative nature of gathering data on the users of technology. Those data are often gathered in the course of routine usage of the technology, with little awareness on the user's part, and may be sold to other parties for a range of purposes. Andrejevic points out that there is no compensation for what is effectively labor: the manufacture by users of economically valuable data. He argues that this lack of compensation is exploitative, even if it is secondary to the usage of technology for work or

play, and even if users consent to the gathering and sale of their data in exchange for (free) access to the technology.

While the gathering and sale of personal data now feel routine to technology users—exploitative or not—there has been little public discussion of the potential addition of emotion analyses to these data. A quick review of recent news coverage demonstrates little coverage of emotion analytics as they may be implemented in consumer technology; it is difficult to know how the public would respond to the idea that their emotion data—even if only ever analyzed and sold in aggregated, anonymized forms—could be made available for purchase. Is there something fundamentally different about emotion data that should cause a negative response to this prospect? The abstracted legibility of emotion data might suggest that the phenomenon of *feeling* of those emotions does not matter; rather, those feelings present merely yet another opportunity for promoting products, and what it feels like *to feel* is beside the point. This treatment of emotion represents a cheapening of human experience, even as it makes data regarding those experiences inherently valuable.

Managing with Emotion Analytics

Even if we were to conclude that emotion data should be regarded no differently from data on one's favorite movie or preferred language, its availability for sale raises another concern: the potential for efforts toward managing the emotions of an individual or group. Scott notes that forests, made legible to the state, were "also easier to manipulate experimentally" (1999, 18). Just as the legibility provided by mapping makes a forest's acreage and features more yielding to foresters' interventions, so too might the legibility of emotion offered by emotion analytics provide a way for various groups to attempt to manage emotions.

Lest this discussion sound too much like the rant of a conspiracy theorist, it is worth noting that actual efforts have already been made to try to manipulate emotion using various

technologies. One of these received extensive media attention: Facebook's ill-advised experiment with emotional contagion throughout its network, which, though legally permitted through its terms of service, raised questions about the legality of manipulating emotions among unwitting users through the items shown in their News Feeds. The experiment showed that users' emotions could be effectively altered by Facebook's strategic display of positive or negative items; however, the actual effect was quite small (Kramer, Guillory, and Hancock 2014). The fact that Facebook has a business interest in testing its capability for emotional contagion suggests that digital media platforms are already realizing the prospective value of the emotion data they gather—and of potentially altering it to suit their own (or their advertisers') needs. Research has shown that certain kinds of advertising may be more effective when presented to viewers in specific emotional states (e.g., Kemp, Bui, and Chapa 2012). Therefore, Facebook's revenues could be positively affected by offering advertisers the ability to show ads to users already demonstrating, or deliberately shifted toward, the desired emotions.

Social media sites have an interest in emotional manipulation for the purposes of advertising, but all companies have an interest in maintaining a happy workforce to ensure productivity and profit. The ability to place sensors in workplaces—and even on employees' bodies—makes ubiquitous emotion analytics potentially a powerful tool in managing a workforce. A couple of technology companies have begun developing or already offer such tools, and they market them as means of improving workplace quality and removing forms of bias from humans' evaluative processes. For example, the Hitachi Business Microscope system uses sensors in employee ID badges to track movement and to collect other data. The analytics software then looks for "distinctive patterns in physical movements that have strong correlations with a group's happiness…quantifying [the] 'happiness level'" (Hitachi 2016). This information can ostensibly help managers create better conditions for workers, though

such data-gathering is potentially invasive and controlling. Another startup, Kanjoya, applies sentiment analysis to textual responses to employee surveys in order to seek the "truth" behind what employees say (Captain 2015). Finally, the company HireVue uses facial expression analysis to help managers evaluate job applicants, partly by comparing the applicants' expressions to those of successful employees at the organization (ibid.).

This latter example points to another issue in managing emotion using ubiquitous emotion analytics: To what degree should workers' emotions be "policed" and required to fit within a particular set of norms? Such omnipresent surveillance and analysis of emotion are problematic, particularly when tied to one's work and livelihood. Those whose emotional expressions are outside of an "acceptable" range may feel that they must learn to display the standardized, "legible" emotions of the mainstream, or risk marginalization. Illouz (2007, 66 argues that today's popular concept of "emotional intelligence" is especially reflective of "the emotional style and dispositions of the new middle classes which are located in intermediary positions, that is, which both control and are controlled, whose professions demand a careful management of the self, who are tightly dependent on collaborative work, and who must use their self in both a creative and a productive way." The emotional expressions likely to be valued and receive positive responses from employers and others in power are likely to be similar to their own emotional norms and preferences. The standardization of emotion required for emotion analytics, if implemented more widely for the purposes of emotion management and policing, could reinforce existing societal circumscription of emotional expression, confining acceptable expressions within class-constrained norms.

Mechanizing Emotion

This critique has suggested that the ubiquitous use of emotion analytics tools, in their varied current and potential forms, represents a contemporary effort to standardize, commodify, and

constrain emotion in ways that ultimately result in a narrowed range of human emotional expression. These new tools for looking at and classifying human experience provide another example of what Meštrović (1997) calls the "mechanization" of emotion in contemporary society. Just as other human activities have been made industrial or mechanical in nature, Meštrović argues that we also now live in a "postemotional" society, in which not only ideas, but also emotions, are manipulated by those in power to serve their own needs: "emotions have been McDonaldized, petrified, routinized, and otherwise made artificial. Mechanization has extended its imperialistic realm from technology and industry to colonize the last bastion of nature: the emotions" (146). Indeed, the deployment of ubiquitous emotion analytics does indeed seem to follow this progression, suggesting a uniform experience of standard emotional classifications to be experienced and managed as needed.

Though he crafted this theoretical perspective well before the introduction of emotion analytics, Meštrović describes how "work, family, play, leisure, church: these and other social domains increasingly come to resemble the functioning of a machine based on pre-determined rules for engaging in emotional exchanges" (150). Today, ubiquitous emotion analytics means that the world might not only resemble, but could literally be guided by machines with rules regarding emotion. The end result of the mechanization of emotion, Meštrović argues, is a postemotionalist society "designed to avoid emotional disorder; to prevent loose ends in emotional exchanges; to civilize 'wild' arenas of emotional life…to order the emotions so that the social world hums as smoothly as a well-maintained machine" (150). Some of the applications of emotion analytics described here do certainly claim to eradicate areas of human doubt, inconsistency, indecision, and bias—as in the interpretation of market research test subjects' reactions, or in the assessment of job candidates. Emotion analytics allows computers to tidy the chaos caused by human emotion and to resolve the

concomitant disorder in human affairs, asserting algorithmic certainty over processes currently flawed due to human involvement.

Emotion Analytics as a Technology of the Self

Further insight into our contemporary acceptance of emotion analytics is provided by Foucault's (1988) analysis of the history of what he calls "technologies of the self," various methods people may use to scrutinize their own "bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality" (18). Foucault traces the movement of Western culture toward a fundamental belief in the significance of "self-knowledge" and identifies different means of achieving that knowledge. The Christian understanding of the self, he says, focuses on the "deciphering of inner thoughts…there is something hidden in ourselves and…we are always in a self-illusion which hides the secret" (46). Release from this self-illusion, and an increased closeness to God, can be found only through constant examination of one's thoughts, with the aid of verbalized confessions to an authority t (such as a monk's confession to the abbot of a monastery). In this tradition, individuals obey religious authority—renouncing their own will and autonomy—and accept guidance regarding performing penance or changing their ways (47). Significantly, though, Foucault notes that modes of verbalization of the self have been changed "from the eighteenth century to the present…by the so called human sciences in order to use them without renunciation of the self but to constitute, positively, a new self" (49). Foucault here observes that the social sciences eventually suggested ways people could reshape their own selves—autonomously and independently—without the intervention of, and obedience to, a religious authority figure.

In our contemporary society, acceptance of ubiquitous emotion analytics as a new "technology of the self" implies another intriguing cultural shift — this time, toward computers as authority figures that can capture and classify verbal and nonverbal expressions of emotion, then respond accordingly. The adoption of emotion analytics as a technology of the self augurs the dawn of that civilized, well-ordered, but emotionally sterile society that Meštrović describes. If only Foucault were here to offer his insights into this new development. I would suggest that he would critique our apparent willingness to accept the implementation of emotion analytics and to trust in the promise of greater digital insights into ourselves. During rapidly changing times, it is tempting to delegate our understanding of emotion to a new technological power, thinking that we have somehow regained technical superiority over our challenging emotions through the legibility provided by analytics. Emotion analytics suggest a new way to "constitute, positively, a new self," with external discernment of what we "really feel"; however, in lieu of an abbot serving as confessor, we have placed ubiquitous sensors and devices—and their designers—in the place of authority, and may sacrifice our emotional autonomy to satisfy their needs.

Critiquing the "Emotion Layer" of Ubiquitous Computing

The company Affectiva (2016) describes the data gathered through their emotion recognition tools as an "emotion layer" that enhances "any aspect of your work…it can be used anytime, anywhere, and on any device." Indeed, the growth of emotion analytics and the likelihood of these tools' widespread implementation add a new layer to theory and research on ubiquitous computing.

As our technologies become both ever present and aware of our feelings in new ways, we must begin to consider the ramifications not only for the technicalities of their development, but also what they suggest about the larger human regard for the experience of

emotion today, and how that experience may be shaped by those creating and using these new tools. As Dourish and Bell (2011, 195) write, "When we think of sensing technologies as devices that order the world, rather than devices that describe it, then alternative relationships between the social and technical are strikingly brought to light." This perspective highlights the need to examine emotion analytics as a technology that both represents our current regard for human emotion and will shape that perspective in the future.

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