



Counting the Affects: Discoursing in Numbers

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Counting the Affects: Discoursing in Numbers

BY OTNIEL E. DROR

ON the MIT Affective Computing Laboratory website (<http://www.media.mit.edu/affect/>), computers and humans are realizing new modes of human-affective machine interactions. Computer-enhanced technologies measure, quantify, and identify emotional or affective states and communicate their affective measurements in real-time to personal or web-based computers.

One goal of the Affective Computing project, Jennifer Healey and Grant Gould report on the site, “is to build computer systems that can sense users’ emotional states.” “Comfortable, aesthetically acceptable” sensors—shaped into rings, shoes, bracelets, and earrings—transmit in real-time biophysiological changes that reflect alterations in emotional states. This “wearable jewelry,” together with cameras and sensors that “recognize stress,” “a digital music delivery system . . . [that] plays music based on your current mood,” and “Expression Glasses” that allow “any viewer to visualize the confusion and interest levels of the wearer”—are the new props, nomenclature, and gadgets of a unique phase in human-machine interaction.

The affective technologies at MIT have already been applied to monitor subjects at the office, at home, or even “in line at the bank.” They transmit the collected affective data “to personal computers and to the Internet.” The private and lived experiences of users engaged in everyday activities are thus broadcast across and into the public and digitized environments of cyberspace.

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These phantasmagoric realizations of a fusion between human affect and machine, coupled with numeric and, at times, digitized modalities for representing, storing, and transmitting the passions, seem to indicate a radical departure from traditional modes of human-machine interaction. They promise to revolutionize not only our interactions with machines, but also our inter- and intra-subjective modes of communicability and self-manipulation.

One click away from these dys/utopic visions of emergent affective technologies is a parallel universe of online “Passion Meters,” “Love Meters,” “Hate Meters,” “Fear Meters,” and other affective-measuring devices. These latter technologies appeal to a popular audience that seeks to measure, quantify, and represent its realized or potential emotions in a visual and semiquantitative or numeric form.

At <http://predictions.astrology.com/lvm/calc.html>, an online meter takes love readings directly from the user’s home computer screen: “Place your thumb in the Love Meter window” on your computer screen, “Click on the start button while your thumb is still pressed to the meter (Do not lift your thumb),” and your “Love Meter reading will appear instantly.” Other meters on the web deploy hidden algorithms that calculate the affective possibilities of potential lovers, and display their results on scales that indicate different levels of emotional arousal.

Offline hand-held popular meters are also available for the semi-cyber-literate consumer. These relics of a pre-cyber age respond to slight fingertip temperature changes and indicate passionateness on a scale from “pure passion” to “need help.”

These two seemingly divergent images of human-affective-machine interaction—at MIT and beyond—resonate on multiple levels. They share a common technological foundation. They project a particular image of the body, of emotion, and their relationship. And they share the same cultural and social fantasies. More important, and despite the advertised image of a radical departure from traditional modes of human-machine interaction, they both hark back to the same late-nineteenth-century develop-

ments. Their contemporary applications and potential possibilities were, in fact, already partially anticipated by late-nineteenth- and early-twentieth-century experimenters. Their original developers projected a future in which affective sociability would be mediated by emotion-detecting technologies that transcribed affect in numeric or graphic forms.

In this essay I examine the genealogy of the numeral transformation of emotions from its earliest beginnings in the late nineteenth century. My objective is not to narrate this hundred-year history, but rather to study the modern encounter between emotion and number to highlight several hidden and tacit features of number and emotion as these emerged during the late nineteenth and early twentieth centuries.

My main thesis is that the historical encounter between emotion and number should not be viewed solely as a particular instantiation of more general trends in the development of objectifying, quantifying, or even—as Ted Porter has recently argued—trust-building technologies (Porter, 1995). Rather, the numeral representation of emotions created a new type of emotion. The new *emotion-as-number* provided an alternative medium for the circulation and expression of emotions. It sanctioned an economy of emotional exchange and authorized affective communicability in a culture that, at least overtly, emphasized restraint and management of the affective self. In making this argument, I wish to challenge recent characterizations of post-Victorian “emotionology” as a culture of emotional restraint.

I will also argue that the emergence of a numeral identity for emotion implicated a number of additional social activities and loci. It empowered experimenters who wished to study, provoke, and release dangerous emotions inside the laboratory—without corrupting or disrupting knowledge production. It created an emotion that did not threaten the laboratory’s self-representation as an emotion-free space.

The re-presentation of affective experience in the form of number strings also created a disembodied variant. This abstraction in

the number attenuated the tensions that arose when “sublime” emotion was animalized, naturalized, and biologized in a Darwinian universe during the late nineteenth century.

Last, the creation of numerized emotion distinguished between scientific emotion and literary, poetic, and feminized variants in a rich ecology of emotions. It partook in the construction of an emotion that represented the privileged praxis and epistemology of the scientific community.

I begin the essay with a survey of the meanings of emotion in several late-nineteenth-century contexts: its mechanization and vulgarization in the context of the scientific study of emotions; its disruptive signification inside the laboratory and in the study of modern work; and its repression in post-Victorian *emotionology*. This first part depicts the hostile environments for the circulation of emotions. Then, I explore emotion’s empowered transgressive possibilities as number—in these same public, private, and scientific domains. I conclude with a brief discussion of the future possibilities of numeral emotion.

Eviscerating Emotion

During the late nineteenth century, emotions, affects, and machines converged inside the laboratory. Physiologists, psychologists, and clinicians manipulated, isolated, replicated, standardized, quantified, and recorded emotions. They invented new technologies for visualizing and representing emotions in curves and numeric tables. And they propagated their practices and instruments beyond the narrow confines of the laboratory and clinic. Emotion was gradually reconstituted as an object of laboratory knowledge.

The first attempts to inscribe emotions through machines began in the mid-1860s, in the laboratory of the famous French physiologist Claude Bernard.¹ This early—one could say pre-co-

cious—beginning was followed by several sporadic and singular studies that inscribed the emotions in graphical forms.

It was only during the mid-1870s that an established community of experimenters from Europe and the United States began to produce and measure emotions under laboratory conditions. In contrast to the 1860s, the investigators of the 1870s developed a sustained and extensive program that represented the emotions in numeral transcriptions.

The earliest studies in this second phase focused primarily on the measurement of cerebral blood circulation and on cerebral or head temperature changes during emotion. Josiah Stickney Lombard, for example, performed over 60,000 observations on the temperature of the head during intellectual and emotional activity. He measured the temperature differentials that developed during artificially induced emotions and published his numeric results in *Experimental Researches on the Regional Temperature of the Head under Conditions of Rest, Intellectual Activity, and Emotion* (Lombard, 1879).

Other late-nineteenth- and early-twentieth-century experimenters, such as Angelo Mosso, Charles Féré, Alfred Binet, and Alfred Lehmann, also induced emotions inside the laboratory. They measured concomitant physiological changes in heartbeat, electrical conductivity of the skin, breathing, and blood pressure, among other physiological parameters (Binet and Courtier, 1896; Féré, 1887; Lehmann, 1892; Mosso, 1881; 1894).

Most studies on the emotions in physiology focused primarily on the correlation between peripheral—noncephalic—physiological changes and affective states, both in animals and in humans. During the twentieth century, and prior to the Second World War, additional measuring devices, such as the Stomach Balloon, Tremograph, EEG, and various metabolic, endocrinological, and chemical measurements were added to the list of psychophysiological parameters. By the 1960s, these technologies were supplemented by more sophisticated studies of, for example, EO(cular) P(otential) and EV(iseral) P(otential).

The late-nineteenth- and early-twentieth-century quantifiers of emotions narrated their own history by recasting the rituals of “primitive people” and reinterpreting their rites and customs in light of modern emotion theory. The “rice ordeal,” to take one very common example from the early twentieth century, was reinterpreted by physiologists and psychologists as an archaic emotion-detecting device. This and other “primitive” technologies were rewritten into a history of truth or emotion detection that culminated in the new quantitative, machine-dependent, and numeric measurements of emotions that emerged during the late nineteenth century (Cannon, 1929; Larson, 1932).

The modern technologically oriented numeric approaches that developed from the late nineteenth century adopted and promulgated a naturalistic and biological conceptualization of the affects. Emotions were understood as processes in the general scheme of the body-as-machine. In this scheme, specific physiological patterns signified an emotion. Thus, emotion was a pattern written in the language of the biological elements that one monitored in, or sampled from, the organism—translated into a sequence of numbers.

This physiological reading of emotions depended on a particular understanding of the relationship between emotion and its bodily manifestations. Herbert Spencer expressed a common view regarding this relationship in his discussion of the “Language of the Emotions.” There was, he argued, a “recognized relation between the quantity of feeling . . . and the amount of motion generated” by the muscles of expression (Spencer, 1896: 541). This correlation between experience and expression, between subjective and objective, rapidly assumed a numeric foundation.

The exact nature of this relationship was, however, hotly contested during the late nineteenth and early twentieth centuries. In general, debates often took their point of origin from the James-Lange theory of emotions and pitted physiologists against psychologists (Hillman, 1992 [1960]; James, 1884; 1890). The

fundamental question was whether each emotion had a particular and unique physiological pattern or whether one was limited to measuring general levels of “excitement” or emotional arousal.

This debate has often been portrayed as ending with a resounding victory for physiology. In these histories, Walter B. Cannon, the renowned Harvard physiologist, is often credited with defeating the psychologists’ misguided attempts to find a unique pattern for each emotion (Cannon, 1927; 1929).

In spite of this grand narrative, the search for a true and unique physiological pattern for each emotion continued throughout the twentieth century. When the Society for Psychophysiological Research inaugurated its new journal in 1964, for example, A. F. Ax argued that the chief theoretical problem in psychophysiology was still to “break the code” by which the organism translated between experience and physiology (Ax, 1964).

The naturalistic construal of all emotions as material-physiological—rather than spiritual—patterns and processes was thus one conspicuous element in the emergence of the numeric regime. Early investigators of the emotions promulgated this biomechanistic approach to emotions as an important characteristic of their new science. They even criticized Charles Darwin, arguing against his lingering Victorianism. In particular, they rebuffed his refusal to endow animals with the capacity to blush in his famous study on *The Expression of the Emotions in Man and Animals* (Darwin, 1872).

We can understand Darwin’s reluctance to animalize the blush. The blush was the penultimate *pièce de résistance* of a declining Victorian order. It not only separated humans from animals in an emerging Darwinian universe, but it had also played an important role in the construction of a uniquely European moral order during the nineteenth century.

Nineteenth-century Victorians identified the blush as a natural sign of a uniquely European morality. Throughout the century they wondered whether the blush was present—but not visible—in dark-skinned non-Europeans, or whether its absence was a

clear sign of a superior European moral and emotional order (Brown, 1985; Burgess, 1839; O'Farrell, 1997).

The experimenters who came in the wake of Darwin's work rejected what they perceived as Darwin's misguided aversion to animalizing the blush. Angelo Mosso, who, in many respects, inaugurated the laboratory study of emotions, opened his important 1884 study, *Fear*, with an elaborate physiological dissection of the blush. He enthusiastically discussed, recognized, and analyzed the "blush" in his laboratory animals, and reduced the blush to simple mechanistic processes in the body-machine. The reconstruction of the blush in animalistic terms was part of Mosso's physiological manifesto for a modern—mechanistic, physiological, and numeric/quantitative—science of emotions, and his rejection of a misguided Victorian perspective on the affects (Mosso, 1896).

The radical reconceptualization of all emotions in naturalistic terms and the shift from a spiritual to an embodied-material representation were both also visible outside the laboratory. As Steven Kern has recently argued in *The Culture of Love: Victorians to Moderns* (1992), between 1880 and 1920 literary and artistic representations of emotions underwent a radical shift from a spiritualistic depiction to an embodied, "authentic" one.

*Hostile Environments and Social Exclusions:
Laboratory, Work, Society*

In addition to embodying and mechanizing emotions, late-nineteenth-century science presented emotion as a disturbance in the process of knowledge production and as a disruption in the body-machine. As I have argued elsewhere, from the late nineteenth century the physiological laboratory was constituted as an emotion-free space. Numerous experimenters targeted a broad class of disruptive moments and defined them in terms of emotions. The laboratory's capacity to exclude "emotion" was con-

ceived as essential for *normal* science, and was visible in and articulated through new discursive elements and novel practices that targeted emotions and their management inside the laboratory (Dror, 1998; 1999a).

A similar representation of emotion as disruption was also visible in the new ecologies of labor, efficiency, and the managed body. In these contexts, emotion was represented not as a disturbance in knowledge production, but as a failure of the body to function as machine. Emotion signified the failure to industrialize the body.

Histories of early twentieth-century attempts to manage bodies usually focus on the psychologically or managerially oriented sciences. Hugo Münsterberg, Elton Mayo, Charles Myers, and Frederic Taylor are a few of the major figures in these narratives (Rabinbach, 1990; Rose, 1990).

We are less familiar with an alternative approach to human subjectivity and the body- or worker-machine that developed in physiology. Unlike Mayo, Myers, or Münsterberg, physiologists maintained a purely biological stance. They approached the relationship between worker and emotions as a problem in organic mechanisms. Rather than discoursing in terms of contentment and satisfaction, they spoke in terms of the biological changes that occurred during emotion and their implications for the body-machine.

Physiologists discovered that during emotion the body did not function as a machine. The fundamental attributes of machine-like bodies—their standardized, replicable, and predictable output—were disrupted during emotion. Thus, the relationship between emotion and work was construed in terms of the demechanization of the body.

A succinct illustration of this new perspective in physiology appeared in the work of Ugolino Mosso, brother of the famous Italian physiologist Angelo Mosso. In his 1908 study, “Influence of Emotion on Muscle Force,” Ugolino Mosso discovered how his body’s productivity deviated from its standard output during an

(unexpected) emotion. He had just received exciting news during an experiment on muscle fatigue and observed—and recorded for posterity—that the sudden materialization of an emotion deflected his body’s machinery from its standard, predictable, and constant output.

The emotion exerted its effects on Mosso’s body not by influencing his motivation to work, but by changing the material configuration and energy levels of the body-machine. Emotion stood for and explained the failures and fault lines in the idealized vision of scientifically managed bodies. Together with fatigue, it represented “the permanent nemesis of an industrializing” Europe.²

Outside the laboratory proper, and beyond the narrow confines of physiology and the life sciences, attitudes toward and representations of emotion underwent an important shift. As recent literature has argued, during the period of circa 1880 to 1920, a new post-Victorian culture of emotions emerged in the United States. The new, post-Victorian “emotionology” was characterized by a general increase in emotional restraint. New social rules increasingly differentiated between work, control, and emotional exclusion, and between leisure, release, and emotional expression. Emotional display was restrained in all but a few social enclaves—in private diaries, during therapy, and, most important, in the new culture of leisure (Stearns, 1994; Stearns and Lewis, 1998). This restructuring of emotion was articulated through the elaboration of new and restrictive norms of emotional expression, management, and etiquette.

Transgressions: Discoursing in Numbers

It was in these embodied, constraining, and hostile late-nineteenth- and early-twentieth-century contexts that emotion became a number. As a number, emotion transgressed its boundaries and transformed its meanings. It circulated freely in public

culture, and appeared in a wide gamut of social contexts—including inside the forbidden laboratory.

One essential element in emotion's history as number were the technologies that transcribed affect into numeric strings. These devices converted affective experience into graphic or numeric inscriptions in real time. They were available commercially, and could be assembled at home, school, or in the office.

During the interwar years, affect-gauging technologies spread into the judicial, commercial, clinical, entrepreneurial, governmental, private (romantic), and leisure spheres. The "Lie Detector," "Affectometer," "Emotograph," "Emotion-Meter," "Stressometer," "Psycho-Detecto-Meter," "Ego-Meter," and "Kiss-O-Meter" were conceptually similar devices that measured and represented emotions in numeral/graphical inscriptions.

By the late 1920s, the *New York Times* did not exaggerate when it told its readers that "We are constantly developing more accurate methods of measuring human emotions. . . . It is possible, then, to speak of the emotion quantitatively, as being present in large or small amounts" ("Students," 1925).

The "Emotograph," to take one representative example from the late 1920s, looked like "nothing more than a small radio with dials and tubes and a sort of stock market tape at one end to record the emotions" ("The Hidden Truth," n.d.). It provided, like many of its clones, "a complete emotional diagnosis," and inscribed emotions in the universal language of numbers or curves ("Chas," 1929).

During the 1930s—and in anticipation of the revolution of the twenty-first century—the "demand for an apparatus of the pocket type which would indicate galvanic reaction . . . to actual life situations outside of the laboratory . . . led to the construction of the Darrow Reflexohmeter . . . [which] may be carried in the coat pocket." Like its twenty-first-century progeny, this "pocket size psychogalvanic equipment" was tested by a "preliminary study of galvanic reactions while automobile riding," allowing the investigators to study "perturbations of daily life rather than

within the limitations of artificial laboratory situations,” the Stoelting Company of Chicago reported (Stoelting Company, 1935).

In the 1940s, the “Emotion-Meter”—yet another device—was applied in film previews, where “audiences at sneak previews . . . unconsciously subject themselves to tests . . . to determine their reaction to emotional sequences in the film they are watching.” Loren L. Ryder, head of Paramount Studio’s sound department, was “developing a small electronic gadget to record the spectator’s heartbeat and rate of breathing as scenes of love, violence and excitement unfold upon the screen.” The instrument, this report noted, “will be placed under a certain number of seats” (“Emotion-Meter,” 1946). During the 1920s and 1930s, William M. Marston (the future inventor of Wonder Woman), Christian Ruckmick, and Wendell S. Dysinger conducted similar studies inside the laboratory. They projected movie scenes and measured the emotional reactions of their experimental subjects (Dysinger and Ruckmick, 1933; Marston, 1929).

In the private sphere, emotion detectors “reveal[ed] a talent in preventing marriage smash-ups” (“Lie Detectors,” n.d.) and were “being tested as an instrument to measure advertising appeal.” A “Mrs. Reeder’s” reaction, one newspaper reported, demonstrated that “routine ads failed to interest her to any great extent . . . [but] a fur coat ad caused the greatest rise in blood pressure . . . [and] an attractive shoe ad caused a pronounced change in her breathing” (Moyer, n.d.).

Mrs. Reeder’s emotional reactions to these consumer goods were reprinted in the popular press. Similar graphs of emotional reactions were also recorded during weddings. As the press reported, the new devices recorded the mutual emotional flux of couples during their wedding vows. These affective recordings appeared in the press, with the *Chicago Herald and Examiner* reporting that, in one case, “a blood pressure chart is attached to the marriage certificate” as a record of affective authentication (“Marriage,” 1932).

In the clinician's office, an "Ego-Meter," or a "Mechanical Freud" measured subtle changes that indicated unconscious emotions. The "Mechanical Freud" was produced by the General Electric Company. "By a new electrical method it counts heart beats to pick up clues [sic] to emotions, repressed impulses and hidden libidos." It was "based on scientific findings that in unrestricted conversation the heart reveals emotions not always appearing under ordinary, formal tests" (Anon., 2-a). In fact, every physician's office contained an emotion-detecting device—the blood pressure gauge—as one newspaper suggested (Anon., 2-b).

Inside the laboratory, the number empowered the experimenter to produce emotions despite the laboratory's representation as an emotion-free space. The numeric representation of emotion presented one solution for the paradox of a laboratory that depended on the production of corruptive emotions.

Even the men of the laboratory did not disdain measuring, displaying, and communicating their own emotions in the pages of the published scientific literature—in the form of numbers or graphs. The late-nineteenth- and early-twentieth-century psychological and physiological literature contains numerous representations of the emotions of the experimenters themselves in this alternative mode of self-expression.

Francis Gano Benedict, Walter B. Cannon, Ugo Mosso, Angelo Mosso, A. D. Waller, Harold G. Wolff, Alfred Binet, and many other investigators registered their own emotional flux under varying circumstances—both inside and outside the laboratory—and left us permanent records of their fleeting affective states. These numeric and graphic records of emotions circulated among the members of late-nineteenth- and early-twentieth-century science. They not only created a new economy of emotional exchange, but also promoted new habits of the mind, new modes of reflexivity, and novel interactions between emotions, technologies, and the self (Dror, 1999b).

To sum up, during the interwar years Americans measured, exhibited, and exchanged representations of their emotional per-

turbations in the public and laboratory spheres. These representations, which took the form of numeric displays of their emotions, circulated in the popular and professional literature and created an alternative economy of emotional exchange.³

Transforming Meanings

The numeric representation of emotion was also instrumental in the construction of boundaries between science and art and between a masculinized and feminized discourse about emotions. It created a “hard” variant of a “soft” object of knowledge, and it partially sanctioned the study of an illegitimate, even effeminate object, as perceived by some of its main investigators.

When Paul MacLean, the originator of our modern notion of the limbic system, was interviewed regarding its history, he was asked why James Papez published only one—albeit extremely important—paper on the emotions during the 1930s. In response he conjectured that Papez “must have had some strange feeling about” his paper on emotions; “that you were showing a soft side talking about emotion—not being a really hard scientist” (MacLean, 1981).

Experimenters who studied the emotions were self-conscious of the problematic nature of their object of study. Emotion was associated with marginal or oppositional social and cultural movements and it smacked of the feminine, the popular, and sometimes, the superstitious. Its appropriation by mainstream biomedicine therefore entailed various anxieties and a tenuous renegotiation of emotion.

One conspicuous cultural site for these negotiations was the challenge posed by the feminized antivivisection movements of the late nineteenth and early twentieth centuries. These women-led movements competed in the ecology of emotions and through their discourse about animal pain and emotion sub-

verted experimental physiology (French, 1975; Lederer, 1992; Ritvo, 1987; Turner, 1980).

The men of the laboratory castigated these groups for their focus on animal emotions and on animal pain. They defined them in terms of the “feminine” and “sentimental,” and accused them of adhering to older Victorian anthropomorphism. Yet these same physiologists shared with these groups the discursive and practical attention to animal emotions, and like these groups, they engaged profusely in emotion talk.

This shared interest in emotion was a source of anxiety for these experimenters. They strove to demarcate between their own brand of emotion and the emotion of the oppositional groups. One technique for boundary constructing was to retranscribe emotion into the scientific language of numbers and graphs. In this new language experimenters could explicitly discourse about the emotions of their laboratory animals without reverting to what they defined and perceived as a feminized and oppositional type of emotion talk. The number was an important technology for the reframing of “emotion” and its integration into the discourse of the laboratory.

Emotion-as-number also contributed to the definition and construction of the boundaries between science and art—between the literary, poetic, and artistic, on the one hand, and the scientific, on the other. Experimenters who studied the emotions were not oblivious to the competing technologies of poets, writers, painters, and actors who shared and challenged them in the quest for representation. They did not denigrate these alternative knowledge makers, but they articulated an implicit division of labor between the scientist and the poet.

The general context for these late-nineteenth-and early-twentieth-century tensions between science and art was the early- and mid-nineteenth-century accentuation of the opposition between science and art. During the mid-nineteenth century, the natural sciences developed a “fear and loathing of the imagination” in constructing a new image for the emerging scientific disciplines

(Daston, 1998). This process had already begun during the eighteenth century, when French microscopists of the late eighteenth century negotiated the distinction between the scientific and the voyeuristic—"between a sensuous, pleasurable, or merely 'curious' watching and a rational, tasking, language-driven observation" (Stafford, 1992: 96).

There were those who lamented this distancing of science from art, and of reason from emotion. Claude Bernard, who, as mentioned earlier, was probably the first experimenter to depict emotions in graphs and numeral notations, rejected this new oppositional construction.⁴

In his 1865 lecture, Bernard discussed the physiological relationships between the heart, the brain, and emotion. His experiments proved that emotion was created through the reciprocal and cooperative interactions between the organs of brain and heart. This physiological arrangement represented a model for the dialogue that he envisioned between Art and Science, inspiration and knowledge, and *savant* and *artiste* (Bernard, 1866).

During the late nineteenth and early twentieth centuries, the central figures in the new science of emotions, such as Charles Darwin, William James, Sir Charles Scott Sherrington, Walter Bradford Cannon, William Marston, and Stanley Cobb, endorsed or appropriated literary, poetic, or artistic portrayals of the emotions. Their project, however, was not one of mutual interchange with art, as Bernard had envisioned. They demanded a different type of emotion and a representation that would be suitable for and unique to science. They found it in the number and graph.

Last, I would suggest that the number attenuated the tensions that arose when physiologists embodied sublime emotion. As suggested earlier, the radical embodiment of emotions was a potential source for recurring tensions from the late nineteenth century, up to and including the interwar years. Various late-nineteenth- and early-twentieth-century investigators of emotions, among them Edward Wheeler Scripture, Angelo Mosso, Charles Scott Sherrington, Walter Bradford Cannon, Chester

Darrow, and Christian Ruckmick, expressed the tensions inherent in the new representational consensus that depicted emotions—even the most sublime and subtle emotions—as integral aspects of human animalistic biology.

If emotion was embodied and eviscerated in and outside the laboratory during the late nineteenth century—creating new tensions and anxieties—it was also pushed in the opposite direction. The modern embodiment of Victorian “spiritualized” emotion was accompanied by a parallel process of abstraction in the number. This move, I would suggest, attenuated the anxieties of embodiment by representing emotions in the disembodied medium of number and obscuring the viscosity of affect.

Numbing Numbers

The technological-numeric representation of emotion presented a “disinterested” recording of emotion, a neutral medium of exchange, and a universal translator and denominator of affect. As number, emotion was liberated from its particular contexts of production and partially freed from its binding meanings and exclusions.

Numbers collapsed emotions into a single homogenous medium, enabling comparison, hierarchical stratification, accumulation, and compression. They facilitated the comparison of emotions experienced at different times, under different circumstances, and by different individuals.

They also objectified, quantified, standardized, and universalized different emotions—assembling their diverse dialects onto a common, communicable, and comparative platform. Their technique of production through machines freed the study of emotions from human intervention, guaranteeing its objectivity in the late-nineteenth-century sense of the term.

Central for the main argument in this essay were the unique features of numeric emotion. The experimenters of the late nine-

teenth century juxtaposed two culturally inimical elements— affect and machine, number and emotion—to create a new mode of affective communicability. Alienating technologies were harnessed to impoverished numbers to produce an alternative discourse of affects, constituted by strings of sequential numbers that represented emotion.

The numeric, machine-mediated representation of emotion implicitly depleted emotion of its affective content. It depicted emotion as an ordered string of numbers whose purpose and function was to represent—not to provoke or move.

In this new mode of representation, emotion was released from the gesticulations of an unrestrained body or the involuntary perturbations of an embodied self. It was positioned not in opposition to, but in the language of, reason. Most conspicuously, perhaps, it was no longer the nemesis of the laboratory, or of the industrialized working body. Its new manifestation was the emblematic series of numerals, arranged in the form of a table, or the tracing of a graph whose coordinates established a numeric-quantitative frame of reference. This new mode of representation explains the lack of resistance to emotion—as number—both inside and outside the laboratory.

Even the climactic pleasures of human orgasm were representable in this new medium, as exemplified by Wilhelm Reich's famous treatise on *The Bioelectrical Investigation of Sexuality and Anxiety* (1982 [1937]). Reich's technologies and, more important, his graphical inscriptions, were undoubtedly borrowed from the study of emotions, and, in particular, from numeric forms of representing the passions.

In conclusion, the history of the encounter between emotion and number saw the creation of a masculinized emotional discourse in which an affective self was mediated, constructed, and empowered by the number. It suggests that we should not only revise our conception of post-Victorian *emotionology* as one of restraint, but also our conception of masculinity as repressing emotional expression, except anger (Jaggar, 1992 [1989]). The

history of the number reveals that men—even the inhabitants of the laboratory—discussed, exchanged, and expressed a myriad of numbered emotions.

Epilogue

The free circulation of authentic emotions in a culture that manages and flexibly deploys its emotions attests to the creation of a seemingly utopic global economy of affectively linked communities. It affirms the primacy of emotion in a global, machine-mediated, and distant world. It reinstates in the twenty-first century the eighteenth-century economies of public tear-exchange. This latter form of emotional exchange had been lost during the nineteenth century when tears disappeared from public display, especially in masculine culture (Vincent-Buffault, 1991).

Will the new technologies extend the reach of affect, or are we witnessing the creation of a dystopic society in which—as Chester Darrow had already predicted in the early 1960s—“electropornograph[s]” detect our most intimate and well-concealed thoughts and transmit them to our overseers (Darrow, 1964)?

Notes

¹I am excluding pictorial representations from my discussion.

²The quotation is taken from Anson Rabinbach, who has made a similar argument concerning modern fatigue.

³This is only a small sample from a vast literature.

⁴“Aurons-nous à signaler une contradiction complète et péremptoire entre la science et l’art, entre le sentiment et la raison?” he asked and responded in the negative in 1865 (Bernard, 1866: 236-7).

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