



Figure 1. Cara Hartmann, “eHarmony Video Bio” (2011).
www.youtube.com/watch?v=mTTwcCVajAc

The Auto-Tuned Self: Modulating Voice and Gender in Digital Media Ecologies

Lisa Åkervall

Modulation is increasingly ubiquitous in contemporary life. Everywhere we look, from Facebook's individualized news feeds to Amazon's personalized shopping suggestions, we are witnessing the proliferation of digital traces deployed to modulate the self and others. Digital platforms record and instrumentalize digital copies of our behavior as "Big Data" in order to animate, control, and modulate our actions and particularly our sociality.¹ This amalgamation of digital copies and behavioral modification integrates human and machine according to feedback loops producing their mutual adaptation.² Although such feedback loops are, as Michel Foucault has shown in his analysis of the technologies of the self, a long-established and enduring feature of human conduct, digital media ecologies witness their intensification. In the past, mass media platforms such as the newspaper, television, or perhaps even a public rally remediated a small subset of participants' enunciations, due to these platforms' hierarchical one-to-many format. Today, digital platforms condition articulations of

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taste, preference, belief, and affiliation on the fly, even programming their future developing. From the algorithmic push and pull of social networking to the perpetual leveraging of data about our spending habits to micro-target marketing campaigns, the data-driven capture and modulation of affiliations are permanent and ongoing, playing an unprecedented role in the production of contemporary society and the relations that govern it.³

This essay argues that the modulation of the human voice offers a paradigmatic instance for understanding the overall logic of conditioning in digital ecologies, as well as a privileged historical site for the dissemination of such modulation in other spheres.⁴ The importance of modulation in contemporary cultures is part of a more general shift in the forms of subjectivity, power, and *dispositifs* from what Foucault called disciplinary societies to contemporary societies of control, as described by Gilles Deleuze in “Postscript on the Societies of Control.”⁵ In the past two decades, Deleuze’s notions of “control” and “control society” have undergone a hyperinflation in critical discourse, in large part because of the sketchy and suggestive character of Deleuze’s “Postscript.” Rather than simply adding to that inflationary invocation, however, I’m interested in using the notion of modulation to specify what the otherwise vague term *control* might mean and examining the neglected role of gender in control societies’ modulations. In the following pages I investigate the political, technological, aesthetic, and gendered histories of the cultural technique of modulation in digital media ecologies through an analysis of voice modulations with the software Auto-Tune in the viral video “Can’t Hug Every Cat.”⁶ I show that techniques of voice modulation and social modulation are tandem technologies. As such, they are not just consequences of digital media and contemporary control societies but also their conditions of possibility.

Sexy Baby Voice

The YouTube video “eHarmony Video Bio” is a perfect place to start analyzing the cultural techniques of modulation in digital media ecologies, especially in their gendered and gender-specific

forms.⁷ “eHarmony Video Bio” stages not only the fear of modulation but also of its entanglement with feminist anxieties over vocalized femininity as a disempowering affectation. The video depicts a slightly nervous, blonde American in her mid-twenties smiling directly into the camera (fig. 1). Its head-on framing, uneven and overly bright lighting, digital texture, and generally poor image quality give the impression that it was recorded with a laptop camera. The young woman in the video tells us that her name is Debbie, that she is a recent MBA graduate from Villanova University, and that this is her first video profile for the online dating platform eHarmony. In the course of outlining her interests, Debbie turns to the topic of cats. She *loves* cats. She *really, really, loves cats*. Tears begin to flow. As the video takes a turn toward the melodramatic, Debbie comes to the tragic kernel of her passion: *she can't hug every cat*.

Consider this passage from her opening address in the video, expressed with a kind of hesitating, halting, then flowing “upspeak”:

Hello, my name is Debbie, um, this is my first attempt—oops um—at an eHarmony video, um, this is my first time at online dating, so I'm nervous but I'm excited at the same time, um, so I'm just going to start talking about what I like and I hope I'll get some replies, um. So, I am a recent um MBA grad from Villanova, um. I love cats, um, I just—sorry I'm getting emotional [starts tearing up]—I love cats, um, I love every kind of cat, [crying] sorry, I just, I really love cats and I just want to hug all of them but I can't because that's crazy, I can't hug every cat. But I just want to I want to, I want to [crying], um, I'm sorry, I just, I get, anytime I hear cat I just, I love cats, um, ohhh, I promised myself I wouldn't cry. Um, so, anyway, I'm a cat lover, um, and I love to run. [tearing up again] I'm sorry, I'm thinking about cats again, I just, I think about how many don't have a home and how I should have them and how cute they are and how their ears and their whiskers and their nose . . . I just love them and I want them . . .

In the first instance, the video embodies aspirations for twenty-first-century heteronormative reproduction via the genre-specific format of the online dating video, which encourages a highly

self-conscious performance and modulation of a quantified self.⁸ Not only is the woman apparently presenting herself as a suitable female partner for a male suitor, eHarmony itself was founded as a heterosexual-only dating community. Its evangelical Christian founder envisioned it as a forum for users to find opposite-sex partners for marriage and procreation, thereby offering an alternative to the culture of casual hookups of other 2000s dating sites.⁹ In this respect, the video fits into a longer history of mediated love technologies, from the anonymous personal ad in the newspaper to television programs such as *Love Connection* (syndicated, 1983–98). Within the libidinal economies of this genre circulating today via sites such as eHarmony and Nerve, affect, intimacy, and information coincide as a strange assemblage of self-observation, self-modulation, and real-time feedback from a virtual community of users.

As Debbie's discourse gradually becomes unhinged—transitioning from a reflection on her hobbies to an overwrought expression of her love for cats—"eHarmony Video Bio" exhibits characteristics of another genre, the reality TV video confessional often centered on female protagonists' breakdowns.¹⁰ In the video confessional the direct address of a speaker to the camera becomes an occasion for exaggerated self-display and affective abandon, wherein the human (often female) voice stands in as a guarantor for authenticity, presence, and expression of the self. These confessions' histrionics serve as tokens of honesty and directness, especially when delivered by women. From this perspective the aesthetic of the video more closely resembles that of shows such as *The Real World* (MTV, 1992–) or *The Bachelor* (ABC, 2002–) and their distraught would-be lovers than anything to be found in the history of personal ads. Here the absence of sober, uninflected speech testifies to the authentic self-presentation of a femininity that is affected at its origin, always in a state of modulation.

Furthermore, "eHarmony Video Bio" locates itself within a distinctly contemporary scene of the gendered voice. Debbie's speech patterns and intonations evoke what came to be popularly known in the early 2010s as "sexy baby voice," through an episode of Tina Fey's broadcast television program *30 Rock* (NBC, 2006–13)

titled “Sexy Baby” that aired in February 2011 (approximately four months before “eHarmony Video Bio” was posted on YouTube). Though the media notoriety and nickname for this style of speech dates approximately from the time of this airing, it refers to a previously established American-English inflection characteristic of some (typically white, middle-class) women born in the 1980s and 1990s. As this allegedly new vocal style gained ground, some women disparaged it as the affectation of an infantilized femininity that ran counter to the values of autonomy and independence fought for by generations of feminists.¹¹ Speaking to the popular website *The Wrap*, the gender studies scholar Karen Tongson said that the voice evoked some women’s anxieties “particularly for feminist-identified and working professional women—that they are subjugating themselves to certain expectations around femininity and softness.”¹² Yet others objected to that criticism of the vocal style itself as a form of misogyny, aimed at pathologizing an inventory of vocal habits associated with (American English-speaking) women, some of which have anchors in female biology, such that the feminist critique amounts to an unacceptable narrow policing of women’s performance of their gender.¹³

It is amid these feminist debates, thematizing the female voice as a mediated supplement, itself subject to a maelstrom of critiques and counter-critiques in contemporary media ecologies, that the “sexy baby voice” staged by Debbie makes its appearance.¹⁴ Citing the contentious issue of whether or not women should have the right to sexualize themselves in men’s magazines and the critique such representations have elicited online, Fey sketched a kind of *mise en abyme* of mediated femininity, in which her own show became one in a series of mirrors: “In the episode,” Fey told one interviewer, “we have a fake website that we’re referring to, a feminist website called Joanofsnark.com—that the women at Jezebel .com immediately recognized that it was their website, basically.”¹⁵ By associating performance of the feminine with technique, artifice, and mediation, this depiction evokes a vision of gendering as a technology of the self. It is into this contested scene of early 2010s feminine vocalization that Debbie and “eHarmony Video Bio” entered the media ecological fray, with a voice that in the

literal sense resounded with the fraught contours of early twenty-first-century feminisms.

Memetic Catnip

Upon its publication online, the overwrought, feminized expressions of fondness for felines of “eHarmony Video Bio” spread like digital catnip in the viral cultures of internet memes. The combination of the sexy baby voice with a cat-loving woman seeking a partner seemed to encapsulate too perfectly a femininity gone amok, like “the crazy cat lady” in digital remix. Following its upload to YouTube by the user hartmanncara on 3 June 2011, “eHarmony Video Bio” reappeared on the *Daily What*, *College Humor*, and *CBS News* on 9 June 2011, and its authenticity became an object of debate on the *Huffington Post* and other websites.¹⁶ Its popularity stemmed from its too perfectly performed trope of the out-of-control woman, from medical versions à la Jean-Martin Charcot to contemporary entertainment versions, seemingly updated for a contemporary web audience.¹⁷ The controversy surrounding the video became so heated eHarmony posted its own official response. Finally, the American actress and YouTube entertainer Cara Hartmann revealed herself in her blog as the creator of the video, as the performer of this supposedly authentic girlishness and loss of control. By theatricalizing the video’s strategies of authenticity and thus laying bare the misogynic logic that bathes itself in female loss of control, “eHarmony Video Bio” put a feminist spin on the format of the video. The document of female affectation suddenly became an artifact of popular fascination, wherein the credulous audience, rather than the performer, appeared to suffer from a lack of media sophistication. Yet these theatrical twists accelerated the viral spread of the video. Within a short time span, the poor quality and generic framing of the video transformed from indexes of authenticity to indexes of artificiality, styled to fit the appetites of an internet audience.¹⁸

Compounding artifice upon artifice, affectation with exaggeration, remixes proliferated, culminating in the auto-tuned music video “Can’t Hug Every Cat” posted by the Gregory Broth-



Figure 2. The Gregory Brothers, “Can’t Hug Every Cat” (2011). www.youtube.com/watch?v=sP4NMojcFd4

ers on their schmoyoho YouTube account, where it received more than 12 million hits by December 2011 (fig. 2).¹⁹ “Can’t Hug Every Cat” is a remix, which auto-tunes the original video “eHarmony Video Bio” and cuts back and forth between Debbie’s confession and a number of found-footage cat videos. Through Auto-Tune—a pitch-correction software for the modulation of the human voice—“eHarmony Video Bio” transformed into the music video “Can’t Hug Every Cat.”²⁰ In a Kuleshov-effect-producing montage, Debbie’s auto-tuned dating video was cut together with shots of cat musicians: cats at the piano, cats at the turntables, cats with guitars, and drumming cats (fig. 3).²¹ The passages that deal with cat love are reiterated in myriad repetitions. By means of remix Debbie tells us in electronically manipulated tonal pitches, “I’m thinking about cats again and again and again and again.”

“Can’t Hug Every Cat” produces an incessant loop of modulated sounds, images, and affects. These edits, combined with the status of the video itself as a highly theatricalized artifact of twenty-

first-century femininity, displace and magnify modulation: from Debbie modulating herself, with a supposedly grating millennial or Gen Y vocal style, to that of the actress Cara Hartmann modulating her body and voice to impersonate that stereotype of a woman and her affective abandon, to the producers the Gregory Brothers using this voice and its confessional mode as material to modify toward their own entertaining ends. In this series of repurposings, techniques of control and modulation surface at multiple levels, almost invariably circling back around the status of a certain type of femininity and its expression. The self in control society collides, here, with the question of female self-control in a networked society.

These iterative transformations of the video are not just viral but also memetic in the sense in which Limor Shifman has defined that term.²² According to Shifman, we have to distinguish memetic videos from viral videos, even though the two might at first glance seem similar to us by their way of rapidly spreading over the internet. Whereas viral videos rapidly spread without significant change, memetic videos are not merely repetitive, and neither are they just related to techniques of liking and sharing, but they are essentially about transformation and participation through mimesis—their circulation and spread is tied to their alteration. They are closely related to prosumer cultures, where the alteration and circulation of content is not a privilege restricted to one author or producer. To this existing debate, Hartmann's video and its remake introduce gendered and even species difference as sites of mimesis and memetic reproduction.

The various memetic parodies of the video that flooded the internet since its initial upload function as techniques to control and modulate the woman who has lost control on account of unrealized desires. While the online dating video is a medium for the modulation of the self, designed for the successful entry into relationships with others, Debbie's affective confession and her excessive love for cats are signs of her inability to control her affects. The humor of the video and its tendency toward parody rely on a number of appeals for the modulation and control of the female self, which don't show any effects but instead lead to the display

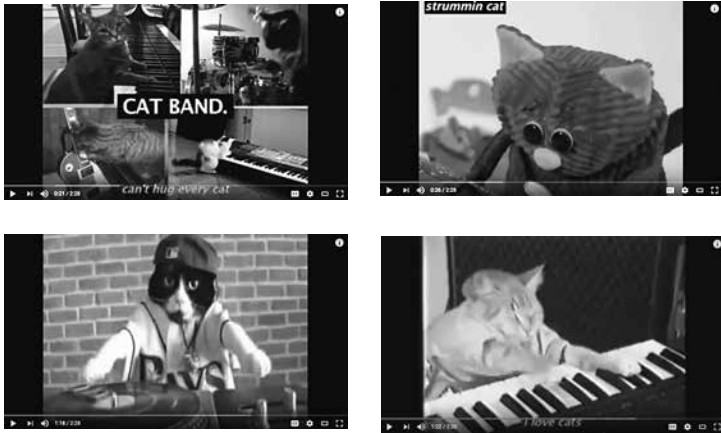


Figure 3. The Gregory Brothers, “Can’t Hug Every Cat” (2011). www.youtube.com/watch?v=sP4NMoJcFd4

of Debbie’s loss of control, which is mimetically replicated by the uncontrolled laughter of the audience.

“Can’t Hug Every Cat” develops its control function in feedback loops of mutual adaptation, based on couplings of humans, animals, and machines. Debbie’s modulated voice controls the cat musicians that play her song on a number of instruments while at the same time being controlled by her excessive cat love. The spectators of the video control Debbie, insofar as they judge Debbie and contribute to the modulation and dissemination of the video through strategies of parody and hyperbole. At the same time Debbie controls the spectators of the video by challenging such parodies in the first place. Such feedback loops—familiar from second-order cybernetics—are hallmarks of control, wherein the observer of systems inevitably finds herself folded into the systems that simultaneously observe her.²³

Cute Cats

The condensation and displacement of gendered and species differences of “Can’t Hug Every Cat” captures a dynamic of

becoming-modulated characteristic of digital media ecologies and contemporary control societies. This modulation of humans and animals is a kind of offshoot of the transhuman cyborg selves figured decades ago by Donna Haraway, who in the course of the 1990s and 2000s shifted attention from machines to animals to radicalize her interrogation of the boundaries of human community and difference.²⁴ This rethinking of difference as the nexus of the cyborg and the domesticated animal reaches its poetic apotheosis in contemporary online web forums and video-sharing sites that increasingly remix animal others into the network of modulation and dissemination of humans and machines. Consider for instance the Grumpy Cat meme (fig. 4) or cute cat videos. In this context, animals (and cats in particular) adapt the role of the human's other and become, in a quasi-compensatory way, mediators who tame the fears associated with digital media and thus perform a kind of modulated domestication of digital technologies. We could say that "Can't Hug Every Cat" is a kind of video lecture in animal studies that even outperforms Jacques Derrida. Whereas Derrida wrote about his fear and discomfort that his cat would see him naked, Debbie wants to hug every cat. Derrida's inhibited form of cat love stands—as a disciplined variant—in sharp contrast to Debbie's out-of-control love for cats.²⁵ Debbie's limitless love of cats furthermore invokes the topos of animal hoarding and thus asks questions about madness and sanity in our relationship to animals. The topic of animal hoarding again reminds us of Eleanor Abernathy, the crazy cat lady from *The Simpsons* (Fox, 1989–), a mentally ill woman who surrounds herself with several dozen cats and has furthermore lost the ability to produce language in the sense of intelligible noises. She instead babbles and screams and throws her cats at passers-by. Debbie's wish to hug every cat also recalls the long philosophical history of hugging animals, which situates itself on the borders of madness and always explores the limits of the human—just think of Friedrich Nietzsche's purported encounter with the horse in Turin.²⁶ Furthermore, Debbie's wish to hug every cat questions scale and thus implicitly that of the sublime and its mutations in digital media ecologies. As Sianne Ngai points out in *Our Aesthetic*



Figure 4. Author unknown, Grumpy Cat images (2012–).
knowyourmeme.com/memes/grumpy-cat/photos

Categories, contemporary arts and media cannot necessarily be described with classical categories such as the beautiful and the sublime but rather demand distinct aesthetic categories such as the zany, the cute, and the interesting. These aesthetic categories cannot be reduced to those of classical aesthetics as they reflect new registers of experience indexing the economic processes and social organization of late capitalism.²⁷ Thinking along these lines, I am inclined to look at “Can’t Hug Every Cat” not only in terms of the cute and the zany—with their relation to consumption and production, respectively—but to also add another aesthetic category to Ngai’s list: the ridiculous.

Control as Modulation

Given the historically central role of gender in schemes of social control, the relatively minor role it has played in debates around the control society is remarkable. Yet in thematizing the modulation of the (female) voice, “Can’t Hug Every Cat” suggests their possible interrelations. Deleuze describes the *modus operandi* of control societies as one of *control as modulation*. “Enclosures are *molds*, distinct castings, but controls are a *modulation*, like a self-

deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point.”²⁸ Control societies operate through the constant modulation of humans, things, and actions as large parts of society have been reorganized around networks and the possibility for their modulation. Modulated networks can be found in various fields of contemporary life such as molecular biology and sociology, and they imply a new world picture of subjectivation, political power, and aesthetics. In *The Control Revolution*, James R. Beniger shows how control societies, which emerge with the rise of industrial societies and complex systems from a crisis of control, substitute personal relationships through bureaucratic organization, new infrastructures, and mass media.²⁹ A capitalism based on extraction and manufacturing is replaced by one characterized by modulation, the factory by the corporation, the enclosed school by lifelong learning. Whereas disciplinary societies’ factories predetermine all steps in the tasks of their workers, control societies’ corporations leave every step open to continual adaptation. Workers and consumers each exercise marginal autonomy to make small changes.

What it means to speak of control as modulation, and inversely of modulation as control, becomes clearer if we look at William Burroughs’s notion of control, from which Deleuze borrows his concept. In “The Limits of Control,” Burroughs differentiates between the principles of *control* and *use*. He explains their difference through controlling techniques such as brainwashing, psychotropic drugs, and lobotomy.³⁰ Burroughs considers those techniques *limits of control*, insofar as they over-accomplish the goal of control, establishing absolute control and thus making man a machine. Burroughs writes: “I control a hypnotized subject (at least partially); I control a slave, a dog, a worker; but if I establish complete control somehow, as by implanting electrodes in the brain, then my subject is little more than a tape recorder, a camera, a robot. *You can’t control a tape recorder—you use it.*”³¹ To define control as modulation implies that control is a partial technique. Control can never be absolute, in order to not become mere use. Control is always modulation, insofar as it always implies the potential for get-

ting out of control, for losing control, and is consequently bound to a minimum of autonomy on the side of the individual.

Deleuze relates these differences between disciplinary societies and control societies to that of the energetic machine and the cybernetic machine. Through this analogy Deleuze defines digital media as media of control and modulation, and inversely control and modulation as digital techniques. This emphasis on the digital in the formation of Deleuze's concept of control societies led Alexander Galloway to claim that the kernel of Deleuze's "Postscript" essay is a technological one.³² Modulation, however, is originally a musicological concept. In music theory it refers to the technique of a change of harmony, the change from one key to another. From music theory the concept migrates into communication engineering, where it comes to denote a change of frequency. In Alexander Graham Bell's notes on deaf education, modulation refers to a training of the different aspects of the human voice.³³ And the French philosopher Gilbert Simondon describes modulation as a dynamic and interactive mode of continuous formation of active matter.³⁴ In contrast to the pre-given form, modulation is a self-transforming form, which adapts to any situation and constitutes networks of differentiation and variation. In the modality of modulation one is never done with the transformations one can undergo. Modulation is endless adaptability and results in a hypermimetic faculty of adaptation.

A Short History of the Modulated Voice

So what do control societies and digital media have to do with "Can't Hug Every Cat" and its auto-tuned voices? The mode of modulation and auto-tuned voices in "Can't Hug Every Cat" are not just products of digital and internet-based media. "Can't Hug Every Cat" is also part of a long history of the modulation of the human voice, which is itself linked to the rise of control societies and digital media. The modulation of the human voice is not a novelty of digital media ecologies but has a long history that goes back to the eighteenth century and Wolfgang von Kempelen's so-called speaking automata. Although best known for his theatrical-

ization of ethnic difference in his so-called Chess-Playing Turk, a mock automaton that showcased the separation of intelligence from a human body even as it was reintroduced into a caricature of Muslim and Ottomanesque alterity, Kempelen also probed the voice as a site where machines might reorder difference and its ties to humans.³⁵ Kempelen's speaking automata were among the first devices to separate the voice from the body and reproduce it mechanically (fig. 5).³⁶ In the nineteenth century Alexander Melville Bell developed a universal phonetic alphabet, which later became known as Visible Speech.³⁷ Visible Speech, developed for deaf education, effectively disassembled spoken language into discrete signs that could be read and "spoken" by the deaf. Bell developed it on the basis of the assumption that language can be not only phonetically transcribed but through the skillful movement of the speech organs also mechanically reproduced as *articulation*.³⁸ Alexander Melville's son Alexander Graham Bell chose another focus in his own work with the deaf. He centered his training on various aspects of the voice such as pitch, length, volume, and rhythm, which he called *modulation*.

A couple of years later, Alexander Graham Bell developed a telephone system based on the principle of the disassembly of voices into mechanical sound waves and their conversion into electrical signals for the purpose of their communicability. With Visible Speech and the telephone, the human voice started a journey of mechanization, electrification, and automatization that leads to our technological present. Telephony and telegraphy mark key moments in the modulation of the human voice and in the rise of control societies as societies of networks. As shown by Alan Trachtenberg as well as James Carey, telephony and telegraphy allowed for a mode of commercial command and control that gave rise to the modern corporation, exchanges such as the commodity price index, and modern warfare.³⁹ Telephony and telegraphy are based on techniques of the transmission of information across distances as well as on the deconstruction and reproduction of the human voice. Scientists at the Bell Telephone Laboratories and American Telephone and Telegraph (AT&T) developed mechanisms for an efficient reproduction of the human voice as

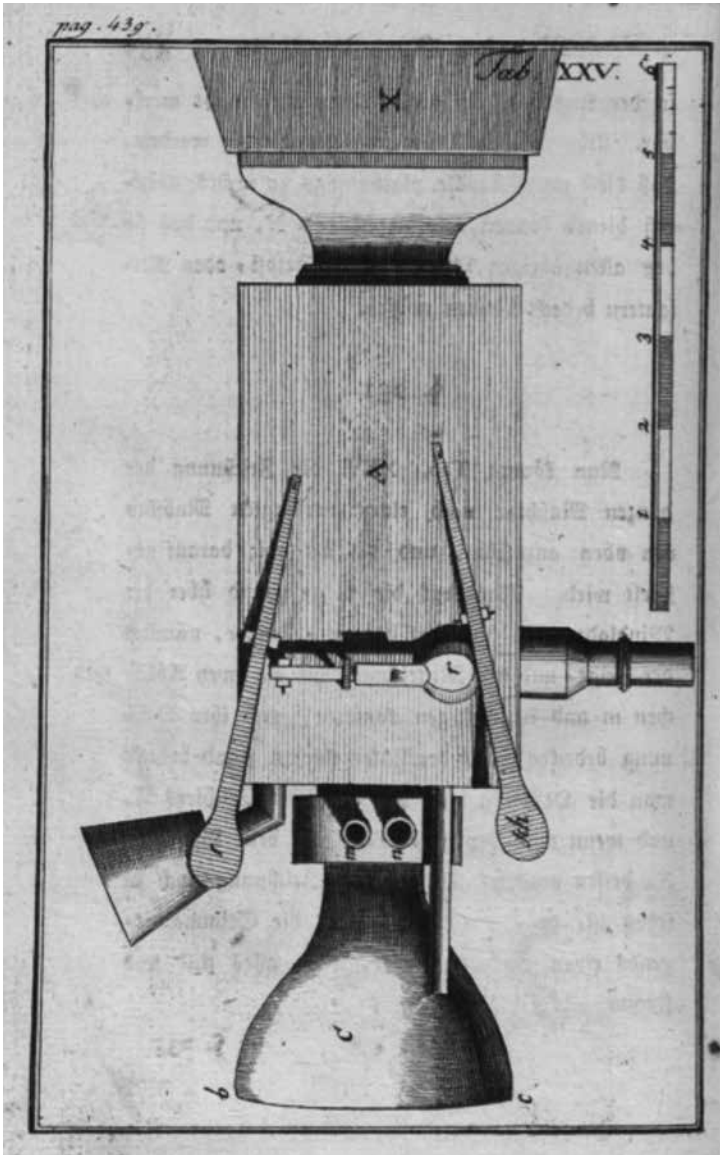


Figure 5. Kempelen's speaking automaton. Source: Wolfgang Von Kempelen, *Mechanismus der menschlichen Sprache nebst Beschreibung seiner sprechenden Maschine* (Vienna: Degen, 1791). Courtesy of OHSU Digital Collections

signal. The results of their research were not only relevant for telephony but—as shown by Mara Mills and Jonathan Sterne—also played a leading role in the development of information theory and cybernetics.⁴⁰

There is therefore an intimate interrelatedness between the history of the human voice and the birth of digital media. By extension, voice modulation, digital media, and control societies are tightly interwoven. A precondition for the invention of digital media was the development of techniques for modulating and reproducing the human voice as a series of signals. In that way, the modulation of the human voice is not just a consequence but also a necessary condition of possibility of digital media and contemporary control societies.

Auto-Tune and Gender Modulation

The auto-tuned voice modulations of “Can’t Hug Every Cat” are the newest iteration in this history of the modulation of the human voice. The commercial pitch-control software Auto-Tune by Antares Audio Technology, which came on the market in 1996, has spread like wildfire since its inception and enjoys wide popularity in the music industry as well as on video-sharing platforms such as YouTube or Vimeo. Auto-Tune marks a decisive step in electronic music production. In contrast to earlier technologies such as the Vocoder, it enables independent pitch-correction in real time, and its simplification of voice modulation allows for amateur use. Before Auto-Tune, modulation typically demanded expert effort (and expensive technologies) for adjusting pitch and speed in real time. Sound samples could not be contracted or extended in time without being pitched higher or lower.⁴¹ Within this system of technical constraints, the innovation of Auto-Tune originally had a mainly corrective goal: to inaudibly smooth out false tones and other imperfections in the singer’s voice, to bring her voice to perfect pitch.⁴² Indeed, a large part of electronic and pop music production still uses Auto-Tune for pitch correction.

This corrective (or perhaps cosmetic) use of Auto-Tune usually remains inconspicuous. The aesthetic ideal of this use fore-

grounds the naturalness and discipline of the reproduced voice that is always in perfect pitch.⁴³ In its cosmetic use it is Auto-Tune's goal to produce a commercially efficient product for a mass audience—pop songs—as fast as possible. In contrast to the mode of discipline, which trains the voices of opera singers over long periods of time to perfection, Auto-Tune's voice modulations are part of a mode of constant control and modulation. Yet since its introduction, Auto-Tune has gradually morphed into a tool of showy affectation, closely associated with probing the boundaries of gendered difference. Consider Cher's 1998 single "Believe," which thematized Auto-Tune for the first time as a stylistic device. "Believe" transformed Auto-Tune from a pitch-corrective software into an instrument, whose metallic reconstruction of Cher's voice redefined the musical landscape. That Cher recognized this potential use is striking. As the gender theorist Loran Marsan notes, since the 1960s Cher has troubled the boundaries of gender, embracing the role of the diva and female sex symbol even as she pushes the boundaries of "gender drag" that undo any simple gendered identification.⁴⁴ Marsan describes Cher's self-presentation as "indicative of a politics of representation of identity that subverts ideas of authentic identity," arguing that it "exposes the manufacturing of ethnic and/or gendered identities and rejects ideals of naturalness or authenticity."⁴⁵ In this context her purposeful use of Auto-Tune to denature the voice appears as part of a long-standing critical interrogation of the authenticity of gender. Cher's iconic voice, noted for its strength and its unusually deep tones for a female voice, is here rendered mechanical, even neutered. While speaking of love, it sheds traditional vocal markers of gendered difference. This continues at the level of the lyrics. While speaking of a loss of control, the voice treads an uncertain path between the excessive control exerted by audio and the loss of control as body gives way to machine. With the exception of the refrain "Do you believe in life after love?" the lyrics of the entire song are modulated with more or less extreme Auto-Tune effects. Of course, we don't hear modulated voices for the first time in "Believe," but in "Believe" vocal modulation becomes a stylistic device. In it we witness the birth of a technique that makes the sound of control and modulation audible as its own aesthetic.

While subsequent performers arguably put less emphasis on Auto-Tune as a strategy of gendered denaturalization, Cher's inauguration of the technique suggests its close affinity with the modulation of gender and particularly the interrelation between female sexuality and the voice. When Auto-Tune is used in this manner as a stylistic device, its functioning significantly differs from that of its use as a pitch-correction software. As a stylistic device, Auto-Tune doesn't flatten or smooth out aberrations from perfect pitch but, instead, reacts to them. The auto-tuned voice depends on its aberrations. In contrast to the disciplined voice, which has to hit every tone right on, Auto-Tune's stylistically employed voice modulations work best if the voice is *not* in perfect pitch.

The production secret of the robotic sound of "Believe"—the use of Auto-Tune as a stylistic device, which the user manual for Auto-Tune refers to as the "Cher-Effect"—soon became public and saw expanded—at times, indiscriminate—use in the music industry and, in the years to follow, on video-sharing platforms such as YouTube and Vimeo.⁴⁶ In 2000, Madonna used Auto-Tune in her album *Music*. T-Pain uses Auto-Tune in almost all of his songs. His idiosyncratic use of Auto-Tune is so famous that it even became an app for the iPhone called I Am T-Pain (fig. 6).⁴⁷ Whereas T-Pain uses Auto-Tune mainly in interaction with his voice, Lil Wayne experiments with the extended use of Auto-Tune on sounds such as yawning and laughter in his single "Lollipop." Kanye West uses Auto-Tune to self-conscious excess in his album *808s & Heartbreak*.⁴⁸ *808s & Heartbreak* is interesting for our consideration here, as it differs significantly from West's earlier albums because it is not a "real" hip-hop album but rather a mix of hip-hop and other genres. Furthermore, his introduction of auto-tuned effects seems to fit with a broader detachment of West's performance from the bravado and machismo of male rapping; not only the voice but the subject matter of the songs emphasize a certain loss of control and a shift away from the overweening assertiveness of mainstream male rappers of previous decades. In *808s & Heartbreak* it seems as if, through Auto-Tune, not only West's voice but the entire genre of his music has been submitted to multiple modulations. In that

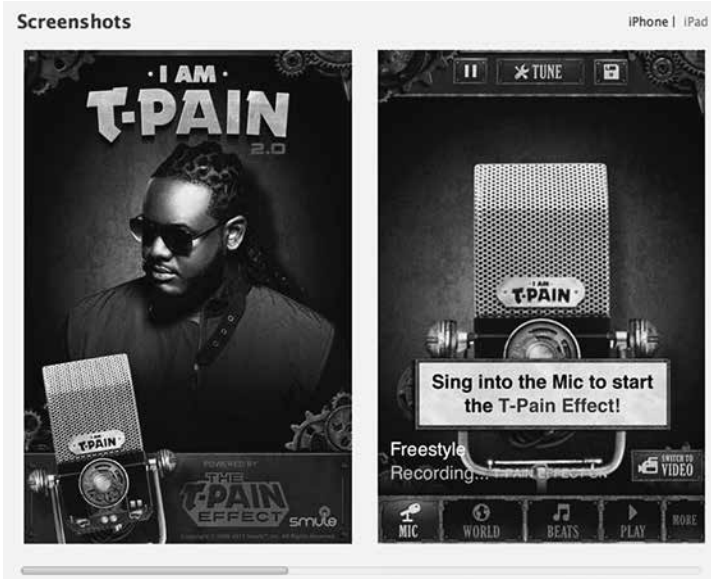


Figure 6. I Am T-Pain, I Am T-Pain App, advertising material

sense, the use of Auto-Tune in *808s & Heartbreak* refers to a more general cultural technique of modulation.

Fear of Auto-Tune

Predictably, Auto-Tune's growing popularity met an equally significant amount of skepticism. In various magazines Auto-Tune was discussed under headlines such as "Oh My Ears: Auto-Tune Is Ruining Music" or "Is Auto-Tuning Cheating?"⁴⁹ In 2009, Jay-Z addressed the inflationary use of Auto-Tune in his song "D.O.A. (Death of Auto-Tune)," which was, ironically, produced by Kanye West. Bemoaning a loss of authenticity and (male) control in the new generation of auto-tuned music, Jay-Z announced his role reestablishing an apparently male realness. "This is Sinatra at the opera, bring a blond, preferably with a fat ass who can sing a song."⁵⁰ Denouncing the apparent undoing of gender used so

effectively by Cher and West, Jay-Z declares, “Y’all lack aggression, put your skirt back down, grow a set man,” while bragging of his own refusal to be “politically correct.”⁵¹ In identifying the unmodulated voice with masculinity, virility, and voice, Jay-Z also drew on a thorny legacy of race, violence, and misogyny perhaps most familiar from the generation of gangsta rappers that slightly preceded him. It is as if the history denaturalizing gender and ethnicity Marsan identified with Cher here finds its counterparts in Jay-Z’s reassertion of bodily marked difference through the rejection of Auto-Tune. Yet the same themes emerged among male artists from other genres less noted for an in-your-face celebration of ethnic difference and masculinity. That same year the indie rock band Death Cab for Cutie protested against the inflationary use of Auto-Tune at the Grammy Awards.⁵²

Perhaps most notable in the Auto-Tune backlash was “The Cissy,” an episode of the TV series *South Park* (Comedy Central, 1997–) that aired 8 October 2014, devoted to a parody of Auto-Tune. It positioned the modulation of the voice within a wider cultural scene experimenting with the modulation of gender (and the products of the cultural industry—most notably pop music—that are structured around and also structure gendering).⁵³ In this episode Stan’s father, the geologist Randy Marsh, who appeared in the previous episode, “Gluten Free Ebola,” at a children’s birthday party as the personification of the New Zealand pop singer Lorde, reveals that he is transgender and—thanks to Auto-Tune’s modulations—that he actually *is* Lorde (fig. 7). The eponymous term *cissy*—a play on the words *sissy* and *cisgender*—mutates in the course of the episode from an insult for Stan to a more general insult for sexist and transphobic people. In the context of our reflections on mimetic modulations, the reflections of “The Cissy” on sexual identities and their transformations are particularly interesting because they not only conceive of Auto-Tune as a software for the modulation of the human voice but situate it within a broader ecology of cultural techniques of modulation of the gendered self.⁵⁴

Generally, the often-raised skepticism toward Auto-Tune relates not so much to its use as a stylistic device as to its cosmetic use in the studio—as a tool for perfecting the voice and its intona-

tions. In that context, Auto-Tune is often accused of being unnatural or even inhuman.⁵⁵ Such accusations have a strangely anachronistic overtone, especially when taking into account Auto-Tune's place within the history of the reproduction of the human voice. They also point to a more general mutation of the specific taste cultures of media ecologies. For more than a century, media industries aspired to an inconspicuous transition between human perceptual norms and media technological norms. As Sterne has shown, this naturalization is doubled by a paradox and an uncanniness: it was the deconstruction of the human voice and the denaturalization of human perceptual norms that enabled engineers to produce a seemingly natural similitude in audio technologies in the first place.⁵⁶

In digital media ecologies we are witnessing mutations of these ideals: in contrast to twentieth-century media cultures, which sought to establish an inconspicuousness of the artificiality of reproduction of the human voice, twenty-first-century digital media ecologies exhibit and emphasize the *artificiality of expression*. To be sure, voice modulations are not an invention of digital media ecologies; since the 1950s they can be found across different musical genres. However, we are witnessing a shift from the ideal of the seamless suture that negates its artificiality to the ideal of exhibiting artificiality as its own reality, thus celebrating the sound of control and modulation as its own aesthetics. This explicitly affirmative stance of celebrating and exhibiting artificiality is an integral part of the functioning of Auto-Tune, especially in its use as a stylistic device. Within this modulation, the becoming-fluid of gender norms seems less an aftereffect of production than a fundamental realignment of bodily differences. Again we are reminded of the initial distinction drawn between disciplinary and control societies. Discipline established institutions that ordered bodies by an increasingly finite regulation of gendered difference (e.g., in schools, factories, and hospitals that produced the very gendered differences they claimed to accommodate). By contrast, control cedes differentiation to the modification of flows between bodies, in the extraction of financial values from the variability of floating exchange rates, with semiotic play triumphing over physically incar-

nated values and identities. Within this shifting schema gender itself appears increasingly identified with the modulation of flux between bodies rather than rooted in immutable bodily difference.

Auto-Tune in this respect embodies a broader trend in digital cultures toward data flows over physical embodiment. Consider, for example, debates surrounding the app Facetune and its update Facetune2. Facetune, a selfie-editing software, takes its name from Auto-Tune, proposing an analogy between the modulation of the voice and the modulation of its users' appearance in self-taken digital portraits. With a few simple clicks, users of Facetune can modulate the width, distancing, positioning, tone, and angling of facial features such as the eyes, nose, and complexion. A slide bar, modeled on similar such bars used to modulate the pitch of sound, permits a gradual magnification or minimization of features such as nose width or eye size. As a technique of modulation, however, the modification of the facial features is perhaps the smaller part of the intervention; more decisive is the application's aim at allowing users to intervene in social networks, crafting the flux of affiliation and status in virtual environments. It is aimed in particular at users of social media platforms such as Instagram and Facebook, where the selfie acts like a bridge or currency regulating affiliation and exchange between a user's supposed everyday life and a wider virtual network of virtual friends. Since its popularization, it has incited small-scale moral panics about contemporary standards of beauty. "The app that makes Photoshop-style retouching easy is wildly popular with celebrities but has prompted a body image debate," the headline of a recent article in the British newspaper the *Guardian* reads.⁵⁷ The same article warns that all too often "Facetune users go overboard, smoothing their selfies into amorphous avatars or slimming their bodies to the point of anatomical impossibility," quoting the model Chrissy Teigen as having tweeted, "I don't know what real skin looks like anymore. Makeup ppl on instagram, please stop with the smoothing (unless it's me) just kidding (I'm torn) ok maybe just chill out a bit. People of social media just know: IT'S FACETUNE, you're beautiful, don't compare yourself to people ok."⁵⁸ Yet the popularity of the app and similar functions such as Instagram and Snapchat filters—many of

which produce images that can be seen as patently manipulated by the highly trained consumers of social media—suggest newfound comfort and ease with self-modulation. While many users may employ these apps with the goal of tricking their peers, for many others they are mere devices for shaping one's self-presentation and thereby locating one's own personage within a social network of others. Artificiality is an element of these applications' attraction.

Applications such as Facetune expand and complicate what the media scholar Tania Bucher terms "programmed sociality," friendships shaped by the algorithmic management of social data and affiliations by corporate entities, for they also show that algorithms often serve strategies of self-management and a kind of do-it-yourself programming of the social by users.⁵⁹ Indeed, in an era of apps intervening in the flux of data flows, the computable friendships that Bucher singles out as being central to contemporary subjectivity must also be linked to other forms of modulation, such as visually and aesthetically based manipulations enabled by Facetune and Instagram filters. Put in other terms, the interactivity built into contemporary platforms structurally precludes the close restriction of modulability to programmers. Certain margins of indeterminacy allow users themselves, with the aid of supplementary software and tools, to modulate these flows. By the same measure, however, this structural distribution of modulation should exclude naive appeals to the self or the individual as the author of these interventions in the fluxes of connectivity and affiliation. Modulation is about the symphony, not the solo. Put in other terms, on contemporary media platforms we are witnessing a transformation in the medial, political, and aesthetic constellations between human and machine.

Looked at through this lens, Auto-Tune's modulations don't lead to an artificialization of the human or a hybridization of human and machine. We can instead conceive of the new relations that develop with Auto-Tune as a form of intimacy between human and machine. Auto-Tune, Facetune, and similar apps create a series of techniques and new forms that simultaneously invent a new form of creation *with* the app. In this sense, singing with Auto-Tune becomes a duet between human and machine.

The Auto-Tuned Self

As our excursion into the history of the modulated voice—from the speaking automata of Kempelen, via the experiments of Visible Speech, to the invention of telephony and telegraphy—has shown, voice modulations are not just the result of digital media but also its conditions of possibility. The separation of signals from a physical substrate is one condition for the rise of modulation as a decisive technique of contemporary control societies, to be sure, but so too is the problematic of gender, both as a site of modulation within control societies and as structuring difference conditioning such modulation. Techniques of the modulation of the human voice are preconditions for the rise of the digital media ecologies of contemporary control societies, but such modulations cannot be fully separated from gender as a modulated and modulating form of difference. In this regard, Deleuze's comments in the "Postscript" essay help us to better understand the auto-tuned voice modulations in "Can't Hug Every Cat" and, conversely, the video's auto-tuned voice modulations make the medial foundations of control societies and their mechanisms of functioning visible and audible.

We laugh about "Can't Hug Every Cat" because the same mechanisms that are supposed to create control in the end lead to a series of uncontrolled affective discharges. We laugh about the video's mimicking of the dating video and the confessional. We laugh about its repetitive loops, its viral spread and memetic mutations. Moreover, the pop culture topicality of cats reinforces the comic effects of the video. We laugh about the cats and the cuteness and ridiculousness of the cat videos. But we mostly laugh about "Can't Hug Every Cat" because the use of Auto-Tune reveals the "truth" of the video. In "Can't Hug Every Cat," modulation is not just a technique to modulate the human voice with Auto-Tune but a more general cultural technique, bound up in gendered, species, and generational difference. Here, the auto-tuned voices are closely linked with the genre of the dating video, the confessional, and more general techniques of the self in contemporary control societies, wherein such differences are always in a state of strategic

and tactical modulation, staging their authenticity by techniques that undermine their claim to naturalness. In this sense, Auto-Tune doesn't function as an external add-on that modifies an original voice and adds an artificial layer to the video, but rather reveals the inherent logic of modulation and control already at work in contemporary digital cultures. "Can't Hug Every Cat" is not just an abnormal video of a young woman who has lost control or a critical commentary about the internet's mechanisms of control and desire. The video's auto-tuned voice modulations lead us into the heart of the world of technical and political distributions and assemblages of contemporary control societies: into the world of the auto-tuned self.

Notes

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1. Tania Bucher, *If . . . Then: Algorithmic Power and Politics* (New York: Oxford University Press, 2018).
2. These feedback loops function the same way that Gilbert Simondon has described an open machine. See Gilbert Simondon, *Du mode d'existence des objets techniques* (Paris: Éditions Aubier-Montaigne, 1958). These modulations exemplify a long-held dream of digital and cybernetic communications. See, for example, J. C. R. Licklider, "Man-Computer Symbiosis," *IRE Transactions on Human Factors in Electronics* HFE-1 (March 1960): 4–11.
3. On the centrality of modulation to contemporary societies, see Yuk Hui, "Modulation after Control," *New Formations*, nos. 84–85 (2015): 74–91. For the now-standard account of this perpetual leveraging of personal data toward commercial ends, see Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: PublicAffairs, 2019).

4. Michel Foucault, "Technologies of the Self," in *Technologies of the Self: A Seminar with Michel Foucault*, ed. Luther H. Martin, Huck Gutman, and Patrick H. Hutton (Amherst: University of Massachusetts Press, 1988); see also Foucault, *The History of Sexuality 1: The Will to Knowledge* (New York: Pantheon, 1978).
5. Gilles Deleuze, "Postscript on the Societies of Control," *October*, no. 59 (1992): 3–7.
6. Here the concept of media ecology refers to configurations and interactions between human and machine, living beings and technologies that have evolved in the past fifty years or so through the "cybernetization" of life. Its relationality of human and nonhuman entities ties the concept of media ecologies tightly to that of control societies. On an extended concept of ecology, see Félix Guattari, *The Three Ecologies* (London: Continuum, 2008). On the concept of media ecology, see Erich Hörl, "A Thousand Ecologies: The Process of Cybernetization and the General Ecology," in *The Whole Earth: California and the Disappearance of the Outside*, ed. Dietrich Diedrichsen and Anselm Franke (Berlin: Sternberg Press, 2013), 121–30; see also Matthew Fuller, *Media Ecologies: Materialist Energies in Art and Technoculture* (Cambridge, MA: MIT Press, 2007). For an overview of the concept of cultural techniques, see Bernard Dionysius Geoghegan, "After Kittler: On the Cultural Techniques of Recent German Media Theory," *Theory, Culture, Society* 30, no. 6 (2013): 66–82.
7. Cara Hartmann, "eHarmony Video Bio," YouTube video, uploaded by hartmanncara, 4 June 2011, www.youtube.com/watch?v=mTTwcCVajAc.
8. On the quantified self, see Deborah Lupton, "Understanding the Human Machine," *IEEE Technology and Society Magazine* (Winter 2013): 25–30. On the post-Fordist subject and immaterial labor, see Maurizio Lazzarato, "Immaterial Labor," in *Radical Thought in Italy: A Potential Politics*, ed. Paolo Virno and Michael Hardt (Minneapolis: University of Minnesota Press, 1996), 132–46. For a historical analysis of how computers change our sense of self, see Sherry Turkle, *The Second Self* (Cambridge, MA: MIT Press, 2005).
9. For some of this history of the site, see Sara Ashley O'Brien, "Eighty-One-Year-Old eHarmony Founder on Gay Marriage and

Tinder,” *CNNMoney*, 12 February 2016, money.cnn.com/2016/02/12/technology/eharmony-neil-clark-warren/index.html.

10. Moreover, such shows explicitly borrow elements from two other highly gendered technologies of the self considered by Foucault—Catholic and psychoanalytic confessions—which in their classical format presented a sober male listener opposite a parishioner or analysand staging their own unreasonableness. See Foucault, *The History of Sexuality 1* and “Technologies of the Self.” It is somewhat remarkable that as TV producers remediated these formats for display to a virtual audience of millions, in many respects they recovered a presentation of gender in some ways more reactionary and formulaic than their present-day embodiments in much of the Catholic Church and practices of analysis.
11. See Ann Hornaday, “Lake Bell Talks about *In a World . . .* and the Politics of Dialect,” *Washington Post*, 10 August 2013, www.washingtonpost.com/goingoutguide/movies/lake-bell-talks-about-in-a-world--and-the-politics-of-dialect/2013/08/08/71eb5edo-ff76-11e2-96a8-d3b921c0924a_story.html; and Tess Lynch, “Talk like a Woman: Lake Bell vs. ‘Sexy Baby Voice,’” *Grantland*, 13 August 2013, www.grantland.com/hollywood-prospectus/talk-like-a-woman-lake-bell-vs-sexy-baby-voice/.
12. Matt Donnelly, “‘I Feel Pretty’ and the Long History of ‘Sexy Baby’ Voice on Screen,” *The Wrap*, 21 April 2018, www.thewrap.com/feel-pretty-long-history-sexy-baby-voice-screen/.
13. See Mark Liberman, “Sexy Baby Vocal Virus,” *Language Log*, 15 August 2013, languagelog.ldc.upenn.edu/nll/?p=5842.
14. As Fey remarked some two years after the airing of the episode that launched the debates over sexy baby voice, “I think it confused and sort of delighted the Internet in a way because it sort of opens up more questions than answers,” by staging the vision of a self-styled feminist trying to correct another woman’s voice. “She thinks she’s doing the right thing by trying to correct this woman, by trying to say like, you don’t have to be this way. And at the same time, this girl has every right to be whoever she wants. And so that, to me, was what the story was about, that it’s just such a tangled-up issue, the way women present themselves. . . . And the way women judge each other back

and forth for it.” See Terry Gross, “Tina Fey: 30 Rock Star and Creator Moves On,” *Fresh Air*, 25 January 2013, www.npr.org/2013/01/25/170170988/tina-fey-30-rock-star-and-creator-moves-on.

15. Gross, “Tina Fey.”
16. “eHarmony Cat Lover Video Bio Beyond Ridiculous,” *Huffington Post*, 6 June 2011, www.huffingtonpost.com/2011/06/09/eharmony-cat-lover-video-bio_n_874507.html.
17. Georges Didi-Huberman, *Invention of Hysteria: Charcot and the Photographic Iconography of the Salpêtrière*, trans. Alisa Hartz (Cambridge, MA: MIT Press, 2003).
18. On the politics of poor-quality images in digital media ecologies, see Hito Steyerl, “In Defense of the Poor Image,” in *The Wretched of the Screen* (Berlin: Sternberg Press, 2012), 31–45.
19. The Gregory Brothers, “Can’t Hug Every Cat,” YouTube video, uploaded by schmoyoho, 7 July 2011, www.youtube.com/watch?v=sP4NMojcFd4.
20. “eHarmony Video Bio meme,” *Know Your Meme*, knowyourmeme.com/memes/eharmony-video-bio#fng.
21. The Kuleshov effect is a montage effect named after the filmmaker Lev Kuleshov. In 1918 Kuleshov showed in a montage experiment that spectators attributed a different affective meaning to the same shot—the close-up of the relatively expressionless face of the actor Ivan Mosjukhine—depending on whether this shot was followed by the shot of a plate of soup, a coffin with the corpse of a young woman, or a small girl playing with a teddy bear. Depending on the second shot, spectators described the face as hungry, sad, or happy. Louis Giannetti and Scott Eyman, *Flashback: A Brief History of Film* (Englewood Cliffs, NJ: Prentice Hall, 1986), 86.
22. Limor Shifman, *Memes in Digital Culture* (Cambridge, MA: MIT Press, 2014).
23. Regarding second-order cybernetic feedback loops, see Niklas Luhmann, “The Paradox of Observing Systems,” *Cultural Critique*, no. 31 (1995): 37–55; N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and*

- Informatics* (Chicago: University of Chicago Press, 1999), 10–11, 131–59.
24. Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 149–81.
25. Jacques Derrida, “The Animal That Therefore I Am (More to Follow),” *Critical Inquiry* 28, no. 2 (2002): 369–418.
26. Julian Young, *Friedrich Nietzsche: A Philosophical Biography* (Cambridge: Cambridge University Press, 2010), 531–32.
27. Sianne Ngai, *Our Aesthetic Categories: Zany, Cute, Interesting* (Cambridge, MA: Harvard University Press, 2012).
28. Deleuze, “Postscript,” 4. On the distinction between modulation and molding, see Hui, “Modulation after Control.”
29. James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA: Harvard University Press, 1989).
30. William Burroughs, “The Limits of Control,” in *Schizo-Culture*, ed. Sylvère Lotringer (Los Angeles: Semiotext(e), 1978), 38–42.
31. Burroughs, “The Limits of Control,” 38.
32. Alexander R. Galloway, “Computers and the Superfold,” *Deleuze Studies* 6, no. 4 (2012): 513–28.
33. Mara Mills, “Deaf Jam: From Inscription to Reproduction to Information,” *Social Text*, no. 102 (2010): 35–58.
34. Gilbert Simondon, *Individuation in Light of Notions of Form and Information* (Minneapolis: University of Minnesota Press, 2020).
35. On Kempelen’s tying of informatics to ethnic difference, see Bernard Dionysius Geoghegan, “Orientalism and Informatics,” *Ex-Position*, no. 43 (2020): 45–90.
36. See Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003), 74–76.
37. Alexander Melville Bell, *Visible Speech: The Science of Universal Alphabetics* (London: Simpkin, Marshall and Co., 1867). See discussion in Mills, “Deaf Jam.”

38. Mills, "Deaf Jam."
39. On the rise of corporations, see Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age* (New York: Farrar, Straus and Giroux, 1982). On the relationship between commodity price index and telephony, see James W. Carey, "Technology and Ideology: The Case of the Telegraph," in *Communication as Culture: Essays on Media and Society* (New York: Routledge, 1989), 201–30. On the relationship of war and telegraphy, see Kate Maddalena and Jeremy Packer, "The Digital Body: Telegraphy as Discourse Network," *Theory, Culture, and Society* 32, no. 1 (2015): 93–117.
40. On the relationship between telephony and the history of digital media, see Mills, "Deaf Jam"; see also Jonathan Sterne, *MP3: The Meaning of a Format* (Durham, NC: Duke University Press, 2012).
41. In a way, older techniques imitated analog formats digitally, as their transformations mimicked what happens when a DJ turns a record slower or faster on the turntable. From this perspective, the higher-pitched voices that we know from various jungle or rave productions from the 1990s cannot just be attributed to a taste culture or an aesthetic decision but were also the results of a technical necessity. If one wanted to change the speed, the pitch automatically changed with it and vice versa.
42. See Antares Audio Technologies, *Auto-Tune 8: World Standard Professional Pitch and Time Correction: Owner's Manual* (2014).
43. See David McNamee, "Hey, What's That Sound: Auto-Tune," *Guardian*, 6 April 2010, www.theguardian.com/music/2010/apr/06/auto-tune.
44. Loran Marsan, "Cher-ing/Sharing across Boundaries," *Visual Culture and Gender* 5 (2010): 50.
45. Marsan, "Cher-ing," 51.
46. On the "Cher-Effect," see Antares Audio Technologies, *Auto-Tune 8: World Standard Professional Pitch and Time Correction: Owner's Manual* (2014), 80.
47. Jemima Kiss, "Apps of the Day: The Best Pitch-Bending Apps," *Guardian*, 24 August 2010, www.theguardian.com/media/pda/2010/aug/24/auto-tune-apps.

48. See Jody Rosen, "80s & Heartbreaks," *Rolling Stone*, 11 December 2008, www.rollingstone.com/music/albumreviews/80s-heartbreak-20081211.
49. See Tony Sclafani, "Oh My Ears: Auto-Tune Is Ruining Music," *Today*, 2 June 2009, www.today.com/id/30969073#.VPRhy3ZWVIE; and Adam Connor-Simons, "Is Auto-Tuning Cheating?," *Gelf Magazine*, 12 March 2008, www.gelfmagazine.com/archives/is_autotuning_cheating.php.
50. These and other lyrics from the song are taken from website genius.com, which, while admittedly not always 100 percent accurate, seems to be the most reliably accurate large-scale repository of contemporary lyrics. Jay-Z (Shawn Carter), "D.O.A. (Death of Auto-Tune)," track 3 on *The Blueprint 3* (Roc Nation, 2009). Lyrics quoted from "D.O.A. (Death of Auto-Tune)," [Genius](http://Genius.com/Jay-z-doa-death-of-auto-tune-lyrics), www.genius.com/Jay-z-doa-death-of-auto-tune-lyrics (accessed 15 January 2021).
51. Celebrating his own role promoting the restoration of melody-free songs that "should make niggas wan' go and commit felonies," he exhorts his listeners: "If you a gangsta, this is how you prove it to me (uhh, uhh!) / Nigga just get violent / This is death of auto-tune, moment of silence."
52. See Sean Michaels, "Death Cab for Cutie Declare War on Auto-Tune Abuse," *Guardian*, 11 February 2009, www.theguardian.com/music/2009/feb/11/death-cab-for-cutie-auto-tune.
53. See Adam Pliskin, "Hilarious *South Park* Clip Proves Lorde Is Really an Autotuned 42-Year-Old Man," *Elite Daily*, 9 October 2014. See also Jessica Rawden, "*South Park* Debuts Lorde Song and It's Awesome," *Cinema Blend*, 16 October 2014, www.cinemablend.com/television/South-Park-Débuts-Lorde-Song-It-Awesome-67889.html.
54. See Christin Scarlett Milloy, "*South Park* Takes on Trans Issues . . . and It's Great," *Slate*, 9 October 2014, www.slate.com/blogs/outward/2014/10/09/south_park_s_cissy_episode_was_great_on_trans_issues.html.
55. Peter Lee, "The Evil That Is Auto-Tune," *Hooks and Harmony*, 11 June 2008, www.hooksandharmony.com/hmph-day-the-evil-that-is-auto-tune/.

56. Sterne, *MP3*, 32–60.
57. Olivia Solon, “FaceTune Is Conquering Instagram but Does It Take Airbrushing Too Far?,” *Guardian*, 9 March 2018, www.theguardian.com/media/2018/mar/09/facetune-photo-shopping-app-instagram-body-image-debate.
58. Reproduced in Solon, “FaceTune Is Conquering Instagram.”
59. Bucher, *If . . . Then*, 4–12.

Lisa Åkervall is associate professor of film studies at the Department of Cultural Sciences at the University of Gothenburg. Her recent research focuses on cinematic affect, digital and social media, postcinematic aesthetics, digital sound studies, and the cultural techniques of neoliberalism. She is author of *Kinematographische Affekte: Die Transformation der Kinoerfahrung* (2018) and coeditor of *Waking Life: Kino zwischen Technik und Leben* (2016). She is currently writing a monograph on the relationship among aesthetics, subjectivity, and neoliberal politics in digital media cultures.



Figure 7. "The Cissy," Trey Parker and Matt Stone, *South Park* (1997–), Season 18, Episode 3