

71. This tension between the history of mobile media in fostering user creativity and a present represented by the iPhone's commodification of creativity in terms of applications and anti-hackability is discussed in detail by Jean Burgess in Chapter 3 in this anthology.
72. Gregg, *op cit.*
73. Judy Wajcman, Micheal Bittman, and Jude Brown, "Intimate connections: the impact of the mobile phone on work life boundaries," in Gerard Goggin and Larissa Hjorth, eds., *Mobile Technologies* (London and New York: Routledge, 2009), 9–22.
74. Qiu, *op cit.*

13 Four Ways of Listening with an iPhone

From Sound and Network Listening to Biometric Data and Geolocate Tracking

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INTRODUCTION

Much commentary on the iPhone has focused on its visual aspects, from the way the phone looks to how it influences the act of looking, via camera, photographic apps and various forms of augmented reality software.¹ But the iPhone is also a complex technology of listening. From its inception, it was touted as a perfect combination of a music device, a telecommunications hub and an internet communicator. These can all be understood as different kinds of listening available to the user, but beyond this, there are multiple ways in which the iPhone listens back to its user. Together, the iPhone and the user form a "listening station": where an array of activities and processes can occur that are impossible alone, depending on the nature of the accord that is reached between the human agent and the iPhone.

This is an account of four "vectors of listening" that intersect through the iPhone and beyond: described as vectors because they move through other devices, people and forms of media, and they are evolving with speed. The first two sections focus on users listening in or through the iPhone; the other two consider the ways the iPhone listens to users. In each case, it is the assemblage of user and iPhone that allows for the development of particular listening practices. It is important to note that many of these vectors cross through other mobile technologies, and that the iPhone is just one in a rapidly growing market of smartphones, tablets and other connected media devices that share some of these characteristics. Mobile phones have a complex inheritance. They display their lineage in multiple ways, revealing a patina of previous media forms and prior models. Nonetheless, the iPhone has certain particularities, sometimes intentionally produced by Apple and sometimes invoked by its place in the history of mobile devices and of the other media genres that it draws upon.

This chapter contends that the iPhone offers a productive site where we can begin to consider how listening functions on smartphone platforms, what is prioritized and what kinds of bargains are being struck. We begin

with a consideration of the iPhone as a sound device and follow with an account of the ways it enables forms of network listening. Next, there is an analysis of the ways the iPhone can listen to an individual's biometric data and finally as a device of eavesdropping, where the iPhone gathers—without the full permission of the user—geolocative data about his or her daily travels.

LISTENING TO PLACE: SOUND AND THE iPhone

The iPhone contains a conglomeration of sound technologies. From its inbuilt microphone, speaker and white headphones to the onboard iPod and its capacity as a platform for new and emerging sound software, it offers multiple avenues for listening to audio. The collection of affordances it represents is the result of many histories: technological, economic, institutional and cultural. Certain activities are naturalized through its interfaces, while other forms of listening fall to the margin. Here, we consider one element of this complex set: the role of the iPhone in placing the listener in particular forms of space, be it social, environmental or corporate-owned space.

The convergence of multiple forms of aural listening in the iPhone mimics earlier telephonic technologies as well as amplifying and augmenting them into new forms of attentiveness and perception. For the first-generation iPhone, its immediate predecessor was the iPod, a device that itself possesses considerable cultural significance and recognition. Like the iPod, the iPhone represented a portable media player, one that connected to the owner's library of stored music through Apple's walled garden: the iTunes software. The iPhone encompasses the iPod, taking on its functions as an MP3 player, while also extending its reach in many new directions. Apple's careful cultural positioning of the iPod also influenced the design and cultural reception of the iPhone. Its position was consciously shifted away from the prior associations of mobiles as business tools,² which often saw mobile devices kept within the aesthetic strictures generally accorded to office furniture: function over beauty. Instead, the iPhone appeared as something other, an expansive glass screen that asked to be touched and stroked, illuminated by colorful icons and marked by just a single button. The design of the device has invoked considerable scholarly attention but the emblematic, white headphone/hands-free cables have their own significance.³

The iPhone headphones are, on first impression, the same familiar white cords that were a distinctive part of the iPod design from its first release. They look almost identical, allowing the iPhone to disguise itself, blending in with the multiple generations of iPod in public spaces. When watching someone at a train station, headphones on and gaze unfocused, it is difficult to tell what kind of device has his or her attention. The Apple branding

remains distinctive, but the specific nature of the device is unclear. The woman at the station could be listening to music or a podcast or a person speaking to her on the other end of the line; only if she begins speaking in reply will the nature of the object be suggested. There is another signal that betrays its identity: a small, almost imperceptible microphone, also white, built into the cable to collect sound.

To those looking on, the white cables invoke all the images of iPod use that had been relentlessly underscored by Apple marketing campaigns.⁴ Giant iPod advertising billboards in cities such as New York, London, Sydney and New Delhi offered up colorful panels featuring a silhouette of a person dancing to music, white headphones in high contrast. The replication of their form in the iPhone invoked the urban, music and youth associations of the iPod, offering a type of tightly marketed cool that was in stark opposition to alternatives, such as the all-business gunmetal or black protrusion of a Bluetooth headset. Thus, the iPhone inherited the functions of the iPod, as well as a predominant external trace. Like the iPod, the iPhone became a site of listening, but across multiple formats: music, podcasts, voice calls, as well as a range of apps and games that record, produce and mutate sound.

A recurring theme in popular and academic criticism of the iPod was that the headphones isolated listeners from the world around them. Joseph Pitt exemplifies this position when he argues that iPod users are "antisocial beings, those who avoid human interactions."⁵ In his view, "The spontaneity of the social has disappeared and the silence of the anthropoid now rules." At the most simplistic level, turning the volume up on an iPod or iPhone can insulate the user from environmental sound. But this assumes a binary relationship between being "social" in public, perfectly attentive, and being silent, withdrawn and antisocial. This belies the many gradations of inattention, of not being present, that exist regardless of the presence of MP3 players. Or, in Erving Goffman's words, it is very common that "we might not be listening when indeed we have a ratified place in the talk, and this in spite of the normative expectations of the speaker."⁶ But more significantly, iPhones, and iPods before them, are participants in a more complex structuring of place, of what constitutes presence and absence, while dynamically redrawing boundaries around who and what is included and excluded. The very meaning of what it means to listen to one's location is itself in flux. As Eric Gordon writes:

Even if one doesn't carry around an iPhone or BlackBerry, as normative understandings of situations shift to accommodate new practices, network locality operates outside of the tools that enabled the practices in the first place. The tools are themselves just a medium to address much wider cultural changes around what it means to occupy space, to be with others and to be local.⁷

In this sense, iPhones do not cut people off from their location but play a role in reconceptualizing what constitutes “the local” and how we listen to the space around us: local space, personal audio space and network space. This is not purely metaphor. There are also very material applications of the re-spatialization capacities of the iPhone, including software that turns the iPhone and its owner into a form of highly attentive listener while also altering the way local sounds and social arrangements are functioning. Two iPhone apps offer examples of this kind of meta-listening: *RjDj* and *Shazam*.

RjDj is a reactive audio app that uses “the iPhone’s internal microphone to ‘listen’ to the noises and voices heard in your proximity to dynamically create music.”⁸ *RjDj* encourages listeners to use the app while walking around, hearing the sounds of the city or countryside refracted through the filters and effects of the application. It creates a compelling sensation of displacement in the real, as the everyday sounds of the environment are heard through headphones, still present but strangely modified. One is listening, but the listening experience is altered and heightened. It reverses the assumption of headphones being worn as a sign of disengagement from the immediate aural surroundings and produces new forms of immersion.

Don Ihde, writing in *Listening and Voice: The Phenomenology of Sound*, describes a scene of listening to a Vivaldi concert on record. He accounts for the way the hearing self closely produces the sound in a doubled form:

There is, in auditory imagination, the possibility of synthesis of imagined and perceived sound . . . in this case the auditory “hallucination” is not a matter of hearing one thing as something else but a matter of a doubled sound, a synthesized harmonic echo.⁹

This evocative account functions as an eerily prescient description of the synthesized harmonic echoes of *RjDj* and also suggests the appeal of the meta-listening offered by the app. It brings forth what is otherwise an act of “auditory imagination”: the re-hearing and re-spatializing of sound, producing ghostly doubles. The in-ear style of the iPhone headphones ushers the immediate environment into the auditory canal with unusual closeness and intimacy while synthesizing perceived sounds with imagined, digitally processed sound. The *RjDj* user walks through space, listening to the “hearing of space.”

Finally, *RjDj* also offers the option to record “scenes”: to capture the moment of listening as it is heard through the algorithmic filters of the app. These scenes can then be uploaded for others to hear, giving them access to an individual’s sound experience: walking through a park in summer, drinking a beer in a pub and overhearing the surrounding conversations, or cycling through the city. This, too, offers a tantalizing suggestion of an *a priori* impossible ideal of listening: to hear another’s listening. Or, as Peter Szendy and Jean-Luc Nancy ask:

Can one make a listening listened to? Can I transmit my listening, unique as it is? That seems so improbable, and yet so desirable, so necessary too.¹⁰

RjDj’s recorded scenes cannot render the particularities of someone’s individual head shape, Eustachian tubes, sound receptors, neurons, memories and the myriad contributors to the lived experience of sound. But it is, even temporarily, a sense of listening to a place as heard by another—a transmitted listening to location. This highly personal sensation of iPhone listening, almost an erotics of sound, reminds us both of the intimacies and the impossibilities of listening, and the boundaries that exist in spaces and between bodies.

Shazam offers a different kind of engagement with sound and space. As a music identification app, *Shazam* allows users to “tag” a piece of music they don’t recognize. It records a short sample, then analyzes it against a database. If it finds a match, it then returns the name of the song and the artist. *Shazam* works better with particular genres and artists. One reviewer explains:

Shazam loves current Top 40 hits, most classic rock, and indie favorites. *Shazam* doesn’t particularly care for movie scores, obscure indie rock, surf music, or ’90s vintage hardcore, and is often confused by electronica—among other things.¹¹

Thus, *Shazam* assists the user, acting as an external “ear” that both listens and recognizes, but only for particular kinds of music. The classic use case for *Shazam*, or other identification apps such as *SoundHound*, is in a cafe or a bar where music is playing and an unrecognized track comes on. Often this is a social process: friends will ask who a track is by, and if no one can name the artist, then *Shazam* becomes the final arbiter. In addition to the close attention being paid to the music in the local surrounds—by the user and the app, listening and identifying—another kind of space is opening up. If *Shazam* successfully recognizes an artist, it encourages the purchase of the song from the iTunes Music Store. The listeners are directed toward Apple’s corporate-owned space, which may be a vast database but still has weaknesses in regard to representing non-mainstream genres and musicians. There is a particular kind of exchange occurring here, and in return for being a knowing ear, *Shazam* is also shifting a public space of listening (such as a bar or cafe) into an iTunes-branded shopping space. This is neither an unusual occurrence, nor necessarily problematic, but it has the effect of prioritizing certain forms of music as hearable, locatable and thus purchasable, and others as unknown, ephemeral and confined to a specific moment and space.

As an audio platform, the iPhone represents the convergence of multiple possibilities for attentiveness to sound and modifying sound environments.

It works in concert with the user, offering abilities and forms of knowledge, and in doing so, the iPhone user reconfigures the act of listening in space. Some of those configurations are shaped in advance, encouraging certain pathways (economic, technological) while minimizing others. The iPhone has already become a player in a wider remaking of place, significantly altering how we understand listening, both socially and phenomenologically.

NETWORK LISTENING: SOCIAL MEDIA AND BEYOND

The iPhone, along with other smartphones, opened the mobile from being a focused telecommunications device to being a media portal: connecting to several social networks such as Facebook, Twitter and Google+. Friends, strangers, colleagues, news services, celebrities: all can be heard via a range of social platforms. Conversations, posting messages, images or videos can persist while on the move, away from a computer. Another pattern emerged: “tuning in,” the habit of checking the changing feed of posts multiple times during the day. For regular users of social media via iPhones, this becomes a “discipline of listening.”¹²

Back in 1912, Freud developed the concept of “evenly suspended attention,” which was a technique he suggested for analysts who risked exhaustion from listening to patients for many hours per day. Instead of focusing on a single line of thought, the aim was to give equal notice to all things without selection. In a consideration of Freud’s recommended state of receptivity, Jonathan Crary contends that this approach brought forth more than just a method to deal with vocal streams of information that have no clear coherence. As he writes:

It presumes an ideal state in which one could redistribute one’s attention so that nothing would be shut out, so that everything would be in a low-level focus. . . My interest here is not in any specific psychoanalytic implications, but rather in the larger cultural significance of a technique designed to impose a measure of cognitive control on an unassimilable excess of information.¹³

For what began as a technique for listening to patients’ voices could later be recognized in the twenty-first century metaphorical forms of listening to networks. Jonathan Crary notes the way in which Freud presages our own era, with the current emphasis on the “compulsory consumption of ‘information’.”¹⁴ The extraordinary spread of Facebook, for example, contributed to the sense of compulsory participation: for a while, to not be on Facebook was to take an unusual stand and to be absent from a dominant space of interaction. The first release of the iPhone, with its simple, single-stroke access to Facebook, compounded this sense of being forever networked. Users would habituate themselves to tuning in frequently, in case

something important was missed, or if they—by delaying response—were causing offence or, worse, gradually disappearing from the minds of others. Thus came the emergence of regular “listening in,” checking the activity of the feeds.¹⁵

This emerging habit of listening to networks throughout a day comes from already established patterns of phone use: it requires people to already be habituated to checking for text messages and calls, to already be carrying their mobile with them every day.¹⁶ As Catherine A. Middleton writes, “Mobile device usage begets more mobile device usage, addictive or not.”¹⁷ Thus, the iPhone represented a key moment of metastasis, when an already intimate, popularized technology expanded to encompass a host of media forms, with easy access to multiple spaces of listening.

I have previously outlined different forms of listening to networks: “background listening,” “delegated listening,” and “reciprocal listening.”¹⁸ Background listening occurs in a social media context when commentary and conversations continue as a backdrop throughout the day, with only a few moments requiring focused attention and response. Delegated listening is evidenced when there is an outsourcing of the act of network listening to other parties: when media officers update a politician’s Facebook profile, or celebrities pay an agency to run their Twitter account. Finally, reciprocal listening is when two parties both “listen” to each other in social media spaces—noting and responding to each other’s comments. The iPhone is a significant agent in the ability to engage in background and reciprocal listening throughout the day, untethering the modes of social media listening from desktop environments and allowing for potentially ongoing attentiveness, regardless of location or context. In a 2011 study by Pew Internet, approximately fifty-four percent of US-based adult Twitter users accessed the service from their mobile phones.¹⁹ In the Young, Mobile, Networked study, our survey of 1034 Australians discovered that sixty-six percent of eighteen- to thirty-year-olds access social networking sites via their phones (see endnote 15). Significantly, twenty-nine percent of those accessing social networking sites from their mobiles spent more than thirty minutes each day on those sites. These figures reflect the multiple “checking in” moments that mark out frequent social networking users: not necessarily long and sustained periods of use, or even necessarily posting content, but repeatedly and briefly listening in for the latest updates.

Another reason that the iPhone has become closely associated with a wider cultural emergence of network listening is that the device emerged alongside the mass popularization of Facebook and Twitter. Twitter was first launched in July 2006, Facebook was opened to all users in September 2006, and the first iPhone went to market in January 2007. This seven-month period represents a highly significant moment for the internet, and the kind of usage patterns that would emerge. The iPhone operating system offered one-touch access to the networks that were capturing large user bases in a very short, critical space of time.

Apple very deliberately emphasized the iPhone's role as a powerful platform for accessing the internet. When launching the original iPhone, Steve Jobs described the device as a combination of three technologies: an iPod with touch control, a revolutionary mobile phone and a "breakthrough internet communicator."²⁰ These three features quickly became naturalized on a wide range of smartphones. But at the time of the iPhone's release, it was portrayed as uniquely combining these elements (although many smartphones in Japan already served similar functions). Its appeal as a large-screen and full-color platform to access the internet, and social networking sites in particular, was part of the wider perception that it was "the first widespread pocket desktop computer."²¹ While we can consider the iPhone as an early site of mobile network listening, it is by no means the only one. In addition to RIM's BlackBerry and Windows mobiles, Google launched the Android system in November 2007, and by 2011 it had become one of the leading smartphone operating systems globally.²²

If "evenly suspended attention" became a necessary state to sustain therapeutic efficiency, then mobile network listening became a necessary practice to sustain connection to a range of institutions, including news and information organizations, work and family. Network listening via mobiles is significant not only for the way in which it gave people what Carey describes as a sense of "cognitive control" over constant flows of information, but also the way in which it became a normative practice: an expectation that one would be contactable, and never far from the networks. The feeling of exerting control over these data flows may well be illusory, and the ushering of work into more non-work times and spaces is an established problem.²³ But there is also an increasingly sophisticated process of managing workplace, family and friend relationships within a set of separate but often overlapping networks, as well as the development of a dispersed, low-level focus necessary to maintain a presence across multiple platforms. Mobile network listening offers us a useful approach to understanding these shifts in attention and presence.

BIOMETRIC LISTENING: THE BODY AND THE iPhone

From being a technology originally oriented toward communication and listening to the outside world, the iPhone also functions as a device that focuses its users' attention back on themselves. Ever more intricate forms of self-listening and self-management have emerged to support an increasing reflexivity in the relationship between users and their mobile phones. This can be understood as "biometric listening."

The iPhone's capacity to support processes of self-management underlies a proliferation of productivity tools available via Apple's App Store. Apps such as *Momento*, *Daily Tracker*, *TraxItAll* and *Snaptic* provide tools for users to record their movements and activities using text, images and

sound recordings as they go about their day. *ReQall* presents itself as a sort of multimedia dictaphone, a way of recording ideas before they disappear from memory. Apps such as *Remember The Milk* and *Limits* provide ways to manage to-do lists and track progress against defined goals.

Self-monitoring via the iPhone also extends to matters of personal and mental health. *DietPicture* and *MealSnap* ask users to photograph their food using the iPhone's built-in camera, and in return they are told the estimated number of calories contained in their meal. *Log for Life* and *HealthEngage* attempt to track glucose intake for diabetics, while *Asthmapolis* tracks asthma inhaler usage and maps it in geographic space, potentially offering insight into physical triggers for attacks. *Mood 24/7* and *GottaFeeling* keep track of a user's mental states over time; similarly, *Track Your Happiness* correlates mood data with other events recorded by the iPhone in an effort to work out what makes its users happy.

Fitness obsessives can use the iPhone to access the kinds of performance analysis and highly detailed data previously reserved for sports researchers and elite athletes, with tools such as *iMapMyRUN*, *iMapMyRIDE*, *RunKeeper*, *DailyMile*, *RunMonster* and *PedalBrain* offering maps of workouts, logs of physical exertion and analysis of changes in speed, distance and cadence by drawing on geolocative data and the inbuilt accelerometer.

The iPhone can also listen even when a user is asleep. One popular set of apps uses the iPhone's built-in microphone and accelerometer to monitor the quality of its owner's sleep. By placing the phone on a bed beside a sleeping subject, apps such as *Sleep Cycle*, *Sleep Phase* and *WakeMate* can record and identify the sounds and body movements associated with different sleep cycles. In the morning, the user can view a report quantifying and categorizing the various phases of sleep they have just experienced. These apps can further be configured as alarm clocks that listen for changes in sleep, so that they only activate the alarm during light sleep cycles.

Applications such as these provide an increasingly intimate technological foundation for self-analysis and self-management, offering quantitative measures of performance and improvement based on the kind of continual close-range monitoring that only an always-on personal device such as the iPhone can provide. The iPhone provides its users with a range of potentially useful analytical services, but it does so by insisting that users reconstitute themselves as mobile data collection points, with the iPhone listening for changes and updating on-board and online databases with information about the personal, social and biophysical environments they move through. In order to gain maximum value from these services, users must interact with their phone in a way that generates well-structured data. Users strike a balance between the value that they can extract from the device and the lifestyle changes the device imposes as it gathers information about them. In effect, this functions as a pact: the more structured data a person allows the iPhone to gather, the more the device can offer by way of a meaningful analysis of that person. An individual learns to speak in

languages that can be heard by the iPhone; the iPhone reciprocates by listening and then responding, with richly detailed and personal stories of the user's daily data patterns and how they change over time.

Amateur athletes, who may previously have compared their performance against that of their peers and competitors, can now track their improvements against objective criteria using automated tools on the iPhone. Dieters can consult an impersonal device rather than seeking advice from people with nutritional experience. Those suffering from depression can supplement or replace the observations of their friends and family with an app that helps them keep track of changes in mood. By externalizing subjective data, users are offered the prospect of an objective understanding of various dimensions of their personal lives. Yet individuals can only realize these benefits when they subject themselves to scrutiny by the device and its on-board software. Individual activities must be measured, quantified and stored as coherent data sets. Activities must be reduced to a form that can be described in terms of discrete performance values and determinate states. When a user accesses the application's reporting functions, he or she implicitly acknowledges the validity of the results and acts accordingly, adapting to the new information by making lifestyle changes or adjusting personal goals. As such, the particular forms of rationality codified in the phone's software gradually leak out and produce effects in the lives of users.

Ultimately, while the biometric apps produce particular kinds of useful information to users, their operations are embedded within a more ambiguous legacy. Max Weber suggested that modern capitalism is characterized by the continual extension of scientific rationality into areas previously considered unknowable or uncertain.²⁴ Rational perspectives could now be applied to social and personal spheres previously understood as being governed by shifting subjective forces, which Weber viewed with some ambivalence. On the one hand, it offered the prospect of significant improvements in analytical capacity over new realms of understanding. On the other, it suggested that many mysterious human capacities could be irreparably damaged through their subjection to rational and bureaucratic rules, a process he designated as "disenchantment." Disenchantment in Weber's terms can be defined as:

The historical process by which the natural world and all areas of human experience become experienced and understood as less mysterious; defined, at least in principle, as knowable, predictable and manipulable by humans; conquered by and incorporated into the interpretive schema of science and rational government.²⁵

A similar observation appears in Foucault's work on the governance of the self, where he suggests that scientific advances function as instruments of power as much as extensions of knowledge.²⁶ In his later work, he developed a notion of "care of the self," according to which individuals make

use of particular technologies to constitute themselves as individual subjects.²⁷ The iPhone could be understood within a broader technological system of self-management, providing mechanisms for users to reflexively develop and assess their capacities but simultaneously placing limits on the available forms of self-understanding. Of course, individuals are still able to sustain a critical engagement with the mobile technologies they use, modifying both the applications themselves and their use of them. In the Young, Mobile, Networked study, participants offered nuanced accounts of what applications they use, how and why: regarding them as an open set of options that could be regularly augmented or deleted at will. As such, users were able to modify the set of rationalities exposed by the device to suit themselves. Nonetheless, the gathering of data to suit biometric tracking apps produces another set of problems: how secure is the data, and who has access to it?

LISTENING AS EAVESDROPPING: THE IPHONE AND LOCATION TRACKING

Imagine a map of the city where you live. Tracing across it is an array of circles, in colors shifting from deep orange and red to dark blue and purple. The circles overlap and vary in size, but they form clear clusters and lines, focusing on the areas where you spend the most time and the paths you tread most regularly: perhaps from school to home, or home to work or between your friends' houses. It has an eerie appearance; you can see how ingrained your patterns of travel are and how many areas of your town you never enter or explore. It knows everywhere you've been for the last year: an externalized memory trace of thousands of small journeys.

In 2011, two researchers working for technology company O'Reilly Media, Alasdair Allan and Pete Warden, wrote a piece of software called *iPhoneTracker*.²⁸ This software caused major international controversy, and a public relations disaster for Apple. In essence, *iPhoneTracker* is quite simple: it extracts location data from iOS 4 (the iPhone 4 operating system) and graphs the data on a map. The result is a map that features a range of circles, which appear to trace the whereabouts of the phone user. The release of *iPhoneTracker*, however, caused alarm to spread among iPhone users, particularly once it was revealed that the latitude and longitude data of the phone's location was being backed up via iTunes to the user's computer, where it was stored unencrypted. Thus, anyone with some knowledge and access to the user's computer could view the location and times of their comings and goings. It was the stuff of good scare headlines, and duly a privacy scandal erupted.

In fact, this kind of tracking data has always been available—but only to a select few. Mobile telecommunications providers have always had access to the location data of a mobile, as it moves between mobile base stations,

which can be appropriated (with a warrant) by law enforcement or obtained illegally by tapping into mobile network databases.²⁹ But here was a claim that Apple had installed a log file that was storing this sensitive data on every iPhone and backing it up with every synchronization, without permission of users, and in such a way that it could be readily accessed. Alex Levinson, a data forensics researcher, had previously noted the existence of the log file in iOS 3, but it was only with the advent of iOS 4 that the files began to be backed up with every synchronization with iTunes, such that the data was being recorded indefinitely.³⁰

Apple responded with the claim that location data was only tracking via base stations, which could be kilometers away from the user, and that any data reaching them was anonymized. Further, Apple revealed that a bug was responsible for the infinite data collection: it should only store a week's information, as a way of improving GPS-related functions on the phone.³¹ However, the company did note that it was collecting anonymous traffic data to build a crowd-sourced traffic database, aiming to give iPhone users improved traffic services. So although the scandal dissipated, the phone was still listening to users: just not as closely, nor with such lasting memory of its user's travels.

Location data is becoming increasingly valuable. Companies are seeking to own and control more location data, with the aim of on-selling niche services as well as advertising, and to gain a higher resolution picture of what their customers do and where they go.³² But there is another kind of bargain at work here: users can make a choice whether to offer their location information (although as *iPhoneTracker* shows, there is a considerable gray area around the operating concept of "choice"). Nonetheless, there are factors at work in how these choices are made. Often users privilege convenience (and new capacities, such as live map access) over privacy.³³ But as George Danezis, Stephen Lewis and Ross Anderson have demonstrated, there are also economic decisions being weighed—users can often nominate a price for which they are prepared to give away information about their location.³⁴ The considerable questions that remain about the use of locative data include what kind of consent is being given for that price, let alone what kinds of uses that data will serve over time.

One of the elements of the iPhone tracking controversy that disturbed users was the permanent and unending nature of the data collection: large volumes of data, collected over years, can reveal an incredibly detailed depiction of an individual's life, associations and preferences. What might be deemed acceptable at one point in a lifetime may not be at another; information may be acceptably harvested by a company, but not if given to a government, or vice versa. The serious problems facing the rapidly expanding field of locative data—and the iPhone's role within them—is the nature of the bargains being struck, and whether all parties have full knowledge of what role they are playing and where it ends.

Finally, beyond the concerns about data use and misuse, there is an issue of aesthetics. This is where *iPhoneTracker* offers a different kind of insight. Contained within the richly colored circles, illuminating the user's path between mobile base stations of their town, was something beautiful and nostalgic: the ability to reflect on the paths and experiences of one's life, remembered with far greater reliability than most people are able to summon. Alexis Madrigal, an editor at *The Atlantic*, installed *iPhoneTracker* and visualized his data:

Here, each little clump of cell phone pings reminds me of a story. There's the time I went to Great Falls, and another time to an Audubon bird-watching preserve, and Annapolis, and a trip down to Richmond. I can see where I travel in the city and what terrain remains unexplored.³⁵

This is location data nostalgia: a genre of personal reflection that is impossible without the kind of relentless machinic listening offered by our mobile devices. Location memories have been externalized, allowing the iPhone to record for us and later remind us where we've been. The circles give a rough approximation, with the rest being left to the user's imagination and recall. Acknowledging the clear and serious privacy implications of geolocation tracking, particularly without full consent, Madrigal nonetheless pauses to draw an emotional remembrance from the data. Like Jorge Luis Borges' character Funes the Memorius, who could remember everything he saw, the iPhone is an implacable data collector. But Funes, for all his prodigious recollection, could not reflect on what he saw: "to think is to forget differences, generalize, make abstractions. In the teeming world of Funes, there were only details."³⁶ The iPhone, too, is tracking details of movement, but without the narratives or driving forces that animate them.

CONCLUSION

The iPhone, both culturally and historically, represents a key site to understand the development of listening practices. The four "vectors of listening" discussed above are by no means an exhaustive list, as types of listening are evolving and multiplying on smartphone platforms. But the iPhone captures a moment in time when many of these forms of listening converged in one device. From listening to music and conversations to the many apps that alter, enhance or distort our listening, the iPhone can augment the human ear as well as insulate it. As an Apple product, it is indentured to iTunes and the particular forms of commercial space controlled by the parent company. It also redraws the boundaries of what constitutes listening in public spaces. From reactive audio applications that respond to the immediate environment to music identification apps that engage with background

music, the iPhone is a significant agent in the remaking of place and of the act of listening to the sounds around us.

As a platform for network listening that allows users to regularly tune in to the social media spaces where they maintain a presence, the iPhone is a site where users experience and develop disciplines of listening. Regularly checking to read ongoing updates from friends, associates, colleagues and strangers has the quality of a background channel, like half listening to a radio. Nonetheless, this kind of regular “tuning in” develops into a normative practice, where being available, present and attentive is expected from active participants in social media spaces. This is also part of the larger process of constructing particular circles of social connection: the people who are ignored, those who are listened to and those who will receive a response.

In addition to the ways users listen to and through the iPhone, the iPhone attentively listens to the user, in terms of both tracking their biometric data (through applications designed to monitor sleep, heart rate, diet and so on) and recording location data from mobile base stations whenever the user travels. One type of listening offers to assist the user—through a bargain whereby the giving up of data will return richer information over time—as the iPhone will record, analyze and remember the user’s patterns. The other—eavesdropping by location tracking—is more ominous, taking information and storing it on the user’s computer without clear permission. While Apple has promised to remedy the excesses of this form of listening, the concerns about location data on the iPhone iOS 4 nonetheless reveal the way these devices and the bargains we make with them can have unintended and long-lasting consequences. There are already vast stores of iPhone-produced latitudes, longitudes and time stamps, stored on computers around the world. Depending on who is listening to that data, it may be used to seriously infringe privacy, to produce more targeted services and advertising or to draw out a set of personal meanings. In the broader listening process that includes both humans and iPhones, all that endless detail without context can be transformed into data with profound meaning and enduring effect.

NOTES

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15. I draw this claim from the data generated by the Young, Mobile, Networked study, a three-year Australian research project conducted by Gerard Goggin and myself. We interviewed over 300 people around Australia and surveyed over 1000. Many talked about their varying experiences of listening to networks via mobiles. As one twenty-seven-year-old female explains why she got an iPhone, “I liked the idea of being able to indulge my compulsive urge to check everything . . . and Twitter fed my obsessive need to know things all the time.”
16. This kind of habituated connection to the mobile is strongly evoked by one respondent in the Young, Mobile, Networked study: “My phone’s usually not more than like three metres from me at all times . . . I even admit taking it to the bathroom with me. When I’m going to have a shower, I’ll have it on the bench. It’s so sad. It’s under my pillow when I sleep.”
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14 How a University Domesticated the iPhone

Ilpo Koskinen

INTRODUCTION

This chapter studies how the iPhone entered one formal organization, the University of Art and Design Helsinki (Taik). Like mobile phones throughout their history, the iPhone was a coveted object that people passionately wanted as soon as it entered the market. However, Taik had a mobile phone contract with a carrier that did not have the iPhone in its selection until summer 2010. This paper shows how Taik found settlements between passion and organizational policy through several routes from 2007 to 2010: at one School, through a conflict; at another, through research-based justifications; at a third, through the very reason for existence of the School.

iPHONE AS A MORAL OBJECT

One strand of literature on mobile phones has looked at mobiles as more than things for calling and texting. In what must be the first empirical study on mobile phones, the sociologist Timo Kopomaa noted that phones are moral objects.¹ Just like many other novelties, people and institutions observe and evaluate mobile phones, and people who buy them may have to explain the reasons for buying and using them.² Typically, buyers and users appeal to reason for buying their phones: phones are tools, not toys.³ A few years later, Leopoldina Fortunati, James E. Katz and Raimonda Riccini edited a book that looked at phones as fashionable objects.⁴ From around 2000, phones were treated as accessories, and companies like Nokia followed the fashion and luxury industries keenly to create phones that would attract a following among the fashionable set.

In 2007 and 2008, the iPhone was hotter than any other phone at that time. Some reasons were in the cult status of Apple and its American origin, but the iPhone's sleek interaction design and minimalist appearance also played a part. The iPhone, however, was not just hot. It was also a dangerous object, especially in formal organizations. People wanted it, but large formal organizations had phone policies that tied them to carriers that did not always have an iPhone in their selection. Also, the iPhone was at the more expensive end of the market, which often placed it outside the price range accepted by many organizations.