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Moving Beyond the Auditory Bubble: Apps, Gestures, and Musical Participation

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Abstract This article examines users' relationships to mobile devices, their surroundings, and music by concentrating on three interconnected aspects of some recent sound/music apps for the iPhone: 1) the way they suggest a form of musical participation that challenges the separation of listening and performance; 2) how they expand on musical performance gestures to involve larger-scale movements such as walking; and 3) how this occurs in public space. After briefly contextualizing the apps by looking at the player piano, which also blurs the line between playback and performance through gesture, I move on to consider the promotional discourse around the apps, particularly ideas of immersion and personalization. I argue the actual functioning of the apps potentially challenges these ideas as well as the notion of the auditory bubble that has been attributed to mobile music devices. I draw attention to the multidimensionality of gestures involved in the use of mobile devices and how gestures are interconnected with digital, physical, public, and private spaces.

Keywords mobile device; gesture; apps; mobile music; hybrid space; player piano

1. Introduction

This paper focuses on new ways in which mobile devices such as the iPhone are being used to play music, drawing on both the idea of playing an instrument and the idea of playing back recorded audio. The specific smartphone applications I will be investigating operate in part by blurring the distinction between these two activities, offering an entry point for considerations of relationships between mobile devices and users that can be seen as a shift in perspective from the work that has already been done on mobile music by scholars such as Shuhei Hosokawa (1984), Jean-Paul Thibaud (2004), David Beer (2007) and Michael Bull (2000, 2005, 2007). While there are important distinctions between these works, they share an interest in the mobile consumption of music and how this affects the user's experience of their environment and social interactions. My investigation connects with some of these concerns, but comes at them from a different angle, as I will not be looking at the kind of musical consumption that has typically been examined – listening to linear pieces of music on a mobile device, whether it be a walkman, discman, or iPod. Instead, drawing on my own experiences as a user and sound designer, I concentrate on a particular kind of smartphone application that exhibits the qualities of what Norbert Herber (2008) has referred to as “composition-instrument”.¹ Herber describes the notion of composition-instrument as blurring the traditionally distinct roles of its appellation, allowing music that is playing back to simultaneously be played like a musical instrument (p. 104).

The apps I focus on are created by a company called Reality Jockey and combine predetermined music with audio generated and controlled in real-time via variables from the smartphone's sensors (accelerometer, GPS coordinates, compass, microphone etc.) to create interactive compositions. For example, in Reality Jockey's first app, RjDj (now discontinued), a possible scenario would involve a listener walking down the street while sounds from the environment are picked up by the microphone, processed with effects like delay or reverb, and mixed in the headphones with pre-composed music. More recently, Reality Jockey has created apps based on major blockbusters such as *Inception* and the *Dark Knight Rises*, featuring cinematic music that changes depending on factors like the user's level of activity, GPS coordinates, and the ambient sound level of the environment detected by the microphone.² Several aspects of these kinds of mobile applications are of particular

¹ The next stage of this research will involve interviews with others on their experiences with applications like the ones considered here.

² An important precedent for these apps is the Sonic City project from the early 2000s, which involved a wearable system that created electronic music in real-time by sensing bodily and environmental parameters as the user moved through urban spaces (Gaye, Mazé, & Holmquist, 2003). Reality Jockey's apps bear similarities in that they utilize the user's mobility and context as input data for musical interaction, but they package the idea in the form of a mobile application rather than custom wearables, making the experience more widely accessible.

importance: 1) the way they suggest a form of musical participation that challenges the separation of listening and performance; 2) how they expand on traditional musical performance gestures, such as hands moving over the keys of a piano, to involve larger-scale movements such as walking; and 3) how this occurs in public space. By looking at these areas I want to draw out the significance of these apps for thinking through our relationships to our devices, to our surroundings, and to music. My argument is that the bleed between listening and performance put into play in public spaces through large-scale gestures poses questions for the way mobile music devices have often been viewed – for instance, the iPod as providing an “auditory bubble” for experience maintenance (Bull 2007) – and potentially undermines the discourse on immersion and personalization that frequently accompanies the apps in question. That this is so is important for considering how “hybrid spaces” (de Souza e Silva 2006), facilitated by mobile devices and comprised of physical and digital space, are embodied in daily life. Here gestures are not only means of bridging listening and performance, but also operate as probes into the increasingly complex relations between public and private space, as well as the convergence of physical and digital spaces.

2. Listening and Performing Gestures: The Player Piano as Precedent

In order to think through the relationship between listening to music and playing an instrument, as well as to provide some contextualization around musical participation, I want to briefly consider Reality Jockey's apps in tandem with the player piano. As a mechanized instrument providing a means of playing back compositions – arguably an early composition-instrument – the player piano provides an interesting point of reference, recalling the historical blurring of musical production and consumption and the significance of physical gestures for making sense of musical participation. Let's consider the text from an advertisement for a Pianola push-up style piano player – a device, just preceding the integrated player piano, that could be moved up to a regular piano to play it:

The amount of practice required to become a finished artistic pianist is discouraging...Practice gives digital dexterity alone. It makes capable and obedient machines of the fingers. The artistic and esthetic is a matter of temperament. Lacking this temperament, it is impossible to become a great musician although one may learn to play acceptably. With the soul full of music, a means of expression is still essential. The Pianola supplies this means at once. The player can give his whole attention to the development of the artistic, and thereby cultivate a musical taste. (reprinted in Roell, 1989, p. 111; originally printed in *The Cosmopolitan*, 1901)

While detractors of the player piano argued that mechanization was de-humanizing music, this advertisement contends that someone who

practices is really just mechanizing a part of their body, turning their fingers into little machines. The ad goes on: “The Pianola is a substitute for the human fingers. The brain remains unfettered and is still the controlling influence” (as cited in Roell, 1989, p. 111). Musicianship is thus located elsewhere than in the playing of the keys – it is a matter of the brain, of taste and temperament. As music critic Ernest Newman put it, “the ready-made technique of the player-piano sets the musician’s brain free to attend to the purely artistic side of the performance” (as cited in Ord-Hume, 1984, p. 3)³. The Pianola ad flatters would-be pianists who don’t have the time to practice, offering them a more accessible avenue to musical participation that makes them potentially as much a musician as their hand-playing counterparts. Craig Roell (1989) describes the player piano craze of the 1910s and 20s as sort of democratization of music that was simultaneously a move away from what he calls the Victorian producer ethic and toward a consumer society. Coming just prior to the widespread adoption of the phonograph, the player piano suggested something of an intermediary position between playing an instrument (Roell’s producer ethic) and the notion of music as increasingly commoditized and passively experienced (consumer society). In order to make the piano operable for a broad range of users, a transformation of gesture was needed. Despite the suggestion by the Pianola ad that the brain controls the instrument directly, the instrument was actually played via the pumping of foot pedals. For detractors, this was seen as cruder gesture than the smaller more refined movements of the hands and fingers (Roell, 1989, p.58). Interpretations of the gesture also suggested a convergence between public and domestic space, as Arthur Whiting wryly observes in a uncomplimentary review of the player-piano from 1919: “indeed, the intelligent running of an automobile in and out of town is a natural preparation for the auto of the drawing-room, which further insures against all lapses and contingencies by being fool-proof.” (as cited in Roell, 1989, p.58). This comment demonstrates how gestures are not only associated with activities, but with the spaces in which those activities are thought to belong, leading to the possibility of perceived disjunctures when gestures move between spaces.

The apps created by Reality Jockey actually have a very similar operational logic to that of the player piano. In both cases the music is dependent on the user’s continued involvement in its (re)production via non-specialized physical gestures; walking acts as a primary means of playing many of Reality Jockey’s apps. But if the player piano seemed to

³ The freeing of the brain from the constraints of physical gesture was embraced by some composers as well. Carlos Chavez, writing on mechanized instruments in 1937, notes: “There can be developed new types of musical instruments, and of sound-agents in general, out of sight of human possibility of playing them directly with ten fingers, two arms, two lungs, two lips, freed completely of those factors, and without any limitation except the capacities of our ears, nerves, and intellects” (Chavez, 1975, p. 49). Conlon Nancarrow’s compositions for player piano from the 1940s to the 1970s demonstrate an approach that moved beyond the physical capacities of a human player to explore the creative potential offered by mechanization.

act as mid-point in a shift from active musical participation to a more passive form of consumption, these apps seem to attempt the reverse – to move away from established habits of music consumption in order to involve the listener more actively in the production of the music. Both the apps and the player piano end up somewhere between traditional notions of performing and listening to music. The larger movements involved, which are now actual movements of the body through space, operate as key factors in this form of musical participation and demonstrate the complex interdependence of gestures and spaces.

3. Walking as Musical Gesture

In order to further think through the significance of the body's movement through space as gesture for musical participation, I want to first draw attention to how user experience is framed in promotional materials for Reality Jockey's mobile applications. Two ideas that are particularly strong in the rhetoric around RjDj are immersion and personalization. The website for Reality Jockey's "The Dark Knight Rises Z+" app features a telling quote from composer Hans Zimmer (2012):

I'm hoping to give fans of this beloved trilogy the opportunity to fully immerse themselves in the soundscapes and atmospheres of the world of the Dark Knight. This new app allows users to be part of the film in a way that goes beyond the movie screen – it's the difference between looking at a photo of a river, and being able to drop your hand over the side of the boat and feel the current of the water tug as the river takes you on a journey.

This notion of immersion comes in large part from the ubiquity of the smartphone, a quality Scott Ruston (2012) has identified as one of the five critical affordances of mobile media. The ubiquity of mobile devices allows for the omnipresence of the mediascape, in this case leading to a strong convergence between the "real" world and the world of the film. The heightened sense of immersion is related to the fact that the user's movements through space are directly linked to what the user hears, involving the entire body in the experience. A second critical affordance identified by Ruston, and one that he argues is closely linked to ubiquity, is personality.⁴ Personality, as Ruston describes it, connects to typical ideas of personalization, such as the customization of the content and physical traits of a handset, but also extends these ideas by focusing on the closeness of the body and device (p. 25). Promoting their first app, Reality Jockey remarked, "as soon as you press the play button it generates a unique experience for you and only you" ("#6 in Kevin Kelly's," 2011 March 30). This unique experience is based on the user's particular location and movements through space, as the app uses the

⁴ The other three critical affordances of mobile media identified by Ruston are: portability, connectivity, and locativity. As Ruston notes, all five affordances are interconnected.

iPhone's sensors (such as accelerometer, compass, microphone) to collect input data that affects what the user hears. Because the phone is kept close to the body, the movements and surroundings of the user provide parameters for sound generation in a way that extends beyond ideas of customization to include the intimacy of the body and device, or what Ruston has referred to as the "cyborgian quality of an extension of the self and body" (2012, p. 25).

With this focus on immersion and extended personalization in place, it would be easy to apply the kind of arguments that Michael Bull has made around the iPod to these new applications. Bull (2005, 2007) has contended that iPod use often amounts to a kind of experience maintenance for listeners seeking a greater sense of control in the face of the contingency of everyday life. In terms of the apps created by Reality Jockey we could say, for instance, that although sounds and variables from the environment outside the headphones do combine with a pre-composed soundtrack, thereby lending a greater sense of chance to the experience, these sounds and variables are all folded into the logic of the app as they are designated as input data with predetermined effects. Thus, the app essentially makes the world its interface with the user at the centre of a unique and personalized experience. However, while this is one view to take on these apps, I want to focus my attention elsewhere and consider how the functioning of these apps might actually undermine the ideals of immersion and personalization. To do this, I am going to devote the rest of this paper to looking more closely at the gestures and spaces that are central to these apps.

Thinking about apps like those created by Reality Jockey in relation to others that turn the phone into a musical instrument in more conventional ways – such as the Ocarina app, which re-imagines the phone as a wind instrument – the notable thing about apps like the "Dark Knight Rises Z+" is that in many cases they necessitate moving through public spaces to get the full experience. A user review of the "Dark Knight Rises Z+" app raves about the experience walking through crowded streets and a school ("The Dark Knight Rises Z+", 2012). Moreover, that movement through space is often the extent of the required gesture. In this way, it is almost as though the app has piggybacked onto what users do anyway to turn it into music. In other words, everyday life is musicalized – it is not just that music is added, as in the case of the iPod, but rather that everyday activities trigger musical events. This brings up a number of questions: how much is your mobility about moving yourself from one place to another and how much is it about interacting with the music? If you're walking to get somewhere, to what extent might the musical experience change your path or movements? How much bleed is there between the different motivations for movement? These questions have to do with the recognition of the double functioning of mobility in the context of these apps as both a means of getting from place to place and as musical gesture. Mobility here occurs in a hybrid space that incorporates the spaces of daily life and the space of an extended digital musical system made possible by the mobile device. This hybrid space is significant not only for the person using the app, but also for passers-by who share the

same physical space and may catch glimpses into the digital/musical space of the user via gestural give-aways. Of course, the appropriateness of walking and other larger-scale forms of mobility like taking the bus or subway lies precisely in their quotidian status; they can occur unnoticed by onlookers, known only to the user as musical gestures.

In this sense, such movements connect with Hosokawa's (1984) discussion of the walkman as secret theatre. Hosokawa argues that everyone, whether they use a walkman or not, participates in this secret theatre, effectively reworking the fabric of urban space. For Hosokawa the crux of the secret theatre is that the walkman listener discloses that they have a secret (through the act of listening to the walkman) but not the contents of the secret (the music being listened to). Today, the secret has expanded, as the possibilities include not just musical content but whole ways of relating to one's device and environment. Clues come in the form of different gestures – typing, swiping, talking, shaking the phone etc. The gestures involved in the apps I've been discussing keep the secret close by exhibiting little that could not be attributed to regular daily movement. But much in the same way that headphone leakage can end up revealing the contents of the walkman secret, the gestures and relations called for by these apps may not remain entirely hidden.

4. Conclusion: Musical Gestures in Public Spaces

I want to conclude by considering some gestures beyond walking that are occasionally involved in these emerging apps and that push at the boundaries of normative behaviour with mobile devices. Recently, I have been doing sound design for a couple of applications – “Lost Rivers” and “Burgundy Jazz” – that feature geo-located interactive music and soundscapes, making use of the same programming environment (PureData) as Reality Jockey's apps. As an example, one of these soundscapes uses the iPhone's compass and accelerometer so that as the listener turns 360 degrees she will hear a jazz composition made up of different instruments depending on which direction she is facing. The listener can shake the phone to add trombone hits to the composition. However, as this soundscape is located along a street in Montreal, it raises the question of whether anyone wants to be seen spinning in a circle and shaking their phone in public. With the advent of motion gaming systems like the Nintendo Wii these kinds of bodily gestures may be perceived as normal within the home, but how do they translate to other spaces? What are the limits of the ways we accept interacting with mobile devices in public space? How do they change over time? Will more expressive gestures like this come to be understood as mundane uses of devices in the way that we understand someone who appears to be talking to themselves as using a headset mic or Bluetooth earpiece to make a phone call? Such questions point to the way gestures operate within different contexts at the same time and are consequently always in excess of the established meaning in any one context. Just as the auditory bubble attributed to the iPod (Bull, 2007) is actually porous and permeable rather than hermetically sealed (Beer, 2007; Kaye, 2012; Thulin, 2011), so too do gestures involved in the use of mobile devices elude containment. Like sounds, which simultaneously may sneak in

from outside the headphones and out from inside the headphones, gestures travel both ways. For instance, routine movement through the city can become a gesture for playing music in the world of an app, while the more particular gestures elicited by the “Burgundy Jazz” app have remainders outside the app that appear to onlookers as strange clues to the user’s secret involvement with the device.

By adding a new layer of mechanization to the piano, the player piano demonstrated that human gesture could have an increasingly indirect relationship to the sound it produces. On the one hand, this contributed to the idea of minimizing gesture both in the production and reproduction of music: I can click a mouse to construct a drum break (production), I can press a button hear a song (reproduction). There is the idea of approaching an unmediated exchange between music and the brain. On the other hand, if the gesture is incidental, different kinds of bodily motion can be explored as ways of making music. Here we have a sort of liberation rather than erasure of the gesture. At the same time, even if the gesture is freed from direct physical relationships, it is still governed by codes, both social and computational, making its movements across spaces telling. What is significant about apps such as those created by Reality Jockey, despite their own rhetoric, is not so much a new degree of immersion or personalization, but in some ways just the opposite – the way they may be used to draw attention to how each body moves in relation to a system that is not personalized and how these movements cut across contexts. Where immersion and personalization suggest a sort of individual, hermetic experience, I find it more fruitful to consider how these apps might probe the relations between users, non-users, mobile devices and the spaces and contexts in which use occurs.

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