Speculative Designs: Towards a Social Music

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ABSTRACT

This paper introduces a collaborative research project in which the authors explored the possibilities of music making using social media. We aimed for this music to reflect the various genres born of social media, for example the selfie, the tweet, the emoticon. Our research was therefore propelled by questions like "what might a musical selfie sound like?" and "how might an audio emoticon extend the language of online communication"? This project explored the potential of speculative design, or "design fictions", in the creation of new musical interfaces. Overall, the project revealed the vast potential for new kinds of music making in today's socially networked world.

1. INTRODUCTION

The rise of the internet and the democratisation of affordable, high quality, portable computing devices has produced an explosion of digital text and images. On Twitter, 4,861,108 words are written each minute, while more photos are taken in a single day than in the history of the world prior to the advent of digital photography. Not only are we communicating more frequently, the mediums through which we communicate have expanded and diversified. For Susan Murray, photographs no longer function primarily as documents of special or rarefied moments of domestic life kept in photo albums; platforms like Facebook and Snapchat afford an immediacy and transitoriness that is more amenable to communicating fleeting, banal and mundane experiences [1].

Emoticon conversation is another new mode of visual communication that, in addition to supplementing the affective lack in textual discourse, have provided the basis for whole genres of online discourse; entire books have even been written or described in "emoji". The effects of new intra- and extra-textual modes of communication on culture can be witnessed in memes, hashtags, snapchat stories, gifs and microblogging, which together constitute the fabric of digital life.

Yet although music recordings are regularly promoted and shared over social media, other modes of engagement with sound and music remain relatively rare in this new media ecology. This is in spite of the smartphone-powered ubiquity of recording and playback devices. Collaborative or "social" modes of music composition, for example, are largely absent from social media cultures, even though social media would seem to be an ideal channel through which to develop new forms of participatory, interactive, and co-creative approaches to music-making.

2. SOCIAL MUSICKING

Christopher Small [2], Charles Keil [3], and Jaques Attali [4] have all separately argued for an understanding of music that goes beyond the text-centric, sole authored paradigm that prevails in Western art music. For these writers, musical meaning was produced by participation in musical events and not in a one-way linear communication flow from composer to listener. They each argued against the reified understanding of music that prevails in the concert hall, and Small and Attali separately speculated on a situation in which the distinction between composer and listener was broken down. Some contemporary trends in music and sound studies can be seen to take these ideas forward. The rise of improvisation studies, for instance, which understands all composition as collectively produced, and the strand of sound studies called "mobile music studies", which studies the uses of music in everyday life and complicates the notion of listening as a passive activity, are key examples. In her recent work Georgina Born has developed a cogent theory of music and mediation, in which social, technological and temporal dimensions all bear on the musical object. Her analysis recognises social and distributed modes of creativity [5], and she has further theorised a "social aesthetics" in relation to contemporary music [6].

Yet, despite such developments, collaborative and audience- or listener-interactive methods in musical composition have yet to be embraced in meaningful or sustained ways by the music industry and the musical academy. The word "composition" continues to spark associations of solitude for writers [7], [8]. Electroacoustic and Computer Music heightens this association, being essentially a studio art. Creative practitioners have proposed networked models of performance and composition, but these tend to involve small groups of highly expert coder-musicians who collaboratively determine musical outcomes. Historically influential networked music ensembles like The League of Automatic Music Composers (and later The Hub), as well as contemporary "live coding" ensembles tend to evolve in the context of closed forums, with little creative input from listeners or audiences. However, social music-making apps have earnestly sought to democratise the music-making process.

In 2004 Tanaka proposed mobile music making that "extends upon music listening from a passive act to a proactive, participative activity" [9]. More recently, Hamilton, Smith and Wang [10] have explored social sharing,

user-generated content, and "community-driven ecosystems" in online musical networks and mobile music apps. In 2011 Smith and Wang co-founded Smule, a company that produces social music-making apps. According to a 2013 Bloomberg Businessweek report, roughly 125 million people use Smule apps including Sing!Karaoke, a collaborative karaoke app; Guitar!, which allows guitarists to collaborate with virtual vocalists; AutoRap!, which turns speech into raps; and Songify, which turns speech into songs [11]. The Smule team describes their ethos as one of "democratization not only of music but of music-making", citing the invention of the mobile internet as a watershed moment for "the new democratization of music, including the notation, performance and interactive consumption of the medium" We aligned our project with their vision of a "ubiquitous music" that dovetails with everyday, technologically mediated activities.

Whereas online composition platforms like Kompoz and Ohm Studio do facilitate collaborative forms of music making, the models of collaboration they espouse are closely tied to traditional studio recording models, wherein multiple musicians successively contribute additional tracks or elements of production to a song [12], [13]. Kompoz, which is conceived as a platform for "crowd-sourced music production", for example, invites its users to "crowdsource songs with a bass player in Stockholm, a drummer in Nashville, and a guitar player in Kalamazoo". Kompoz encourages its members to use widely circulating audio software like GarageBand, ProTools, Logic Pro, Studio One, and REAPER for recording and uploading musical ideas. Thus, it supports conventional modes of composition as facilitated by standard DAWs and recording technologies, and it does not necessarily enable new modes of music-making that fully exploit the possibilities of online interaction. Ohm Studio goes a step further by enabling multiple collaborators to simultaneously edit a track in real time, and describes itself as a "real-time collaborative digital audio workstation". Still, its principal innovation is Flip, a file-sharing algorithm.

We further aligned our project with Alfred Schutz's 1951 proposition in Social Research that "a study of social relationships connected with the musical process may lead to some insights valid for many other forms of social intercourse" [14]. Our cross-disciplinary study, which spanned creative practice in music, the development of new technologies, and humanities-based research in musicology and anthropology, aimed to explore how everyday social music-making or "ubiquitous composing" might yield new insights into musical communication, digital social life, and their mutual mediation.

3. SPECULATIONS

3.1 Musical Tweets

We start by envisioning social media websites facilitating new forms of co-creative and collaborative composition that diverge from existing models of musical collaboration, and that support new approaches to music-making that are more fully integrated into social media platforms. A music born of Facebook, Twitter or Instagram might specifically reflect the idioms of these various platforms,

enabling the creation and co-creation of sound and music that complements and extends already existing visual and textual social media genres.

We might imagine, for example, "musical tweets" populating the Twittersphere: short compositions that capture and communicate, in sound, aspects of a person's thoughts, emotions or experiences. This example already throws into question well-worn assumptions about what music is, how it is made, how it circulates, who creates it, and why. A musical tweet might be a casual, off-hand composition—not a musical "work" so much as a musical remark or observation. Its value might not depend upon its formal and affective qualities or the technical prowess of its "performers" and "composers", categories that would likewise be called into question. A successful musical tweet might instead be valued for its ability to communicate an idea or an emotional state clearly and succinctly. The author of a musical tweet might not intend it to be "timeless", as we have come to expect of the musical "work" [15], but might conceive of it as particularly "of the moment": a musical idea composed in response or in relation to a particular time, place or event.

3.2 Audio Emoticons

In a similar way, an "audio emoticon" might serve as an aural accent to an online conversation. Here we might imagine a social media powered version of Paul McCartney's audio emojis, which McCartney created for the telecommunications company Skype for Valentine's Day in 2016. As reported by BBC News, "The compositions - which are coupled with moving emoji designs - last just five seconds and can be sent to friends over the messaging platform for free" [16]. McCartney's compositions accompanied ten Skype "Mojis", animated characters that represented emotions like "flirting", "blushing", "love" and "lust". Skype wrote of its partnership with McCartney that, "[McCartney is] known for expressing his passion through music. We are thrilled to lend some of his magic to a set of Mojis conveying the world's most powerful emotion, love, through music and art. If you need a creative way to share your feelings, let Paul be your cupid" [17]. Thus, on Valentine's Day, Skype users could send audio enabled Mojis pre-composed by McCartney. A future technology might allow users to compose their own audio emoticons.

3.3 Musical Selfies

Keeping in mind the idea of music borne of social media, the research team set out to design a mobile app, whereby users would be able to create musical compositions in the form of a "musical selfie": compositions that, in various ways, represent the user in sound. Our aim was for the app to emphasise collaborative and social aspects of music making. We further sought to develop and study a social music app that uses social media websites not only as a platform for connectivity and sharing, but also as a musical interface.

As a secondary consideration, designing a social music app would allow us to consider the ways in which socially-based music might transform current discourses

in musicology, composition, social media studies and mobile media studies. Here, we have been particularly interested in problematizing the categories of "listener", "composer", and "performer". Users of the musical selfie app would conceivably embody all of these categories simultaneously. They would perform and compose their musical identities by undertaking different kinds of (online) social activity. The categories of "composer" and "performer" would further be complicated through the collaborative aspects of the composition. There would be no solitary composers in the traditional sense, but rather individuals and social groups who would create music via their interactions.

4. METHODOLOGY

4.1 Speculative Design

In the previous section we described a series of speculative ideas - musical tweets, audio emoticons, and musical selfies - that do not yet exist but that can nevertheless serve as prompts for discussion and further thought. Although speculation has a bad name in humanistic thought, it was an essential strategy in our research project, allowing us to keep our outcomes as fluid, unfixed and open to collaborative exchange as possible during the design process. Such an approach required that we adopt methodologies and materials that are unusual in a computer music context. Whereas in classic software design one might prototype in pseudocode or create a circuit diagram, we used everyday objects (bits of paper, scissors, tape, etc.) in order to quickly sketch out designs that we would only much later implement in code.

In advancing this approach we drew inspiration from studies on speculative design in media studies and design studies, including Anthony Dunne's *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design [18]*, Anthony Dunne and Fiona Raby's *Speculative everything: Design, Fiction and Social dreaming* [19] and James Auger's "Speculative Design" [20]. Dunne examines how design can "develop the aesthetic potential of electronic products outside a commercial context" [18], and urges designers to further consider the "social, cultural, and ethical implications" of various technologies and the design process itself. Drawing on futorology, political theory, literary fiction and the philosophy of technology, Dunne and Raby propose that design might be reconceptualised as "a means of speculating how things could be—to imagine possible futures" [19]. Designers, then, might *pose* problems (and not only solve problems) in seeking to bring about alternative futures and worldviews. Auger, who undertakes case studies of design fictions created by students and tutors in a course on Design Interactions at the Royal College of Art in London, suggests that "a vital factor in the success of a Speculative Design is the careful management of the speculation, specifically what informs the use of technology, aesthetics, behavior, interaction and function of the designed artifact" [20].

4.2 Workshops

From the outset the project was envisaged as an interdisciplinary collaboration that drew upon musicology, composition, computer science and anthropology. In keeping with the focus on speculative design, we experimented with the idea of the workshop as a site for knowledge production. Rather than taking a tutorial or user-study approach, whereby a prototyped device is road-tested on an audience, our workshop members were active participants in the process of conceptualisation and design. This idea was informed by experiments in anthropology - so called "ethnographic conceptualism" - whereby the workshop or lab is constructed as both a space for ethnographic observation and reflection on the process of ethnography itself.

5. CASE STUDIES

During the year in which our collaboration unfolded we held six workshops for diverse audiences in Bristol, Belfast and Hong Kong. Below we describe four of these workshops, each of which informed the development of our app "Helmholtz," which is detailed in Section 6.

5.1 Workshop on Musical Selfies

We held our first workshop at Pervasive Media Studio in Bristol, a public-facing workspace for creative technologists, artists and academics. The aim of the workshop, on "Musical Selfies," was to discover how mobile apps can facilitate collaborative approaches to music-making; to better understand how the self is represented through social media; and to consider how new music and audio apps might enable new kinds of "selfies" to emerge.

Several themes emerged in relation to the musical selfie. In particular, participants were concerned with the idea of "sonic identity": how personality, age, gender, ethnicity, nationality, and other aspects of selfhood might be expressed in sound. We debated whether social media could enable more complex models of self to emerge than visual selfies, and, whether selfies were a "social tool" or a form of "social performance".

While the first half of the workshop focused on conceptual issues, the second half approached the topic of musical selfies from a practical perspective. We played a series of short audio clips we had composed for the workshop. After each clip, we invited participants to describe the person whose musical selfie the clip might belong to. The exercise put into sharp relief the strong associations that people have with different sounds and their connection to aspects of social identity. Workshop participants reported strong associations with the imagined person's gender, age, tastes, ethnicity, etc., making particular associations with particular sounds and musical genres. This workshop was especially important in establishing an understanding of the richness of social connotations of particular sounds and music, and how this might inform our approach to social composition.

Figure 1. The ISEA participants gather for a selfie.

5.2 Workshop on Musical Tweets

Following the workshop on musical selfies we held various workshops with young people in Belfast. The first was with a group of undergraduate students enrolled in a music technology programme at the Sonic Arts Research Centre (SARC). This workshop focused on "musical tweets". We invited the participants to create three short compositions on three consecutive days that they could imagine sharing through social media networks. Our invitation read:

> These compositions may take any form, and may be recorded or notated. There is no stipulation on genre, instrumentation, method of composition or any other musical aspect of the composition. You may create the compositions by yourself or with a friend / a group of friends. The only stipulation is that the compositions should not last more than 15 seconds each.

> During the workshop we will discuss different aspects of creating these miniature compositions or "musical tweets". The workshop organisers will invite discussion on a range of topics, from how the compositions were created to the challenges of creating miniature compositions to how and why these compositions might be shared through social media.

The participants, all male students aged 18-22, arrived at the workshop with a strikingly diverse array of miniature compositions. These compositions ranged from notated to electroacoustic and electronic music and represented a wide range of musical genres: ambient, jazz, techno, hip-hop, soundscape, drone, finger-picking guitar, electronic piano, IDM and experimental electroacoustic music. Each workshop participant played his compositions for the other participants, and we discussed the various challenges in creating "micro-compositions" that could be shared via social media. Of particular interest in these discussions was what it meant to compose in everyday settings or in a way that reflects everyday experiences. This was an important aspect of these "musical tweets", since music making on social media would by necessity have to be easily integrated into everyday life activities.

5.3 Workshop on Speculative Design

Our final workshop was at the annual meeting of the International Symposium for Electronic Arts in Hong Kong (ISEA) in 2016 (**Figure 1**). With experienced researchers as our participants we were able to offer a more open brief that left more space for experimental design. Our theme for the day was, simply, "what is a musical selfie?" After a morning of discussion we agreed to draft a "musical selfie manifesto" to concretise our ideas on the musical selfie concept. The manifesto (**Table 1**) was a set of edicts designed to guide the afternoon's prototyping. For instance, the group decided that musical selfies were to be similar to visual selfies in that they must derive from the body, include the environment, and function as a kind of memory aid, but different to them in the sense that they could not be field recordings (field recording were seen as an aural equivalent to snapshots or selfies). Further, a ban on mixtapes was imposed to direct the design away from statements of musical taste towards more creative aural representation of selfhood. Finally, the directive that musical selfies must be "deliberate" and made with the intent to share emphasised the social nature of selfies, while leaving unspecified the question of how the selfie was to be shared. In practice, these edicts functioned as a problem space within which to work during the prototyping session.

Musical Selfies must:	Musical Selfies must not:
...be deliberate	...be equivalent to the visual selfie
...be recorded (casual memory)	...be a field recording
...be made with intent to share (initiate response)	...be a mixtape or other representation of musical taste
...derive from the body	
...include environment	
...be ad hoc	
...be miniature	
...represent the self	

Table 1. Manifesto from the ISEA workshop.

Using basic materials such as card, plastic, paper, foam board, mobile phones, speakers, and assorted craft supplies, participants took the afternoon to collaboratively prototype a "musical selfie device" which would then be presented to the group at the end of the day (**Figure 2**). Two participants showed "Ear-Spy", a game-based device for generating text-sound performances derived in response to the environment, whereby one person chooses a concept from the immediate environment and the other responds to that concept in sound. Other devices took aspects of visual selfie technology and subverted them. For instance, "The Musical Selfie Stick" (**Figure 4**) explored the idea of taking and playing back an audio recording at different distances from the operator using a selfie stick. "Sound Periscope" explored similar principles of acoustic transformation using lo-fi technology. It was a device that allowed an operator to channel their voice along a long thin tube, not unlike a periscope or didgeridoo (**Figure 5**). Finally, a further participant displayed a device that used the string-between-two-tin-cans

principle to pass your own voice back to yourself and allow for "enhanced self-reflection" (**Figure 3**),

Figure 2. Four prototypes (left to right):- Resonant cups. Slide Ocarina. Sound Periscope. Physical Filters.

Figure 3. Playing your own voice back to yourself with a tin can style string arrangement makes it clear to on-lookers that you are engaged in self-reflective audio re-ording.

The projects took the idea of the musical selfie far beyond notions of translation, where one medium (photography) is translated to another (sound) through a novel device. Instead, they each grappled with the idea of self and subjectivity: how might the conception of self that finds expression in the form and practice of the selfie be re-imagined through sound and listening?
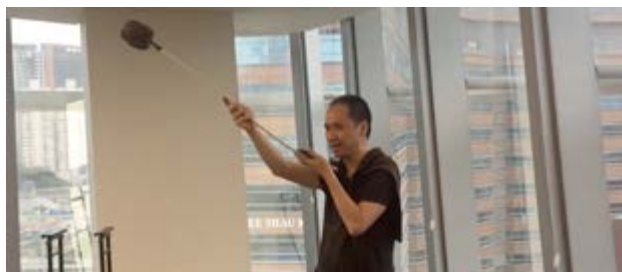

Figure 4. Moving the recording away from the user with a variant of the sonic selfie stick.

Figure 5. Sound periscope concept being demonstrated as an audio equivalent to the ubiquitous selfie stick.

6. THE "HELMHOLTZ" APP

One of the most interesting ideas that emerged during our workshops was the notion that the musical selfie might offer a deeper notion of self-hood than the too-easily-dismissed one that is normally associated with smartphones and social media. In other words, by "realizing" the self in sound, we might move beyond the equation of the self with appearance and narcissism towards a more processual and open notion of selfhood.

6.1 Reconceptualizing the Selfie through Feedback
The main outcome of the project, the "Helmholtz" app, aimed to explore this notion and was developed from an earlier series of prototypes named "EchoSnap" [21]. Building on ideas discussed in the ISEA workshop, we re-imagined the selfie as a kind of feedback loop: a portrait of a user in an environment against which he or she continually adjusts their face, pose, posture and framing until a satisfying image is produced. This formulation has many intriguing parallels with directions in 20th Century experimental music and sound art [22], [23]; it allowed us to move towards a more "ecosystemic" [24] notion of the self; a self that is to some degree an emergent product of the interaction between body, environment and technology. We realized this idea using audio feedback. The "Helmholtz" app creates a feedback loop between the phone's microphone and loudspeaker which, when the phone is brought in proximity with an object, creates a ringing resonant feedback tone (**Figure 6**).

Figure 6. Helmholtz app. Each button routes the input (mic) to the output (speaker) in a different manner allowing feedback effects to be explored and mixed together (unaffected, pitch tracking and delay).

This technique of activating the resonance of objects in one's surroundings is one method through which the user's environment can be made available for playful experimentation and exploration with sound. The qualities of the resultant tone (pitch, duration, volume) can be detected by the app, allowing a higher level of feedback as the detected tone is used to control the feedback loop itself. For instance the pitch of the tone detected may be used to modulate the amplitude of the feedback path, resulting in fast vibrato in smaller objects, and a slowly undulating vibrato in objects with a larger cavity (see [21] for a fuller description of Helmholtz).

7. CONCLUSIONS

Our project took the explosion of connectivity via social media platforms as an opportunity to ask fundamental questions about the nature of musical composition and its relation to technology. Via workshops, collaboration and design we explored the possibilities for new forms of "social" composition. In this work, we were less interested in how the internet might serve to augur new forms of collaboration, but rather in how the everyday sociality of the internet and world wide web might be harnessed for musical purposes. We looked at various idiomatic modes of online communication – tweets, selfies, and emoticons – for what they might offer to musical practice. This, in turn, caused us to reflect back: how might sound help us rethink the profoundly visual and textual modes of communication that predominate on the web? What would a musical selfie or tweet be?

In order to engage these questions, we took an interdisciplinary approach informed by speculative design and conceptual ethnography – this allowed us to take greater risks in the design stage of our research, producing "unfixed" prototypes that could then become a spur for discussion and further development.

We see great potential for speculative design to influence the ICMC community, especially in the realm of musical instrument and systems design. Our own app, the "Helmholtz" app, was itself a product of this novel approach to collaborative design, coming out of the speculative idea of the "musical selfie" that we explored in workshops. "Helmholtz" used cybernetic notions of feedback within an environment to rethink the imagistic concept of the self that is implied by the "selfie". Future work would explore opportunities for the sharing and development of such audio selfies, whether via existing or bespoke online platforms.

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