Methodologies with fashion acoustics *Live on Stage!*

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ABSTRACT

This paper introduces the idea of personalised acoustic fashion objects for performance art and the value of on-going performance-based research to progressively develop unique wearable devices for individual performers, that increase the scope of artistic expression and audio-visual spectacle. We investigate methodologies associated with acoustic fashion objects (novel body-centric musical instruments) and how they can be implemented in-vivo-practice based research workshops, to build a creative visual acoustic language for live-art performance and to develop the aesthetics and functionalities of the devices themselves.

Keywords

practice based research, performance-based research, fashion acoustics, Chicks on Speed, wearable computers, methodologies with NIME, BipedShoes, natural user interfaces, foot tools, Haute Couture NIME

1. INTRODUCTION

We discuss employing performance based research and practice based research methodologies as the main artistic concept for developing new patterns of creatively playing with novel interfaces for musical expression (within a live-art performance setting) and how this research impacts the development of unique prototype instruments for specific individual performers. A practice-based research case study (One lab-type workshop followed by a live-art performance at Museum of Contemporary Art, Australia, 28th February, 2014 is presented) herein titled *performance research study*. The practice based research study workshop served the purpose to develop the instruments aesthetic design functionalities and analyse performers personal relationships with fashion acoustic objects (personalised natural user interfaces for musical expression). The live-art performance served to evaluate the objects and pose new questions for future refinements of the prototypes.

2. AIMS & MOTIVATION

An underlying motivation of this research was to find new ways to integrate novel body-centric musical instruments into live-art performance scenarios on stage to create a new form of audio-visual spectacle, through the movements and sounds associated with an individual playing the instrument. Primary aims include developing methodologies to work across live performance, in-vivo creative workshops and instrument development, we define as action research. We anticipate this culmination of personal and collective experiential knowledge with fashion acoustics will lead to a new body of scientific research into practice-based strategies using NIME in live-art performance, we hope will benefit the NIME community in future.

We argue that the impact of movement is enhanced with the creation of an instrument designed for an individual (like Haute Couture fashion, where a garment is designed around an individual with specific practical and aesthetic requirements) and their specific bodily movements, which creates individual acoustic resonance in a particular scene of a performance, maximizing the “uniqueness” or “newness-effect” of the acoustic fashion objects as perceived by the audience. We believe that the most successful acoustic fashion objects will take into account live practice-based experimentation to create new forms of “composition, performance and physical form” as part of the design process [1].

Acoustic fashion objects enable improvisational interaction individually with ones own body parts and the acoustic fashion object, with other performers and potentially with audience members. Through practice-based research undertaken using live improvisation with sounds and data captured by microphones, sonic interfacing garments or interactive body devices, performer’s movements are transformed and amplified by the aesthetic possibilities of live digital processing. The dual role that the prototypes play in performance research studies break the pattern of first designing an instrument and then rehearsing with it. We describe the importance of performance research as a design strategy, by designing an instrument based on an individual performers on-going experience with an instrument, which changes over time and how individual traits can be embodied in an acoustic fashion object, acoustically and aesthetically. Data collected through performance research studies can help to define new creative ways to design an instrument, define it’s capabilities and play the instrument, but also to refine the instrument’s sounds, aesthetic qualities and the way acoustic fashion objects are used and can influence a performers presence on stage and the total sum of a live-art work.

3. BACKGROUND LITERATURE

Fashion in the context of live-art performance points to “The Italian Futurists…credited with both the earliest programs and manifests tied to polemical externalisations about clothing and the earliest deconsecrations of traditional dress, connecting it to the dynamism and the consequent social changes in machine society” [2] together with Sonia Delaunay’s *Simultaneous Dress* (1913), both artist collective and solo artist embody poetic notions addressing new technologies role in contemporary culture as reflected in fashion.
This paper’s focus is on shoes as tools for the feet and as novel interfaces for acoustic expression with individual performers, therefore it’s necessary to define shoes and their role as cultural artefact. “Lorraine Gamman maintains that a pair of shoes that “is us”, that represents us, reveals much about the constructedness of individual identity” [3]. If this is so, then the sound of a pair of shoes could also represent individual acoustic traits on stage, with the shoe as foot-tool to express new kinds of creativity.

Fashion and sound have always had a unique relationship, whether its on the catwalk, where models walk to the latest fashion sound-track or in the technical developments made by inventors in the current state of the art area of “fashionable technology” [4] including important past research undertaken by Joe Paradiso’s “Expressive Shoes” project at MIT between 1998-2000, which are a good example of innovative acoustic shoes that weren’t developed further in an on-going performance research frame, with very few public performances taking place and remained an invention rather than reaching the stage of becoming a “personalised” creative musical instrument. Paradiso suggests that the composition and choreography weren’t developed fully and there is room for further creative development [5]. Taking Paradiso’s research into account, coupled with author 1’s extensive experiences with the EShoe, (A High Heeled Shoe Guitar) (Figure 1.1) in the group Chicks on Speed, (EShoe is a musical instrument invented by the group Chicks on Speed as part of their ongoing research into “objectinstruments”: self-made musical instruments) we devised the new project BipedShoes.

It was through performance based research in the recording studio and on stage with the E-Shoe with Chicks on Speed over a 4 year period that we are able to refine functionalities of the E-Shoe and develop the BipedShoe, enabling experimental creative expression with this new personalised shoe for performance art practice. We also argue that it is only through performance based research (in-vivo workshops and live contexts), that the actual acoustic fashion objects can be “solved” fully, bringing their development to an evolved conclusion contributing to the current state of the art.

This research focuses on the developmental phases of body-centric objects that are able to respond to particular movements by creating specific sounds, which we describe as acoustic fashion objects. We seek to redefine the relationship between fashion & sound using technology by developing creative methodologies primarily within a performance research frame. The concepts used in the performance research study described in the paper draw parallels with past performance artist’s explorations into “performance objects” [6] and the body in theatrical and live-art settings, some examples include:

- Collaborative performance art works by Charlotte Moorman and Nam Jun Paik, including performing objects: TV Bra for Living Sculpture (1969) and TV-Cello (1971).
- 60’s Japanese Gutai performance artist, Tanaka Atsuko’s electric dress in durational performances.
- Lygia Clarke’s sensorial creations, including hoods, goggles, gloves, suits and other relational objects. (1966-88).
- Audio ballerina’s by Benoit Mauiry (1989).

Utilising such past knowledge of artists conducting live-art research with body-centric objects on stage within art performance styled events, this research seeks to define new creative methods for integrating personalised “performance objects” as acoustic fashion objects to add to the body of knowledge in art performance. In the words of Sabine Seymour, “fashionable wearable’s have great expressive potential that is amplified through the use of technology” [4]. The realisation of this potential to create audio feedback through expressive movement in performance research settings is significant. This is an area which Birringer and Danjoux agree has been underdeveloped: “The relationship of fashion and wearable computing to music — and especially to computer music’s understanding of the body in interactive, gesture-controlled performance as a kind of ‘extended instrument’ — awaits further exploration” [7].

There is an extensive body of work on emotions and the individual in tune with collective creative processes, such as methodologies founded in Synetics’ [8] which we adopted as part of the BipedShoe workshop and live-art performance. We believe that by observing past scientific research and artistic movements we can find clues for new approaches and methodologies to working dynamically with individuals, culminating in a collective creative process, to develop new personalised natural user interfaces for musical expression.

Black suggests “the term ‘Natural User Interface’ is an emerging computer interaction methodology which focuses on human abilities such as touch, vision, voice, motion and higher cognitive functions such as expression, perception and recall. A Natural User Interface or “NUI” seeks to harness the power of a much wider breadth of communication modalities which leverage skills people gain through traditional physical interaction” introducing ways for “computers and human beings to interact in diverse and robust ways, tailored to the abilities and needs of an individual user…which allow for complex interaction with digital objects in our physical world” [9].

3.1 Research Questions
The prototype acoustic fashion device described in this paper (BipedShoes) attempted to address the following research questions through reflective practice in an experimental workshop frame and live on stage using methodologies introduced in this paper, including strategies for developing NUI natural user interfaces.

3.1.1 What sound does fashion make, and how can a performer use fashion to make personalised sounds with a natural user interface?
Traditionally, the primary purpose of clothing or fashion is not making sound, especially in a musical sense. However, many items of clothing are in fact inherently associated with characteristic sounds. For instance, the sound of a zipper is associated with the action of opening and closing a fashion item (such as a bag), the rustle of a raincoat or the opening of an umbrella heralds the rush into rainy weather or the hurried escape from it, and of course the sound of a high-heeled shoe is a characteristic warning of the approach of a taller-than-normal person.

As suggested by Hockley et al. in the research project “If the Shoe Fits: Identity, Transition and Footwear” they suggest that shoes can “change embodied experiences” and “in contrast to many forms of clothing, shoes can almost become a part of the body, taking on the shape of the foot, and changing the way we move.” If this is so, we argue that different people can resonate different sounds, leaving individual acoustic traces whilst moving in their shoes, with a pair of shoes proposing a duality with the representation of identity and personality on stage [10].

The use of these sounds within a performance based research context is a fertile situation for an acoustic fashion device, but also allows the sound’s associated visual or
choreographic metaphors to be subverted for performance purposes when performers are given the chance to experiment with these natural user interfaces for musical expression and build up an audio visual language as repertoire.

3.1.2 How can the use of fashion objects as a musical interface influence or be influenced by a performer’s individual movement?

Some movements a performer makes individually or collectively may naturally result in sounds that can be amplified or transformed, and in this case many typical methods of sound manipulation can be used to influence the sound of a performer’s movement. To have these types of movements influence the performance there is a need for them to be converted into control gestures, and there are a number of different scales (e.g., finger/toe movements vs. arm/leg movements) at which this might occur.

4. IN-VIVO CREATIVE METHODOLOGY

Practice based creativity with individuals in small groups is key to breaking new ground in the arts and other areas, as Aragon and Williams suggest, practice based creativity has been the subject of research in areas including art, architecture, scientific invention, psychology, information technology, economics and health applications. Contrary to the popular belief of the mysterious moment of insight, past research implies that creativity and innovation are connected to a series of stages integrated into a larger methodological framework [11]. It is this methodological framework we explore in relation to the development and use of NIME as personalised sound devices in experimental live-art performance.

To investigate these research problems a workshop followed by evaluative live-art performance into fashion acoustics was conducted to explore the relationships between sound devices and the body. Through the workshop and associated live performance we aimed to define personalised fashion acoustics as relevant to new and unknown creative artistic practices, methodologies, techniques and procedures in performance art research.

4.1 Performance Research Study: BipedShoes

The case study features the first prototype of the BipedShoe as the acoustic fashion object. A series of Haute Couture shoes were made in collaboration with shoe design firm Bruno Magli. They functioned both as highly ornate and visually attractive fashion accessories but also as practical self-made musical instruments or tools for the feet, to improvise and interact with on stage during a “High Heeled Shoe Jam” and enable the feet to carry out complex creative tasks.

![Figure 2. Performers interpreting performance instruction Remote Controlled Shoes in the BipedShoe workshop by Alexandra Murray-Leslie and Sam Ferguson. Photo © Alexandra Murray-Leslie (2013).](image)

As a starting point to the workshop we began with a word, that could signify a poetic gesture with the amplified shoes, we decided upon “synthesized – shoes” or “remote-controlled shoes”. Performance instructions based on these metaphors were given to the dancers and they responded with physical interpretations. The instructional method could be compared to the instructions given to performers by Fluxus artist Dick Higgins, in his 1960’s Gravis performances [12].

Drawing on Higgin’s methods of instructional performance, performers were free to interpret the word Remote Controlled Shoes as they desired. The performers interpreted the instruction in numerous ways; some used repetitive motions, others acted as if the shoes were leading them—the dancers bodies rendered helpless to the machine made shoes, controlling their jerky movement. Such a metaphoric movement experience can quickly also conjure up notions of women’s high heeled shoes as fetish objects or must-have’s in the world of fashion, where women go mad to have the latest “it-shoe”, where the shoes control the wearer on a high speed cat-walk out of control.

Interpreting methodologies based on William Gordon’s Synetics research from 1961, we asked the performers “what would I feel like if I were a shoe” putting themselves inside the object, the dancers reacted with poetic movements interpreting how shoes might move. It was useful to test the instruments through these methodologies, posing an open question to each performer, who then answered through individual movements, interacting with the acoustic fashion device (such past methodologies have had significant influence on preceding movements such as Fluxus, collective 60’s happenings and later interactive art, which seems appropriate, as the shoes described in this paper are interactive musical instruments for the feet or personalised “art systems” as suggested by Ernest Edmonds [13] connected to such art movements that pioneered the live art and interactive art of today).

Simultaneously, the technologist and artist observed the movements of the performers and experimented with synthesized sound processing mappings in real-time. The concept of multi-modal synthesis was adopted as a methodology and carried out throughout the workshops— a synthesis between the fashion-centric object, body movement and sound. Each shoe was augmented with a contact microphone attached to a wireless microphone set (Figure 2). The output of the 5 wireless systems (one per performer) was processed using MaxMSP, using two sets of processing that could be mixed together in real-time, allowing for an on-going dialogue between performers, director and technologist, to find the most creative settings for a movement and its mirrored acoustic feedback.

5. DISCUSSION

5.1.1 What sound does fashion make, and how can a performer use fashion to make personalised sound?

It was through an individual performer’s interactions with the BipedShoes in unique formations that we were able to create moving musical body sculptures to answer elements of the research problems. The BipedShoes successfully echoed the sound of an individuals clothing through amplification and transformation of bodily movement into personalised acoustic sound—what became interesting about this piece was how the artist/technologist responded to the concepts of remote controlled shoes by morphing the natural sound into a synthesized, allegorical sound, followed by the way the performers enacted the instruction, while simultaneously listening to the uniquely mapped sound, surprisingly juxtaposing fashion’s natural sound and correlating individual body movements.

The performative individual and collective processes of the workshop context led to this important creative transition and it’s this real-time response facilitated by the personalised acoustic fashion object, (as it proved to be a tool for spontaneous sonic expression) which is of interest. This new live and flexible sonic dimension of the shoes as natural user interfaces for musical expression in live performance empowered the performers with a means to express individual acoustic speech through their feet and to influence the other performers movements and sounds. And interestingly enough, as with musicians in the flow of a jam
session, the performers didn’t just concentrate on what sounds they made with their moves, but how their moves and sounds worked in unison with the other performers' moves and sounds in the sum audio/visual mix.

5.1.2 How can the use of fashion objects as a musical interface influence or be influenced by a performer’s movement?

New movements and the act of necessity - The first fashionable E-shoe’s restrictive components (12 cm plateau) influenced the way the shoe had to be played. That the shoes platform was 12 cm high made it impossible for the wearer to play their own shoe, and meant that engaging a co-performer to play their shoe and leg was necessary, mimicking the playing of a traditional guitar, performing a type of “guitar rock-pose” (the leg becoming the analogy of a guitar for the performer playing the shoe and leg of the E-shoe wearer). This wasn’t something that was predetermined in the design of the first E-shoe, and was only recognized during experimental performances with the E-shoe by Chicks on Speed. So too the BipedShoes had their own restrictive elements, influencing the performers' movements and interactions between the feet, with each shoe being able to influence the other foot's sound, led to an interesting and unexpected series of personalised performed foot and leg motions, which would not have developed if the shoes weren’t able to interact with each other (each shoe could filter and influence mapped parameters on the wearer’s shoe and the other’s performers shoes, a functionality developed during the workshop) an example of technology directly influencing the shoe tools creative physical expression.

Performing Fashion - A distinctive way the performers enabled their movements to embody the acoustic fashion object was through “performing fashion”. This paper has demonstrated that through fluxus instructional performance strategies in connection with synetics methods, both the fashion object and linked sound can be combined and expressed through movement actions and responses of performers (interactivity between movements, sounds and shoes), such as with their interpretation of the instruction remote controlled shoes. To add to this there was an instance when shoes, legs and body coupled with the synthesized sounds took on a new physical meaning in the performance without an instruction being called out, it was created out of a natural improvisational series of movements which surprisingly led to a new audio visual language depicting the body as antenna (observed by the performers). The body took on the guise of an antenna and began scanning the surroundings, (influenced by the sounds emitted by the BipedShoe instrument) as if looking for precious metals, movements looking and sounding like a metal detector. Alternatively, body as antenna conjured up movements performed by the dancers such as their bodies communicating with the surrounding environment, experimenting with and extending the lines of the body’s radius in the space.

6. OUTCOMES AND QUESTIONS

Building a natural user interface around individual performers needs implies finding new methods of working creatively with performers / prototypes and finding new methods to evaluate the performers explorations in a real time fashion, to advance the capabilities of the instrument and its aesthetics, which then advances the performance as a whole. It could be interesting to develop further research around methods that could nurture this in-vivo conceptual creativity (how to tease out performative creativity in workshops) and develop prototypes more spontaneously, simultaneously alongside this creative flow of ideas of the performers and their movements. Such examples could include larger teams of diverse experts working parallel on aspects of the shoes in-vivo performance research workshops, which could be compared to endeavours such as “Electronic Textiles Live” undertaken by by Mikal Satomi & Hannah Perner-Wilson at Schmiede festival in Austria, where practitioners work alongside performing artists in-vivo to build interactive wearable’s and textiles that can be performed in a live setting.

Finally, it should be reiterated that an instrument created around an individual performer and for a particular scene in a live-art piece need not restrict the further use of the work, neither the technology embedded in the acoustic fashion object or the aesthetics of shoe tools for another performer or performance, which can be repurposed and adapted depending on each performers' performance contexts needs.

7. ACKNOWLEDGEMENTS

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8. REFERENCES