

## **Design-in-Motion: Sculpting Choreosonic Wearables**

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### **Bio**

Michèle Danjoux is a fashion designer, experienced educator and Research Coordinator for the School of Media & Communication at London College of Fashion, University of the Arts London. She is also co-director of DAP-Lab (<http://people.brunel.ac.uk/dap/arch.html>). Her artistic and research interests centre on wearable design through and as performance, and involve collaboration with dancers, choreographers, musicians and media artists. Her costumes have been performed at Kibla Multimedijski Centre, Slovenia; MediaLab Prado, Madrid, Spain; Le Cube, Centre Création Numérique, Paris; Watermans Art Centre and Sadler's Wells, London.

### **ABSTRACT**

Oskar Schlemmer's constraining costume concepts and wearable objects for the theatre of the Bauhaus in the 1920s were central to his movement research. His aim was to limit movement through design intervention to more precisely hone in on the abstract mathematics of lines and geometries created by the mediated body in space. In *The Triadic Ballet* (premiered 1922) for example, he analysed the restricted movements of the performing body in relation to costume's physical material characteristics as geometrical form located on the body. While his later stage-space-architecture movement pieces (1927-1929), such as *Stick Dance*, scrutinised the motion of performers' bodies as they engaged with abstract material forms in space. Altering physical movement was for Schlemmer not the only intention; he also explored the relationship of the dynamic body to the making of sound, appropriating materials with inherent percussive characteristics such as glass as new instruments of sounding [Trimingham 2011, 146]. This visual essay, concerns the use of *choreosonic wearables* in the devising process and explores wearable movement-sounding in interactive performance contexts. It reveals how Schlemmer's methodologies have inspired design-in-motion explorations, both as wearable movement initiators and movement sonification systems that can stretch aspects of movement improvisation.

## **Movement characters**

This visual essay illustrates the ways in which the emergence of movement and sounding can become intertwined with costume or ‘wearables’ in performance through a dynamic process of tactile material interaction. The prototypes presented here – the ‘Solar Light’ prototype and ‘NailFeathers Dress’, stem from a larger investigatory body of wearable design research focused on the act of wearing as amplificatory, multi-sensorial (tactile, aural, visual) and perceptual performance technique for the dancer. Choreosonic is a term that implicates both movement (choreo) and sound (sonic) whilst my concepts for design-in-motion propose a reciprocal process whereby costume orchestrates movement through the palpable affective potentials it exerts on the dancer-wearer; this in turn simultaneously advances further design modifications.<sup>1</sup> Approaching the compositional dynamics of design for performance here, and the collaborative role costume or wearable can play in establishing a new choreosonic creativity, I highlight experimental practices that have their roots in the costume concepts and stage-space-architectures of Oskar Schlemmer for the theatre of the Bauhaus in the 1920s. His methodology incorporating costume and objects into dance has informed my work: his strategies for design employed techniques of constraint aimed at deliberately limiting the fluidity – and thus altering the flow – of movement through time and space, together with his explorations into the phenomenology of sound via experimentation in movement- sounding.

Throughout his work with costume, Schlemmer created distinct movement characters where the costumed dancers’ bodies choreographed the movement through sculptural designs that integrated the use of elementary material forms such as spheres, ellipses, circles, straight and diagonal lines. His experimental costume concepts for the theatre of the Bauhaus were central to his movement research – concerned with the mechanics of joints and limbs and the abstract mathematics of lines and geometries created by the moving body in space. Interestingly, Schlemmer’s Constructivist-type designs were envisioned not as strategies to support free flowing movement, but rather to constrain and/or renegotiate it. The sculptural costumes for *The Triadic Ballet* (premiered 1922) for example, analysed motion, namely the restricted movements of the performing body in relation to costume’s geometrical forms located on the body. Indeed, all eighteen ‘figurines’ in *The Triadic Ballet* were designed specifically to constrict the range of wearer movements. This was a strategy for dance expression that,

according to Karin von Maur as she contemplates the atypical nature of Schlemmer's starting point for the choreographic process, generated 'an antidance, "a theatrical costume dance" that could only have been dreamed up by a painter and sculptor' (2014, 195).

In a similar way, Schlemmer began to translate his experience of mechanisation in the early part of the twentieth century into simple performance spaces consisting of human bodies and objects as apparatus (Blume 2014, 10). His stage-space-architecture movement pieces (1927-1929), including *Metal Dance*, *Stick Dance*, *Hoop Dance*, *Form Dance*, *Glass Dance*, *Space Dance*, produced during his years as director of the Bauhaus theatre workshop (1923-1929), evidence this. These works employed a far more reductive approach to the investigation of design and its relation to the dynamic body in space than his previous work *The Triadic Ballet*. This less aesthetically extravagant, more minimal approach interested me, together with the performativity of the wearable apparatus evident in works such as *Stick Dance* (1927). Here, a series of eight straight sticks symmetrically attached to the limbs of a male performer were employed to make a geometric visual movement statement in space. Lines opened into planes unfolding as volume: the body – clothed in a black body suit – diminished in the subdued lighting of the performance space by the glowing dynamic sticks it set in motion.

### **Solar light prototype**

In response to this work, I explored the development of a wearable constructed out of solar lights, – a technology of today, responding to the ever-increasing sustainable energy needs of our planet, – for a dance featuring in DAP-Lab's dance opera *for the time being* (2014).<sup>2</sup> The wearable prototype features six solar lights, each with a long elegant pole-like metal stem and spherical crackle glass light bulb, attached using elastics to the dancer's limbs (Figure 1). The visual light refractive effects of the final dance with light poles, performed by Manaskarn Insang (Figure 2) proved difficult to capture.

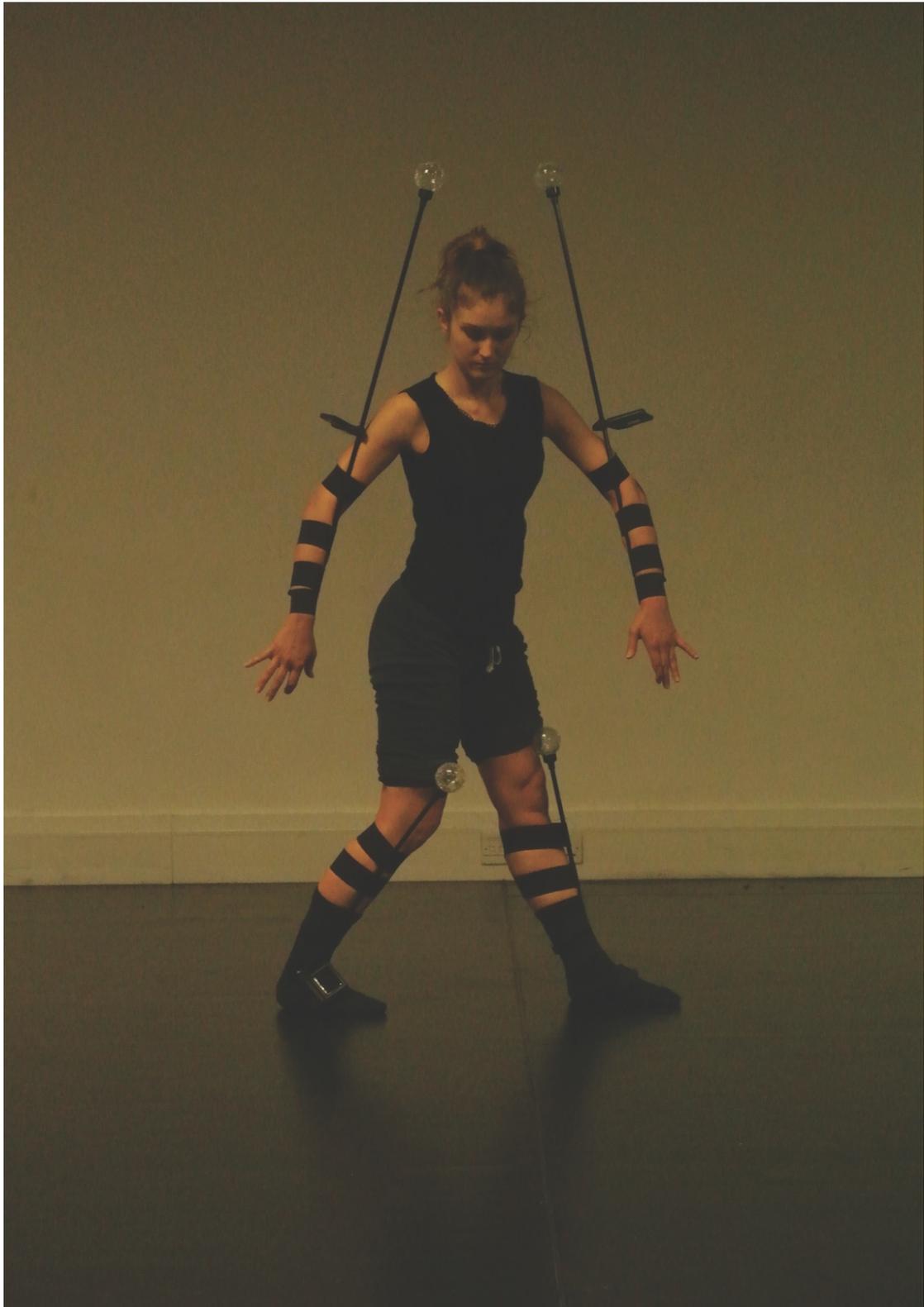


Figure 1. Vanessa Michielon in rehearsal with wearable 'Solar Light' prototype attached to her limbs with elastics – incorporating the four long-stemmed solar lights into her body gestures and movements. *for the time being [Victory over the Sun]* (2014). Photo © Michèle Danjoux.

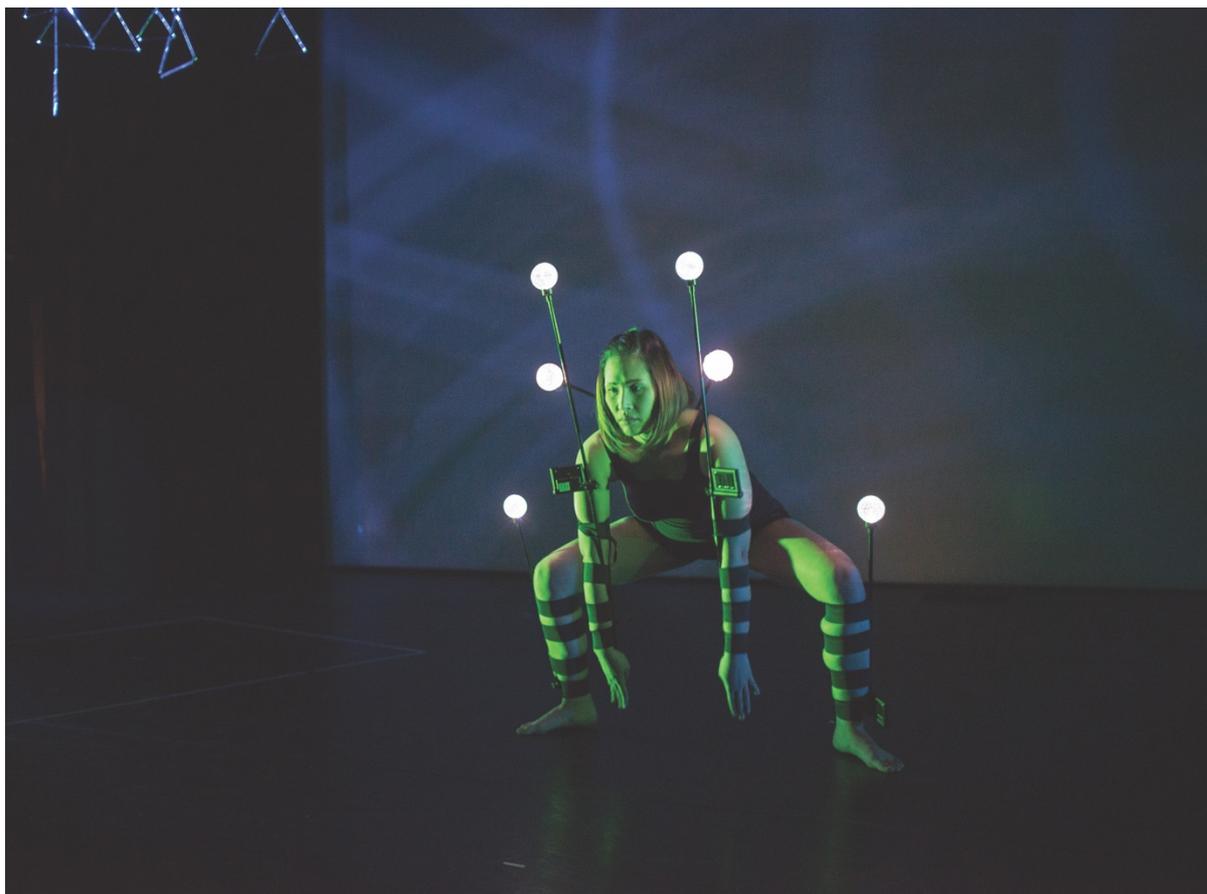


Figure 2. Manaskarn Insang in performance, engaging the performativity of her body-worn material forms – six solar light poles. *for the time being [Victory over the Sun]*, Lilian Baylis Studio, Sadler's Wells, (2014). Photo © Hans Staartjes.

### **The sonic dimension**

As Trimingham (2011) highlights, Schlemmer's dances for the Dessau stage scrutinised not only the motion of performers' bodies as they engaged with material forms in space, but also paid attention to the associated sonic dimension. Sounds originating with the dancer – speaking and basic percussion, were incorporated into his performance with costumes and objects in a desire to find ways to connect the medium of sound more fully to the form or 'Gestalten' of the dance (Trimingham 2011, 129). Here, percussion methods involved not only more traditional instruments such as drum, triangle, cymbal, claves and so on, but were used to investigate the various tonal qualities that could be released from physical materials (sometimes body-worn) such as wood, metal and glass. For example, in *Stick Dance*, the sticks, worn and skillfully negotiated by the performer-body in space, were used as apparatus

to generate a precise visual geometry – a reimagining of the body in motion empathising with the mechanics of the bodily extension – and, we assume, possibly to orchestrate an acoustic event live on stage. While the Solar Light prototype did not explore a sonic dimension,<sup>3</sup> the NailFeathers Dress focuses on the use of materials with inherent percussive characteristics (metal nails), as new instruments of sounding, thus aligning more closely with the ideas in Schlemmer's work.

### **NailFeathers Dress**

The NailFeathers Dress (Figure 3)<sup>4</sup> is an electroacoustic instrument and wearable object of touch designed to be worn by dancer Elisabeth Sutherland in DAP-Lab's immersive performance installation *metakimospheres no.3* (2016 [Figure 6]).<sup>5</sup> It is also a smart garment built from traditional materials of construction – nails, combined with new materials– e-textiles, containing metal stranding for conductivity knitted with other nonconductive fibres. Embedded into the underside of the nail encrusted cloth (Figure 4) are a series of piezoelectric sensors to detect vibrational changes in the physical qualities of the garment and the magnitude of these as the nails became animated through wearing. The piezo-effect of the sensing materials (metal and ceramic) is then made audible and amplified as a sonic texture in the performance space via a portable speaker worn around the dancer's neck suspended like a camera (Figure 5).<sup>6</sup> The portability of the audio technology (speaker), and the audibility of the dress means the dancer can move with her carried sound in and through the space wherever she goes, and her proximity or distance can be sensed by an audience member such that her location can be discerned even when she is no longer visible (Figure 6).

The Nailfeathers Dress thus becomes a new prototype of a moving sculpture, so to speak, which has animistic and transceiving potentials (Figure 7). It is a techno-costume with choreosonic apparatus, and at the same time it could be considered a cultural performance instrument.<sup>7</sup> In this particular instance of DAP-Lab's immersive *metakimosphere* environment, the garment is activated/worn by a Ghanaian dancer who dreams up a choreography of a bird, crouching before flying, her steely nails turning into light feathers and winged arms, allowing her to take flight, her bird nest (Figure 8) swinging gently under the tall trees.

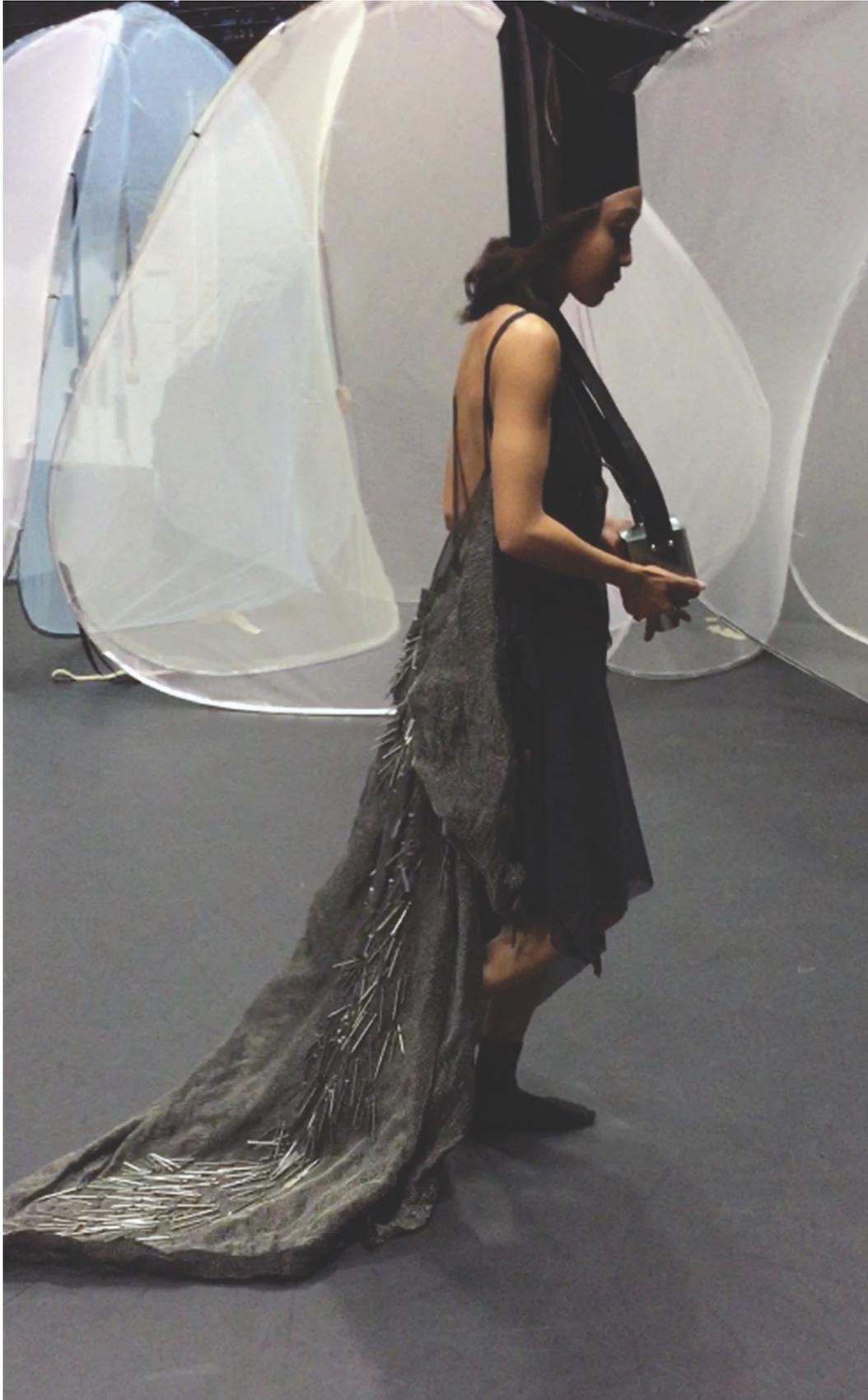


Figure 3. NailFeathers Dress worn by Elisabeth Sutherland, her heels kicking the hem of the dress with sharp, repetitive, almost mechanical flicks to animate the nail encrusted cloth. Rehearsal, *metakimosphere no.3*, created by DAP-Lab. Artaud Performance Centre, London, 2016. Photo © Michèle Danjoux.

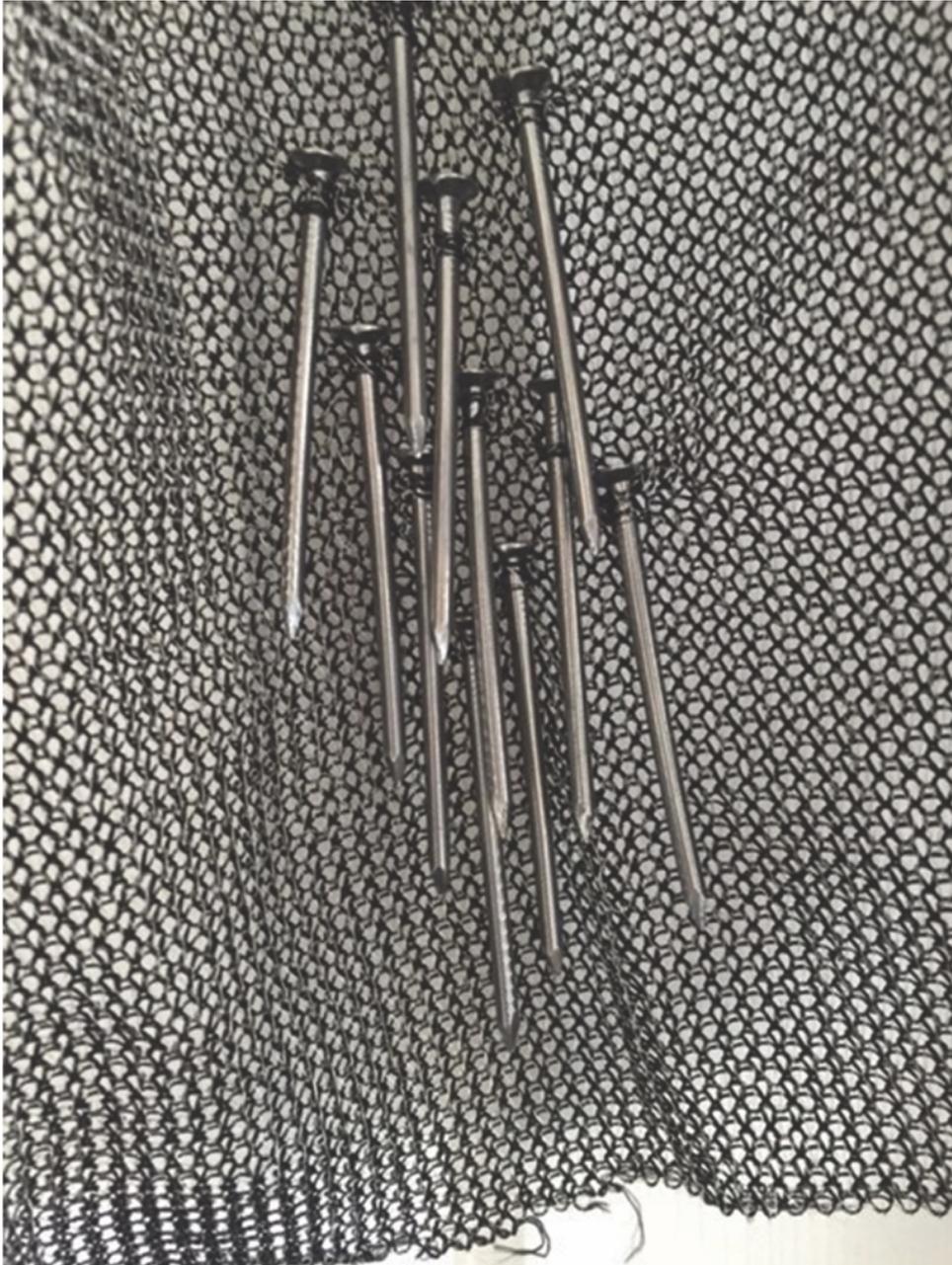


Figure 4. Close-up of fabric sample showing nails inserted into the surface of the conductive cloth, 2016. Photo © Michèle Danjoux.



Figure 5. Elisabeth Sutherland in the NailFeathers Dress – highlighting wearable speaker with volume feature and nails integrated into back of garment. Rehearsal, *metakimospheres no.3*, 2016, Video still © Michèle Danjoux.



Figure 6. Elisabeth Sutherland in rehearsal, moving through suspended tactile scenographic elements. *metakimosphere no.3*, created by DAP-Lab. Artaud Performance Centre, London, 2016. Video still © Johannes Birringer.



Figure 7. Elisabeth Sutherland crouch-crawling through the installation space in her NailFeathers Dress – a member of the audience watches up close. *metakimospheres no.3*, 2016, Video still © Michèle Danjoux.



Figure 8. Elisabeth Sutherland in performance, her bird nest suspended in the space. *metakimosphereno.3*, Artaud Performance Centre, London, 2016. Video still © Johannes Birringer.

## Notes

<sup>1</sup> For an extended discussion of my research on *design-in-motion* and the dance productions for which I created the wearables and choreosonic concepts, see Danjoux (2017).

<sup>2</sup> DAP-Lab [Design and Performance Lab] created *for the time being [Victory over the Sun]* over a period of several years, it was first performed at Watermans (2012) in London; an expanded version premiered at Sadler's Wells (2014): <http://people.brunel.ac.uk/dap/forthetimebeing.html>.

<sup>3</sup> This is something I considered via the use of light sensors for the production of data to generate sound output. I have worked with light sensors in previous prototypes to obtain data from dancers' movements and interactions to alter visual output e.g. in DAP-Lab's multimedia performance *Suna no Onna* (2008) see Birringer and Danjoux (2009). Additionally, in the performance *for the time being* (2014), the Futurian ChestPlate prototype integrated light sensors to be activated in duet performance to generate and alter sonic output, see Danjoux (2017).

<sup>4</sup> The NailFeathers Dress was produced in collaboration with musician and artist Dr. Neal Spowage who assisted in the electronic construction of this prototype design.

<sup>5</sup> For video documentation of the *metakimospheres no.3* (2016), visit: <https://www.youtube.com/watch?v=MGItKALbtwA>.

<sup>6</sup> In previous wearable prototypes I have designed, I explored both simple analogue and more complex digital means for the spatial articulation and transmission of sound, such as interactive systems and software interfaces. For more information see: Birringer and Danjoux (2013), Danjoux (2017), and Danjoux (2014).

<sup>7</sup> For video documentation of the NailFeathers Dress in rehearsal visit: <https://www.youtube.com/watch?v=-SgEhzlc33M>.

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## Disclosure statement

No potential conflict of interest was reported by the author.

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