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PAPER

Choreography of Sonic Chopsticks and Intervention of Digital Technology with Dancing Bodies

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Performing with chopsticks, in the interaction between dancing bodies and digital technology (software, web-cameras, sensors and projectors), raises questions about new forms of choreography and the consideration of cultural identity in the adoption of technology, when such dancing bodies are mediated by computer programming. Following the notion of the choreographic systems conceived by choreographer/digital performance scholar Johannes Birringer for his *metakimospheres*, I use ordinary objects from Chinese everyday life such as chopsticks as an interface to engage with dancing bodies from the perspective of a choreographer trained in Chinese dance traditions. The use of chopsticks in my practice-based research connects to recent sonic arts experiments with sounding materials and recontextualized electronic instruments, and this article explores the sticks as multivalent props or extended instruments which also act as a kind of microcontroller (eliciting sounds through microphonic and software interaction). The convergence of sonic chopsticks and computer-mediated dancing bodies raises images of violence and nostalgia in the dance pieces *Qi* (Breath) and *Xun* (Looking For), which are part of the project *X-Body*, a full-length digital dance work. Embracing a transdisciplinary perspective, this paper examines the configurations of dancing bodies associated with specific interactive technologies, ordinary objects and movement, and probes some of the dimensions of cultural performance in digital choreography.

Keywords: Choreography; Digital Technology; Chopsticks; Dancing Bodies; Cultural Identity

Introduction

This paper focuses on choreographic approaches that consider ordinary objects such as chopsticks as an interface. Adapted sonic equipment and dancing bodies are the main focus of this article, which explores the theory of metakimospheres by choreographer and digital performance scholar Johannes Birringer through experimentation. The first several dance installations created by Birringer and the DAP-Lab were titled *metakimospheres* (2014–17), as they were developed during a European cooperative research project, METABODY (http://metabody.eu). Punning on the common understanding of the metacritical level of work that reflects on its own making, Birringer tried to shift attention to the Greek preposition *meta-* (μετά) in its multiple other meanings such as after, beyond, beside, among, through (Birringer 2017). Kimospheres are 'kinetic atmospheres or environments staged for visitors that pass through them, listen to them and feel them, unconsciously, attentively, distractedly, blindly' (Birringer 2017: 27). Metakimospheres invite spectators to participate, sense, touch and explore physically and virtually (through VR glasses) what is perceivable in the shifting and unstable environments. The kinetic atmosphere is constructed by materials, objects, projections, technological equipment, performers, engineers and spectators, who experience and perceive this shared atmosphere. There is a small difference between kimospheres and metakimospheres, in my understanding: kimospheres focus on dynamic and interactive environments which are constructed by participants inside installations. In comparison, metakimospheres are more than just environments, but also situated in the layers of philosophical reflections concerning objects, movements, the internal and external energies of bodies, and the elemental presence of a kinetic atmosphere between or beyond them.

The notion of metakimospheres is valuable in considering choreography and technology. Drawing on theories from Birringer, I contribute to metakimospheres from the perspectives of a choreographer, dancer, and a research practitioner, composing and participating in this kinetic atmosphere, providing a reflection from my experiments. Especially, how to use metakimospheres as a methodology in dance composition. The entanglement of sonic chopsticks with dancing bodies

in a kimosphere provides a transcultural understanding in the context of digital performance. Dance scholars Sarah Whatley and Hetty Blades (2019) demonstrate that dancing bodies are an open system in digital environments; the flesh bodies receive input and explore tactile spaces in physical and virtual spaces. The dancing bodies I explore in this research are agents who receive echoes from the sounds generated by chopsticks through software (interactive system) and connect to projectors in a shared atmosphere to evoke modes of 'digital dance' which reveal the intervention of choreography through computer and graphics. Digital media output, when software patches effect and modulate inputs, changes the expression of dance or of the movement perceived inside the environment. Projections that move can also affect the space itself, of course. Computer science scholar Lev Manovich states that, 'We are in the middle of a new media revolution – the shift of all culture to computer-mediated forms of production, distribution, and communication' (2001: 19). Therefore, choreographing dancing bodies with computer-based technology in my experimentation highlights the animation of Chinese dancing bodies in the digital era; specifically it is the objects I use in the choreography that allow for sound and image manipulation.

'Chopsticks' are cultural symbols. In this research, I explore chopsticks connecting to sonic equipment and processing through the software application Max/MSP. I question the choreographic method of performing with chopsticks and the embodiment of cultural identity in a shared atmosphere mediated by digital technology. The questions under investigation here are the following: how can chopsticks be utilised in techno-choreography? How can provocation and nostalgia be generated through sonic chopsticks in a kimosphere? I am eager to delve further into this interdisciplinary field as a practice researcher, to contribute to Birringer's research of metakimospheres considering a particular viewpoint of cultural knowledge and the methods of dance composition.

Birringer points out the theories of choreographic systems (2018) and metakimospheres (2017) through his productions with DAP-Lab, a research company established by Birringer and Michèle Danjoux in 2004, focusing on design and performance with technology. Choreographic systems 'incorporate instruments

(cameras, data projectors, microphones, sensors, microcontrollers) and software tools allowing them to structure and control the various components of a performance event: sound, video, 3D animation, motion graphics, biofeedback, light. It is the convergence of choreography with instrument and system design' (Birringer 2018: 470–471). This convergence theory challenges the process of choreography, and the collaboration between dancers and choreographers incorporates movement and wearables with digital instruments, machines and algorithms. Dance workers are no longer limited to the study of choreographic style or the development of movement, but they can further explore choreographic methodology in the era of technology's augmenting realities.

Chopsticks as an interface in this research connect to dancing bodies and computers through sonic equipment and software. Drawing on Birringer's theory, I sense the emotion and the cultural symbol of chopsticks, and it evokes my own body's memories and dancer's interior landscapes. As a choreographer, I find ordinary objects have the potential to trigger dancers' intrinsic impulses, and the atmosphere led by a choreographer could be playful and interactive. This paper examines the sonic chopsticks in what I would, following Birringer, call metakimospheric performances based on two dance scenes, *Qi* (Breath) and *Xun* (Looking For), from my techno-choreographic project *X-Body*, a 50-minute dance-theatre that premiered at Artaud Performance Centre, Brunel University London, in September 2018, and was subsequently restaged at The Place, London in February 2019.

Chopsticks in Chinese Mongolian dance

Before examining sonic chopsticks in the performance, I introduce the Chinese Mongolian chopstick dance and my body memories from this dance form. This form focuses on dancers' enthusiastic expression through footsteps and tapping their bodies with chopsticks (see **Figure 1**). It is a significant dance module in dance education in China. My first exposure to the chopstick dance was when I was 13 years old at a conservatoire where dance students had to study this dance form along with Chinese classical dance, ballet and dance technique. Due to the cheerful

Figure 1: Wei Lisi performing chopsticks dance. Photo: courtesy of Wei Lisi's Weibo.

rhythms and the attractive props, I enjoyed it during my conservatoire studies. I vividly remember the sensation when I used chopsticks to dance. The question filled my curious child's mind of how to use chopsticks to dance rather than eat a meal (see **Figure 2**). I spent two years studying this dance form and this style is rooted in my body. I did not realise how familiar my body was with this dance style until, in 2018, I tried to explore chopsticks in digital performance. I had not practiced Mongolian chopsticks dance for nearly two decades but could easily recall the movements without thinking.

Qi (Breath) – mediating dancing bodies by sonic chopsticks

In *Qi* (Breath), I intentionally avoided using chopsticks like in Chinese Mongolian dance but used them as a sonic instrument in my creation, connecting dancing bodies and the computer through software (Max/MSP and Isadora). For this design, chopsticks provide potential choreographic methods in the creation and trigger dancers to think about ordinary objects in a choreographic way rather than be limited to the dance technique. Dancing bodies and chopsticks both become instruments in this experiment. Birringer points out that 'By the 1990s, the notion of the musical

Figure 2: The props of chopsticks dance. Photo: courtesy of Dong Ri.

instrument had expanded to include the dancer in an interactive interface using gesture or movement to trigger sounds or control the sound sequencing' (Birringer 2008: 39). Dancing bodies made attractive sounds in this piece, which stimulated my creative ideas and musician Dee Egan's composition. *Qi*, performed by Miziying Wang, Jiajie Zhou, Rumeng Li and Limeihui Zhu working with Egan, tests the ideas of chopsticks and bodies as sonic instruments, generating data and sounds through chopsticks and bodies.

On stage left, two dancers, Rumeng Li and Limeihui Zhu, enter carrying a three meter long tube hanging with a microphone as they walk through the space. Their steps trigger lighting, generating a slowly unfolding corridor downstage. The microphone sensitively detects the atmosphere in the theatre. The quiet mood is changed by dancer Miziying Wang moving in from stage right (see **Figure 3**). Her movements are mainly on the floor, numerous chopsticks in her hair which are common ways for some Chinese women dealing with their hairs in daily life.

Figure 3: Dancer Miziying Wang interacts with a microphone carried by Rumeng Li and Limeihui Zhu on a lighting road. Photo: Haein Song and Johannes Birringer.

As she approaches the women carrying the long tube, she becomes curious about the dangling microphone, and begins to play with it listening to the echoes in the space generated by her breathing and touches. These are now picked up by the microphone, to be amplified and processed. Her breath and gesture interact, thus her performance, as Birringer suggests, 'incorporates technologies and associates its compositional ideas with software programming, mathematical and abstract languages' (2017: 107). Live musician Egan manipulates the patches so that the process of sending signals and perceiving feedback generates an interactivity in the 'kimosphere'. Wang's *Qi* '...manipulates and responds to projections, sounds, and lighting in real time' (Mullis 2013: 111), and Egan responds to the movement and generates various effects to enhance the sounds produced by Wang (See **Figure 4**).

Metakimospheres in dance studios

The concept of the metakimospheres was developed in a series of works by DAP-Lab both in theatres and studios: *Metakimosphere no. 1* in March 2015 to *Metakimosphere no. 5* in December 2017.[1] Metakimospheres develop the study of

[1] For more details, please find out at the website of DAP-Lab. http://people.brunel.ac.uk/dap/.

Figure 4: Live interaction between dancer Miziying Wang and musician Dee Egan through a microphone. Photo: Yufei Liang.

participation, examining the manner in which spectators engage with the material installation and how they become participants in the kimosphere (Birringer 2017). I utilise metakimospheres as a methodology in this experiment. Applying the theory to dance studios fostered an examination of working methods that allow dancers to be viewed as dynamic elements in the environment and the way they construct and interact with materials in the space, including camera, projection, tubes, chairs, wires and the microphone. In Birringer's study, he perceives smart wearables and installations in the kimosphere as 'entanglement or encumbrance' (2017: 29). I would argue that the entanglements and the encumbrances in a kimosphere represent opportunities for choreographers and dancers to generate unexpected and emotional movements in choreography. For example, during rehearsal, the limitation imposed by a wire entangling a dancer's body forced the dancer to escape. The movement sequences generated in this process are fascinating and it cannot be created without this encumbrance. Moreover, the kinetic atmosphere is co-contributed by the musician Dee Egan whose sound waves affect the observers. Their motions and emotions also affected the dancer's reactions.

Utilising the concept of metakimospheres as a method in rehearsals, the choreography and improvisation become vivid and allow me to reflect on the different uses of objects or instruments. Dancers during the rehearsals could join the pre-constructed frame any time in any way if they sensed something or if they wanted to contribute to the atmosphere. During the live interaction collaboration with Egan, the software Max/MSP 'provided the stimulus to explore shared and divergent approaches amongst the participants across a range of ideas related' (deLahunta 2002: 97). In the test with the microphone, at the beginning, only one dancer, Zhou, stood on a chair and played with the microphone. Wang found the available space in this scene, then she moved in and made sounds using hand and head to touch or tap the microphone. The spaces constructed by Zhou triggered Wang's intrinsic impulses, and the playful interactivity appeared unconsciously (see **Figure 5**).

Observing this scene for a while, my intention was to interrupt the game between Zhou and Wang, so I threw numerous chopsticks to the floor. My dancing body did not want to participate in the space, but from the perspective of a choreographer,

Figure 5: Dancers Jiajie Zhou and Miziying Wang explore the concept of metakimosphere in the dance studio. Photo: Zhi Xu.

I wanted to add objects to this space to see the reactions of dancers. This element triggered a response in Rumeng Li; she ran to the space, staring at the chopsticks then slowly lay down on them. She used her back, shoulders and arms to push the scattered chopsticks back to together. The process was recorded by the microphone, generating a sound like abstract wind or rain falling on cobblestones.

The sounds generated were my favourites like wandering in the rain and standing firmly in wind. I walked in the atmosphere, stopped, then continued. I carried the chair walking out of the space then stood at a corner to observe other dancers playing at the centre. When Wang noticed my situation, she used the microphone wire to draw me back to the 'stage'. I left the chair at the corner. I put the microphone on the floor to record the sound of the chopsticks generated by Li. She was fully concentrating on the objects, and I felt strongly that she was narrating a story in this space. My sensation linked to hers, and I lay down on the floor to perceive more. Wang and Zhou noticed our non-verbal dialogue and joined us. Wang sat on my back looking in the opposite direction while Zhou moved her body to face Li. The kinetic atmosphere became content, interactive and complete. The atmosphere was not limited to the 'stage' with dancers, but interacted with outside the 'stage', the corner where musician Egan was sitting interacting with us through her computer (see **Figure 6**).

The skeleton of a metakimosphere was explored in the rehearsal studio; we played in this atmosphere for nearly one hour. We did not notice the time but sensed the environment, touching objects, adding stories and participating in or running out of the centre. All things happened in the shared space.

Xiqu in the kimosphere

In rehearsals, Wang's breath caught my interest. She trained professionally with *xiqu*[2] when she was a child. She said, 'I planned to be a professional *xiqu* performer before training in dance. I have a good voice which I think I inherited from my mother, who likes *xiqu* very much' (personal conversation, dance studio, May 2018). *Xiqu* is too familiar an art form to me, so I did not initially consider it in the digital sense. Then

[2] *Xiqu*: also known as Chinese opera.

Figure 6: Rumeng Li plays with sonic chopsticks; Jiajie Zhou, Zhi Xu and Miziying Wang participate in the kimosphere. Photo: Zhi Xu.

I became curious how it would function in a digital environment, so I asked Wang to sing *xiqu* in the scene *Qi*. Egan recorded it live to give feedback. At the same time, I worked on an Isadora patch to generate an abstract ink painting, forming a dialogue between her sound, projection and lighting.

Wang was excited as she had not experienced her *xiqu* voice in this way before. The rehearsals developed in a stunning way. The stimulation that happened in the kimosphere triggered the people involved in this space to develop their sensation according to the environment in the ways of choreography, composition and animated graphics. Preprogramed images triggered by Wang and her dancing body as 'data' were processed in both the physical space and cyberspace. Wang's body also was an interface in this atmosphere connecting real and virtual spaces. The ink painting of fishes, which I projected through the software, was meant to be an amplification of her interior landscape (see **Figure 7**). In rehearsal, as Scott deLahunta suggests, 'instructions stimulate a certain interior landscape of thinking that should bring "intentionality" to the dancers' performance, rendering visible what the dancer is paying attention to during execution of the instruction or task' (2017: 111). DeLahunta points out Wayne McGregor's choreographic method, which

Figure 7: *Xiqu* sung by Miziying Wang generate the ink paintings of the projected graphics. Photo: Yufei Liang.

I also used in the choreography of *Qi*. This method leaves spaces to dancers who can develop according to their understanding of the images I described, just as Wang did (she is a professional dancer who graduated from Beijing Dance Academy). She understood my instructions and explored the task deeply. We stimulated each other during the rehearsal.

Violent stimulation behind sonic chopsticks

The violence behind chopsticks has drawn my interests for a long time. Can I use chopsticks as a tool to present bullying? I brought these thoughts into this piece and unfolded them in a kimosphere. Spectators observed the scenes on the stage according to their own life experiences. I arranged sequences of Zhou and Li pulling out the chopsticks on Wang's hair, then used the chopsticks to push one point of Wang's body. Wang perceived the push then moved generating emotional movements automatically. When the energy lost out, she froze in her step, waiting for the next push. The task for Zhou and Li was to find the hidden space on and behind Wang's body somewhere that might be difficult to notice, making Wang uncomfortable, irritating her. I noticed that at the beginning, Wang moved gently

and did not resist the behaviours from Zhou and Li, but following the intensive bullying behaviours and bad manners toward her, Wang resisted in her own way. It was difficult to deal with the attack from two people at the same time, and I felt Wang's anger strongly from her breaths. The noisy sound effects in the atmosphere enhanced her emotion. I also asked Zhou and Li to use chopsticks to take out Wang's tongue, to drag her lips and eyes, in the way of eating a meal on the stage, to 'eat' the body (see **Figure 8**).

Wang's actions did not meet my expectations. She did not fight back but avoided the bullying movements from others. She even used her hair to protect herself (see **Figure 9**). But Wang's behaviour did not stop the bullying. I found these kinds of movements difficult to choreograph, but the gestures were generated automatically if the atmosphere was constructed. The scene triggered my curiosity, prompting a reflection on choreography, contact improvisation and codified movement in dance. For example, is it necessary to compose emotional movement phrases for dancers? How might a scene be created in which the choreographer provides a motif without actual choreographed movements? Considering these questions is vital to this creation.

Figure 8: Bullying in sonic chopsticks by ensemble. Photo: Graeme Shaw.

Figure 9: Exploring violent emotion through sonic chopsticks. Photo: Yufei Liang.

Xun (Looking For) – Sonic chopsticks as metaphor

Another scene exploring sonic chopsticks is *Xun* (Looking For). The choreographic method for this scene is different from *Qi*, which uses chopsticks to push or bully a body. In a metaphorical way, it considers cultural identity and nostalgia. *Xun* is a duet performed by Rumeng Li and myself in separate spaces. Our physical bodies never touch but are connected closely through sonic chopsticks and the dialogue conducts in the separate spaces.

I consider chopsticks to be an object of cultural identity that stimulates my 'interior landscapes' (deLahunta 2017: 111) and body memories. My mother told me that I learned to use chopsticks earlier than other children. I cannot prove it, but I can recall using chopsticks to eat meals since I can remember things. Chopsticks cause me to think about cultural identity and how environments can change people's behaviour. The change happened when I arrived in the UK. I realised that I do not use chopsticks everyday anymore. Cutlery appeared in my kitchen due to the change in my eating habits. My taste in food are gradually changing as well. In addition, I use English to communicate with people around me, and I realise how language changes peoples' ways of thinking. For example, in using English, people tend to give the

answer first when asked a question. Then they might explain in further detail. In contrast, in the context of Chinese conversation, people tend to express what they think then give the answer at the end. My body as a container is still mixing different cultures every day to generate my own ways of moving and thinking.

Using sonic chopsticks as a metaphor in *Xun* indicated cultural inheritance and descent, and I constructed a dialogue between my body abroad and my hometown body in separate spaces. Using this imaginary situation, I tried to perceive and relate to chopsticks held by Li, using my responsive body to embody the emotion I felt in this atmosphere (see **Figure 10**). The air in this space was stirred by Li. She generated sounds through chopsticks, rolling, tapping and squeezing, and I clearly felt the energy and the emotion between our bodies constantly change; in and through our ongoing relationships, 'a sentient environment can inspire dynamic bodily inscriptions, as forms, matters and sensations unfold' (Birringer 2018: 468) in this space. The lighting and sounds in this atmosphere amplified my nostalgia. I felt the energy from spectators as well, their breathing changed the quiet and sensitive atmosphere, and the kimosphere was not limited to the stage. As Birringer pointed out 'Atmospheres, strictly speaking of course, have no outside' (2017: 29).

Figure 10: Dialogue through sonic chopsticks in the kimosphere by dancer Zhi Xu and Rumeng Li. Photo: Min Zhang.

My dancing body in this process dragged materials, lighting, sounds and projections into the kimosphere. The space of the stage separated into different layers that inhabit various qualities (or expressions) of my dancing body. Dance scholar Katja Kolcio in her somatic and technology research demonstrated that:

> New technologies have changed the way we interact with our environment, with each other and even with ourselves. Clearly new technologies, like the computer and the digital video, effect new experiences – the task is to understand the shifting landscape of an advanced technological age. Although they are commonly placed in opposition to one another, both dance and technology explore the interaction between the body (the person) and the environment by challenging the parameters of what the body can do and experience (human potential). (Kolcio 2005: 103)

My dancing body in this digital environment expanded the possibilities. During the process, I realised that I utilised my body to narrate a story that described my sensation at that moment and stories that happened in my life. The chopsticks also seemed like the bones in my body. Li rapidly rubbing the chopsticks caused my body to shake. The inner connection and visual interactivity between my movements and the chopsticks constituted a dialogue between my dancing body and my homeland. Li constructed a 'forest' on the right side of the stage with 80 chopsticks, and my dancing body 'flowed into' this environment in my imagination. I tried to find the way in this 'forest' with the questions about where I come from and who I am (see **Figure 11**). The sound made by Li led me to find my hometown, but the fog in front of me hid my eyes. I suddenly fell to the floor, which dragged the lighting and sound down into darkness at the same time in the theatre.

Conclusion

In this practice-based research, I paid attention to ordinary objects – chopsticks – collaborating with sonic equipment, software, lighting and dancing bodies. I used techno-choreographic methods to explore sonic chopsticks in a kimosphere. Chopsticks as an interface, used in codified movements and improvisations to

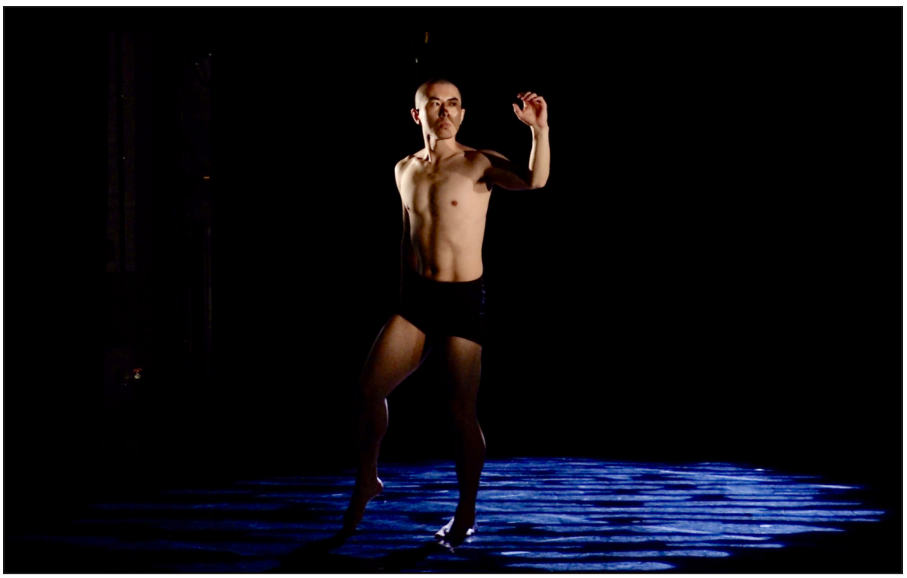

Figure 11: Nostalgia in a kimosphere by Zhi Xu. Photo: Min Zhang.

generate sounds, bullying behaviours and as a metaphor for nostalgia. I have explored Birringer's theories of choreographic systems and metakimospheres considering cultural knowledge and body memories. I have also used a choreographic system to unfold cultural identity in a kimosphere that was constructed by intervening dancing bodies, objects, software, live interactivity, sonic equipment, projection and lighting.

I use the notion of metakimosphere as a methodology in dance composition and constructed a shared atmosphere for dancers, musician and visitors (colleagues and friends visited our rehearsals many times, invited to join in the kimosphere) to participate at any time when they felt intrinsic impulses. The scenes constructed by others in the environment stimulated the recall or sensation of the participants, like dancer Miziying Wang using *xiqu* during rehearsals to play with the microphone. My body's memories of Chinese Mongolian chopsticks dance were triggered in this space, and musician Egan manipulated the sound (with Max/MSP software) to be interactive in the kimosphere.

The choreographic systems used in this research contribute to the exploration of cultural identity in digital performance. The intervention of a microphone, projections and software provided a wide landscape for me, as a choreographer, to

consider the familiar cultural knowledge of chopsticks and *xiqu*. Dancing bodies and technological equipment engaged through choreographic systems, unfolding a kimosphere for the participants on the stage and the audience to share in and contribute to this environment. As Laura Karreman argues, digital choreography provides an environment in which dance workers '…develop a new awareness of their own body and its movement as a tool or corporeal strategy' (2018: 505–506). Birringer's metakimospheres have pushed the study of choreography and technology further, incorporating research of participation, ecology, psychology and the body. This practice-based research examines metakimospheres based on my participation and observation from the choreography and performance of *Qi* (Breath) and *Xun* (Looking For), two techno-choreographic scenes in *X-Body* that illuminate the study of dance and technology from increasingly complex transcultural dancing perspectives in the contemporary arena.

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Competing Interests

The author has no competing interests to declare.

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