

# Touch as Techne: Pulse Reading as Interface

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## Abstract

This paper introduces *Pulse Project* (2011-2016), a practice-led performance research study that explores an ecology of complex relations between art, humanities, medicine, and technology. In this study, I embody transdisciplinary research practice itself through adopting the role of “acupuncture-investigator” and acting as an instrument or medium between myself and others and between cultural traditions for understanding and mediating the body and the embodiment of consciousness. Pulse “reading,” (readings of the energetic body), algorithmic compositions, case histories and notations of pulses are all used together as methods for exploring the cultural encounter between a creative producer, participants and diverse cultural/informational practices.



Fig. 1. *Cambridge 1*, 2014, © Michelle Lewis-King, photo document of *Pulse Project Performance* - pulse reading and notating.

## Art, Science, Culture and the Body

*Pulse Project*, an on-going performance and sound study series conducted at various public locations between the years 2011 – 2016. The performance and sound studies draw from my experience and expertise in both the arts and sciences as primary source material. In *Pulse Project*, I embody research practice itself through my performing as an instrument or medium between others and myself, and between cultural traditions for understanding and

mediating the body. Drawing upon my expertise as a clinical acupuncturist (with training in biomedicine), I use Chinese medicine and music theories together with SuperCollider (an audio programming language) to compose bespoke algorithmic soundscapes expressive of embodied experience.

These soundscapes are not sonifications of Western principles of circulation or embodiment but offer another perspective to conceive of/listen to the interior spaces of the body-in-being. For example, each participant’s pulses are interpreted by using traditional Chinese pulse diagnostics (a complex set of more than twenty-eight waveform images corresponding to embodied mental/physical states of being) and traditional Chinese music theory together with contemporary digital technology as a transdisciplinary and transcultural methods for re-reading and re-mapping the human embodiment and consciousness. Significantly, as *Pulse Project* soundscapes are composed using an aspect of touch that is informed by Chinese medical theory, this study therefore offers an alternate and comparative means for exploring and recording the alchemical nature of embodied being-in-time.

For this reason, the audio works of this study do not represent of the inside of the body from within the Cartesian logic of the *cogito*, but interleaves Chinese medical and philosophical approaches together with Western medicine and philosophy as a means for reconsidering the current discourses that attend the body and embodiment. In resisting the representation of sound in “realistic” (Western) technoscientific terms, this study sonically explores the phenomenal metaphysics of the interior and in-between spaces and processes of the body (according to Chinese medical philosophy) as a means for communicating the more enigmatic aspects of embodied reality than those currently explored by technoscience.

## Pulse Project Performance: An Art-Science Case Study

*Pulse Project* positions the haptic and somatic into play with digital temporality by using intuitive touch in tandem with SuperCollider (a real-time audio synthesis programming language) to create unique soundscapes that materialise and express the invisible and inaudible aspects

of an individual's embodied being. *Pulse Project* adopts touch in this study as a translational instrument of convergence between art and medicine, East and West, past and present, self and other. Each soundscape is composed by using pulse diagnosis as a method to interpret each participant's pulse as a unique set of sound wave images informed by Traditional Chinese Medicine (TCM) pulse diagnostics (as a complex set of more than twenty-eight waveform images corresponding to mental/physical states of being) and also in accordance with traditional Chinese music theory. Significantly, as *Pulse Project* soundscapes are composed using an aspect of touch that is informed by Chinese medical theory, this study therefore offers an alternate and comparative means for exploring and recording the alchemical nature of embodied being-in-time.

As a result, this study generates soundscapes that convey a unique ecology of sonic spaces hidden within the body. These soundscapes are not interpretative of the Western notion of the circulatory system, but instead, draws on early Chinese medical philosophy in order to represent the body/person as a living cosmos pulsating with matter and energy. [1] The architecture of the body according to the Chinese medico-philosophical system is not a separate and discrete entity, but exists as a microcosm in relation to an exogenous multiverse of interdependent material worlds in perpetual motion. This ecological and cosmological model of embodiment is central to this research.

### Context for the Study

This research examines the "body" and the "encounter" as fundamental concerns from which my investigations across art and science unfold. The body is conceptualised in this study as an ecological medium that hosts a multiplicity of encounters. Generally speaking, the modern body is a conceptually divided organism not only due to an enduring Cartesian mind/body dualism, [2] but also according to cultural approach. For example, according to Chinese philosophy and medicine, living organisms are metaphysical entities – each a microcosmos of continuously transforming inter-relational substances (an organism of immanent emergence). Whereas biomedical (Western) model of the body is still largely based on Cartesian and Augustinian traditions that view the body as a set of mechanical parts to be "fixed" when they become faulty - or as a fleshy (sinful) organism that is considered inferior to the transcendental capacities of the mind and cognitive thought. [3] These approaches to the body continue to inform and shape the philosophical and medical investigations and debate within Chinese and Euro-American cultures respectively.

From my clinical experience as an artist-acupuncturist, the processes of the medical encounter are uniquely "intra-cultural," i.e., they involve both biomedical and Chinese medical investigation that is at

the same time articulated by the warp and weft of inter-personal dynamics. Within this particular form of clinical encounter, the body itself is a multi-dimensional site of countless meetings between thought-practices, alchemical phenomenal processes, personal narratives and self-reflections. In this way, my clinical practice engages in transversal modes of inquiry by continuously creating connections that travel back and forth between early Chinese and modern biomedical concepts, bodily interventions and strategic processes of analysis and treatment for each "patient."

Given the dialectical uniqueness between cultural medical practices of this encounter, this clinical experience is re-imagined and explored as a central premise within this presentation as a means for performing a transversal analysis of emergent body-politics between art, science, technology and society. Transversal analysis is conducted in this research through using transdisciplinary creative research practice as a methodological tool that is able to engage in several interrelating strands of inquiry simultaneously, rather than using methods that observe the more traditional approach of examining a singular subject or pursuing singular object-ontology theories.

Therefore, the body (as research site) and body-politic relationships are examined throughout this paper by inquiring into the complex 'nature' of the body itself - by inquiring, 'What is a body?'<sup>1</sup> from both Chinese and Euro-American perspectives. In this way, this research inquires into the *nature* of the body through using the clinical encounter between practitioner and patient as an alembic vessel to test out the art – science relationship through public engagement. By using the clinic as a frame for encountering others as well as other approaches to medical analysis that reorder our understanding of what medical and artistic interventions are and can do, this research inquires into the emergent body-politic of art-science relations by staging events that implicitly ask: "What if art could intervene into the life-and-death determining territories normally occupied by science?" and, "What could science *become* if it embraced the complexity and plurality of (artistic) creativity within its methodological practices?"

### Brief Introduction to Chinese Medical Philosophy

The early Chinese notion of the body as a temporal "interface" has a crucial significance for the creation of

<sup>1</sup>This question is related to Deleuze's famous question, 'What Can a Body Do?' - a question that recalls Baruch de Spinoza's §This question is related to Deleuze's famous question, 'What Can a Body Do?' - a question that recalls Baruch de Spinoza's statement that: 'We do not even know what a body is capable of.' See: G. Deleuze, *What Can a Body Do?* In: *Expressionism in Philosophy: Spinoza*. [4]

my compositions for *Pulse Project*. Central to the pre-modern Chinese conception of the body is that the body is a holistic organism [5] of different interrelated substances and essences that are shaped and mediated by the phenomenological (alchemical) processes of *yīnyáng* and *wūxíng*.<sup>2</sup> The Chinese observed *yīnyáng wūxíng* processes to be animate within all forms of being-in-nature - including animals - as a cosmological process. [6] In order for life to be sustained, the (primordial) substances of *yīn* and *yang* - opposite in nature and expression - must maintain a continual process of relative interaction, mutual restraint and interdependence because when *yīn* and *yáng* separate, death occurs. [7]

In addition to the perpetual dynamics of *yīnyáng*, *wūxíng* describes the cosmological processes of the five elemental “phases” that are made manifest by the changing of the seasons and the transformations of natural phenomena associated with these seasons, such as: Wood (materialised by the powerful growth and movements of spring), Fire (materialised by the heat and upward expansion of summer), Earth (materialised by the languid abundance of late summer), Metal (materialised by the contracting strictness of the autumn harvest) and Water (materialised by the cooling, sinking and storing capacities of winter).<sup>3</sup> These elemental phases (see Figure 2) are expressed both within the body (i.e., through the organs associated with the types of transformations expressed by a particular element and season) and also exterior to the body, such as the manifestations of seasonal processes, e.g., the condensing and sinking effects that winter cold has on natural phenomena.

Within the body itself, there are vital “substances” that are animated and shaped by both interior and exterior *yīnyáng wūxíng* processes. These substances are named: *qì*, *shén*, *xuè*, *zàng-fū* and *jīng-luò*. Roughly translated, these terms are described as the following: *qì* is the primordial substrate of the cosmos (both interior and exterior to the body), *shén* represents the embodied “spirit” that connects the human/animal mind with the cosmic ‘mind,’ *xuè* represents blood, *zàng-fū* is a term describing the *yīn* and *yáng* organs of the body and *jīng-luò* describe the *yīn* and *yáng* organ-networks of the body<sup>4</sup> (See Figures 2 - 4).

### An Introduction to Chinese Medicine and Music Theories

According to the *Huáng Dì nèijīng*, a seminal Chinese

medicine text compiled by unknown authors from as early as the 3rd and 4th century BCE, there are five *yīn*<sup>5</sup> *zàng* organs: the Spleen, Liver, Heart, Lung and Kidneys and

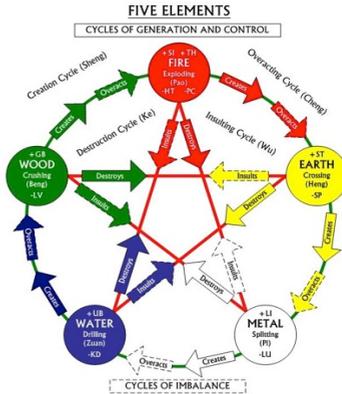


Figure 2: *Five Elements: Cycles of Generation and Control*, 2007, Don Reynolds. [Digital image] Public Domain Attribution. Source: Wikimedia Commons.<sup>6</sup>

six *yáng*<sup>7</sup> *fū* organs: the Stomach, Gall-Bladder, Small Intestine, Large Intestine and Bladder. [9] Each of the *zàng* and *fū* organs possess an associated energetic network, or ‘channel’ that runs between the depths of the organ to the outer reaches of the body. [9] The Pericardium, as an organ which encloses the Heart is regarded in Chinese Medicine as the Heart “protector” and is thought of as an extra organ of the Heart *zàng*. So, when we include the extra *yīn* Pericardium organ-network, altogether the *zàng-fū* organ-network pairs make a total of six *zàng-fū jīngluò* (*yīnyáng*) pairs and/or twelve *zàng-fū jīng-luò* (see Figures 3 - 4).

As it is these twelve channels that elaborate from the six *yīnyáng zàng-fū* pairs that are perceived and listened to at the six locations of pulse analysis (and are therefore

<sup>5</sup> See the Glossary for this term.

<sup>6</sup> This image demonstrates the inter-relational directions and expressions of the generating (reinforcing) and controlling cycles of the *wūxíng*. The first cycle travels in a clockwise direction, with the expression and development of each element gaining strength from the elemental phase that precedes it (such as: Earth creates and supports Metal). The “insulting cycle” (represented by the red arrows) is used as a “controlling cycle” in Chinese medicine facilitates one elemental process to control another elemental process from excessive expression or over-development. [8]

<sup>7</sup> See the Glossary for this term.

<sup>2</sup> Refer to the Glossary for a definition of these terms.

<sup>3</sup> These elements are capitalised to emphasise their distinctness as Chinese philosophical concepts and are therefore not to be associated with their standard use.

<sup>4</sup> Refer to the Glossary for a definition of these terms.

fundamental to pulse reading), the twelve *zàng-fū jīng-luò* form the fundamental structural basis for my graphic notations and audio compositions (this is discussed further the next section).

As mentioned above, each of the *zàng-fū* pair networks is also each associated with the phenomenal processes of the following five elements (*wūxíng*): Fire, Earth, Metal, Water and Wood. For example, the Stomach/Spleen network is associated with Earth, the Lung/Large Intestine network is associated with Metal, the Kidney/Bladder network with Water, the Liver/Gall Bladder network with Wood, the Heart/Small Intestine with Fire, the Triple Heater/Pericardium with “Ministerial” Fire. Also, the *zàng-fū* pairs are likewise associated with the fundamental colours of their respective element: Fire is Red, Earth is Yellow, Metal is Silver/White, Water is Indigo/Black and Wood is Green. [8]

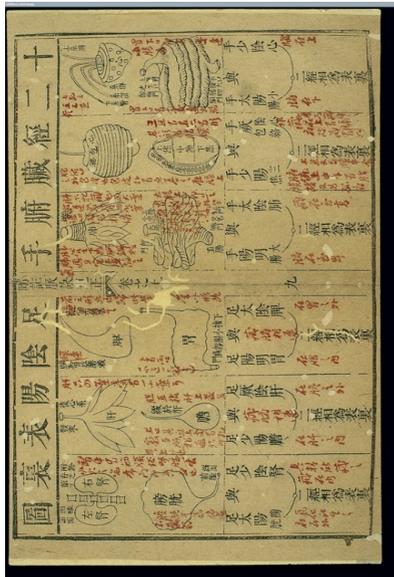


Figure 3: Interior and Exterior Relationships of the Twelve Channels of the Hand and Feet, Qing Dynasty 1644-1911. Shen Jing, Woodcut, Creative Commons Attribution. Source: Image Courtesy of the Wellcome Trust Library.<sup>8</sup>

<sup>8</sup> This image is attributed to have been the work of Shen Jing during the Qing Dynasty. This woodcut illustrates the *yīn* and *yáng* (interior and exterior) relationships between the twelve *zàng-fū jīng-luò* (organ-channel network). Starting from the bottom of the illustration: 1. Water - the Kidney (*yīn*) and the

Each element/organ-network is also associated with a fundamental musical tone of the traditional Chinese pentatonic scale: *gōng, shāng, jué, zhī, yǔ*. [10] The frequencies used in my audio compositions are therefore calculated using these traditional pentatonic tones, this is discussed further in the section titled, “Soundscape Composition as a Healing Modality” below.

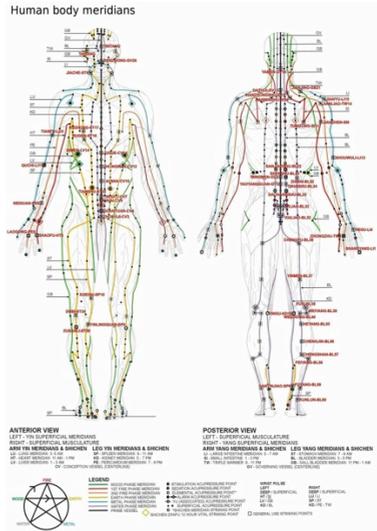


Figure 4: Human body meridians, 2010, Author: KVDP, digital image, Creative Commons Attribution-Share Alike 3.0 Unported license, Source: Wikimedia Commons.<sup>9</sup>

Bladder (*yáng*). 2. Wood – the Liver (*yīn*) and the Gall Bladder (*yáng*). 3. Earth - the Spleen (*yīn*) and Stomach (*yáng*). 4. Metal - the Lung (*yīn*) and Large Intestine (*yáng*). 5. Ministerial Fire - the Pericardium, which looks like a bees nest (*yīn*), and the Triple Burner (*yáng*). 6. (at the top of the image) Fire - the Heart (*yīn*) and Small Intestine (*yáng*). The text illuminates on how these organs also share a “six-level” system of further inter-correspondence between the organs. For instance, the Lung and Spleen *zàng* are paired to form the *taiyīn jīng-luò*, the Stomach and the Large Intestine *fū* form the *yangmíng jīng-luò*, and so on.

<sup>9</sup> This diagram demonstrates a contemporary overview of the twelve *zàng-fū jīng-luò*. Each *zàng-fū jīng-luò* pair is signified by the coloured lines on the body. The *jīng-luò* are: Lung, Large Intestine (blue lines), Stomach, Spleen (yellow lines), Heart, Small Intestine (red lines), Kidneys, Bladder (grey lines), Triple Heater, Pericardium (orange lines), Liver, Gall Bladder (green lines).

## Pulse Reading Method

In contrast to simply counting the beats of the radial pulse (as in the West), in Chinese medicine, there are three positions on each wrist to palpate the pulse - making a total of six positions of palpation altogether (refer to Figure 5). From each position (signified by the black dots on wrist in Figure 5), the practitioner registers at least two levels from which the pulse waveform qualities can be felt and are referred to as *superficial* and *deep* (making a total of twelve locations of palpation altogether for the pulse). Each position is also associated with the specific *zàng-fū*: the Lungs, Large Intestine, Stomach, Spleen, Heart, Small Intestine and so on. Each *zàng* and *fū* position corresponds to a lexicon of pathological and ideal pulse waveform images.

For example, at the middle position on the left wrist (the position of the Liver and Gallbladder *zàng-fū* pair), there is a list of corresponding images: “bowstring,” “choppy,” “replete,” “fine,” etcetera, and these waveform images (and their amplitude and vibratory quality) reveal the state of health of this *zàng-fū jīng-luò* (organ-network). There is more “data” than just the pulse images and vibrations. A practitioner also intuitively discerns other sorts of information from touching others, e.g., how they feel about their place in the world, their living situation, an image of inner courageousness or a sense of a person being diminished, etcetera. It is this “artistic” aspect of Chinese pulse diagnosis that this project calls attention to and extends as *Pulse Project* focuses solely on this moment of clinical art as the basis for the performance.

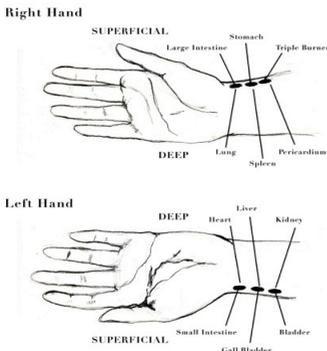


Figure 5: *Chinese Pulse Diagnosis Diagram*, 2013, © Michelle Lewis-King, Digital Illustration.

## Soundscape Composition as Healing Modality

My use of audio programming intensifies its focus on

listening as the determining factor for composing soundscapes - as I use audio programming to sculpt the dynamics of each sine wave within my compositions. In this way, the embodied (sensory) and intuitive aspects of listening form the primary rationale for my composing soundscapes. It is this act of listening-as-composing itself that is used as a means for characterising the fluid and electric-like nature of the vibrations I feel and intuit within people's pulses into sound. In this context, I conceive of sound in its essence - as a sine wave - thereby generating shaping sine waves by using audio programming arguments as a means for translating the range of waveform sensations that I perceive during the pulse analysis procedure of the performances. In my notations I record the pulse waveforms of the twelve organ-networks felt in each individual's pulse to create a unique soundscape. Figures 6 and 7 demonstrate the pulse wave-forms of the *zàng-fū* (reading from top to bottom): Lung, Large Intestine, Stomach, Spleen, Triple Burner, Pericardium, Heart, Small Intestine, Gall Bladder, Liver, Kidneys, Bladder - *R* and *L* indicate overall right and left wave forms.

According to the medical theory of the *Huang Di neijing* (1 BCE), the ‘ideal’ pitch of each of the *zàng-fū*, or the pitch at which the organ network ideally oscillates at and responds best to are as follows:

- Heart/Small Intestine [*Zhǐ* - Fire pitch: 399 Hz]
  - Spleen/Stomach [*Gōng* - Earth pitch: 264 Hz]
  - Lung/Large Intestine [*Shāng* - Metal pitch: 295 Hz]
  - Kidney/Bladder [*Yǔ* - Water pitch: 440 Hz]
  - Liver/Gall Bladder [*Jué/Jiao* - Wood pitch: 350 Hz]
- [11]

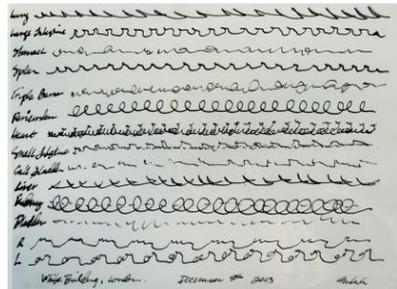


Figure 6: *White Building 4*, 2013, © Michelle Lewis-King, Acetate, ink [A4].

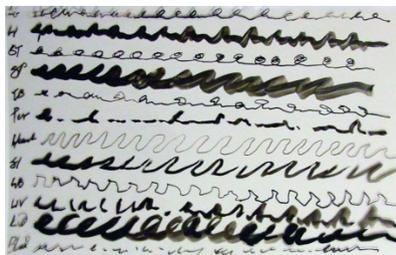


Figure 7: *Cambridge Notation I*, 2014, © Michelle Lewis-King, Ink Painting on Acetate [A4].

In order to convey the landscape of the body according to Chinese Medicine pulse diagnostics as a soundscape, each pulse waveform from each pulse reading is translated into a composition of sine waveforms modulated to exemplify the signature qualities of the pulse waveforms as recorded in the notations. For example, the Spleen and Stomach waveforms in Figures 6 and 7 correspond to the *gōng* waveform pitch - at the frequency of 264 Hz – and these organs are associated with Earth. According to traditional Chinese medicine and music theories, the 264 Hz pitch/frequency is considered to be the most therapeutic tone/vibration for the Spleen and Stomach (Earth) *zàng-fū* network [11] and so each of the twelve pulse waveforms is translated into sound in my audio compositions to both represent and “harmonise” the energy of the specific *zàng-fū* networks. My soundscape compositions draw upon my experience as an acupuncturist (therefore it is a form of diagnosis in Chinese medicine) in that I respond to and aim to moderate imbalances felt within participant’s pulses. Each of my compositions aim to rebalance the overall “pitches” of the participant’s *zàng-fū jīng-luò* in order to promote the health and well-being of each participant.

### Practice-Based Methodology

*Pulse Project* uses practice-based research (PBR) in a socially-engaged context (places the private clinic within the public arena) to use artistic research and interpersonal communication to explore current social awareness of art, medicine and technology practices and to co-create a new set of connections and understandings about these practices as a central part of the research processes. To do this, each encounter with research participants creates ‘relationscapes’ [12]. By using relational touch, tracing and notating the participant’s unique pulse rhythms, interpersonal communication, and composing or playing bespoke soundscapes, these PBR methods both draw upon and evidence the co-emergence and co-production of

relational meaning that takes place between researcher and research participant within the performances.

*Pulse Project* reinterprets the standard uses of case-study consultations and clinical notes as a method for mirroring the clinical encounter in order to: a) question and test what a clinic *is* and can be in public, and, b) open up imaginary and autonomous spaces within the clinical encounter that can be discussed and rearranged via creative communication and production with others.

In this context, using PBR as a method for gathering clinical data can then reflect not only explicit clinical knowledge (i.e., resting heart rate and so on), but also allows for the inclusion of the sensorium of consciousness to become an integral aspect of the clinical production (the outputs of which do not produce a diagnosis but rather artworks *about* the diagnostic process). Consequently, using PBR to abstract the diagnostic process creates a zone intensified ‘listening’ to another person (and to tacit experience), which at the same time produces a new way to listen to clinical practice itself.

### Participant Feedback

In terms of testing whether this project, which touches on converged areas of practice, can be communicated to participants in a clear and cohesive manner that also engages their creative response, the best confirmation of this ‘communication’ is given by this participant who writes:

“Moreover, not every biological process taking place in our bodies is fully explained and understood even in “sophisticated” western medicine, so maybe searching for the new unconventional methods like you do leads us to understand our own species in a totally different way. Although pulse reading has long history and today it gives us lot of information about functioning some of our internal organs, your method is an amazing way to hear it in a way we never did... from beat to ambient music... it makes me think that my body has not only rhythm but also it’s own, unique melody.”<sup>10</sup>

This response addresses precisely the reconsideration of the dominant cultural narratives surrounding embodiment that I have endeavoured to reconfigure through my performances and soundscapes and gives an external source of confirmation to the research objectives of this study. Particularly as this participant notes that she

<sup>10</sup> This text is an excerpt from the ‘Participant Feedback Log’ within my thesis (where all participant-researcher communication is archived. This particular participant is anonymised on ethical grounds and was given the name ‘White-Building 3’ in order to identify the individual and to link the feedback commentary with the soundscape produced for that individual. [13]

can hear her body 'in a way [she] never had before' and that her body 'has not only rhythm but its own unique melody,' these statements give substance to the notion that artistic production can offer an 'enriching' experience of the scientific' encounter.

## Conclusion

Since human touch bridges oneself with another, the development of a technology of touch <sup>11</sup> based on the model of early Chinese pulse diagnostics is elaborated on in this study as a means for challenging and extending contemporary technoscientific practices. [15] More specifically, the establishment of a technology of touch is investigated in this study as a digital methodology that generates new articulations of an embodied consciousness via sound that runs counter to the trends within "interactive" new media that places its emphasis on the mechanical measurement and mapping of participant's vital signs, such as sonifying data from biosensors, stethoscopes and forms of technology which rely on mathematical calculations as the golden mean for representing the interior of the body and embodiment. [1]

*Pulse Project* questions aesthetic and ontological axioms that currently underpin contemporary art, medicine and technology by researching these concerns into relation with the concerns of pre-modern Chinese medicine and music theories. Accordingly, this research travels laterally between cultures and practices and calls for a radical change in conceiving of the body in either "Oriental" and "Occidental" terms in order to both reduce ethnocentric ignorance and also to travel beyond the tired bifurcations between mind and body, self and others, the "West" and its Othered cultures.

Furthermore, *Pulse Project* examines the relationship between the arts and sciences from a transcultural perspective that generates a fresh approach to the arts/humanities-science relationship. In using my creative practice together with my scholarship of two forms of medicine (biomedicine and Chinese Medicine), this project offers unique comparisons of expertise and approaches between disciplines, histories and cultural practices from the position of extending expertise from within all of these systems. Finally, being trained in both art and science fields allows me to disrupt the "two cultures" approach still active within humanities and science discourses through dedicated involvement and practical experience in both fields. At the same time, this research also breaks with the ethnocentric limitations of the coherences of "Occident" (the Western self) and "Orient" (the Other as it is "oriented" to the West) by creating a new dialogic imaginary that exists *between* these cultural categories.

<sup>11</sup> This concept aligns with Elisabeth Hsu's "Towards a science of touch, part I: Chinese pulse diagnostics in early modern Europe." [14]

## Glossary

1. *Jingluo* - This translates as the 'meridians' that extend between the *zangfu* and the exterior of the body. [16]
2. *Shāng diao* scale - an early Chinese pentatonic scale tuning method using the note *shāng* as the fundamental tone. [10]
3. *Shén* - The Central "spirit" or "universal mind" (this is not a Greek-Judeo/Christian concept) that governs the overall processes of the body and also oversees the other four "spirits" of the body - the *Hun* (ethereal soul), *Po* (corporeal soul), *Yi* (intuitive intellect), *Zhi* (the will). The *shén* as an energetic entity is rooted in the body via the connections between the heart-brain-mind and *xue*. [17]
4. *Qi*- Described as an all-pervasive life force, this energetic substance is the basis for Chinese medicine and science. It is the material of transformation itself and the range of transformations could be understood to be as wide as the cosmos itself - traveling from the density of a white dwarf to the briefest emanation of quantum particles. In Chinese medicine, practitioners try to manipulate the flow of this energy to assist healing - based on Chinese Medical principles. [18]
5. *Wúxíng* - Often called the "five phases" or elements (Earth, Fire, Metal, Water and Wood), this term describes a systematisation of phenomena into five distinct movements or phases - phases that describe the movement and characteristics of the changing seasons of spring, summer and so on. These elements have a specific order and inter-relationship with each other. One element may generate or control another, i.e., winter generates spring, whereas autumn is in contrast to spring. These elemental phenomena can be used to describe the phasic interaction between cosmological entities or between the organs of the body. [19]
6. *Xue* - This substance translates as "blood" and corresponds to the biomedical understanding of blood, but is also conceived of as a *yin* essence substance that both moves and is moved by *qi*. [16]
7. *Yīn-yáng* - Describes two opposing yet interdependent and interconnected primal forces that are characterised by phenomena that are cyclical or on a spectrum, such as 'day and night,' 'hot and cold,' 'internal and external,' etcetera. This continually shifting pair of opposites constitutes the fundamental basis for early Chinese philosophy and science. [20]
8. *Zàng-fū* - *Zàng* refers to the five *yīn* organs of the body: Heart/Pericardium, Spleen, Liver, Lung, Kidney. *Fū* refers to the six *yáng* organs: Large Intestine, Small Intestine, Gall Bladder, Urinary Bladder, Stomach, Triple Burner. These *zàng-fū* each have an associated channel that extends the energy of the organs along points across the body. As simple definition of the functions of the *zàng-fū*: the five *yīn* organs are said to "store" and produce essential fluids, while the six *yáng* organs "transform" essences into production of movements/energy. [21]

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