

Annual Art Journal 2018

**ISSUE 07**

SENSE



ISSUE is an international art journal focussed on exploring issues in contemporary art. With an emphasis on Asia and Singapore, this annual publication is an inter- and trans- disciplinary journal that carries research articles, essays, and interviews on a range of disciplines from contemporary art, film, music to theatre.

This is the seventh volume of ISSUE.



1 McNally Street  
Singapore 187940  
[www.lasalle.edu.sg](http://www.lasalle.edu.sg)

ISSN: 2315-4802

ISSUE is an annual art journal published by LASALLE  
College of the Arts

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Designed by Sarah and Schooling  
Printed in Singapore by Dominie Press

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*Introduction*

**Sense**

Venka Purushothaman  
01

*Essays*

**OMULAN - 5 Senses (The)**

Matei Branea  
03

**Para-Haptics. A Touch of Marble**

Călin Dan  
09

**Ultra-aesthetics and advanced  
neuroplasticity or simply, a path to  
expanded consciousness**

Marcos Lutyens  
19

**The House of Dead Scents**

Vida Ognjenović  
33

**Sensing Machines**

Andreas Schlegel  
41

*Exhibition*

**Audible**

Curated by Ahmad Mashadi  
51

*Conversation*

***Affective Mediations and the Politics of Sound:  
Samson Young in Conversation with Joleen Loh***

Joleen Loh  
83

*Contributors' Bios*

97

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## Sense

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Inebriated by a sense of not knowing, I vacillate between a noun and verb: Sense.

But then again how can I sense this vacillation? As my optic fibres unleash themselves, I cannot help but be invoked by Pier Paolo Pasolini's poetry, *The Privilege of Thinking* (1961), in which he writes:

*Ah, to withdraw into myself and think!  
To tell myself, here, now, I'm thinking, sitting  
on a seat, by a friendly window,  
I can think!*

But can I? I sense the impending awaiting to be unearthed out of these pages of *Issue*.

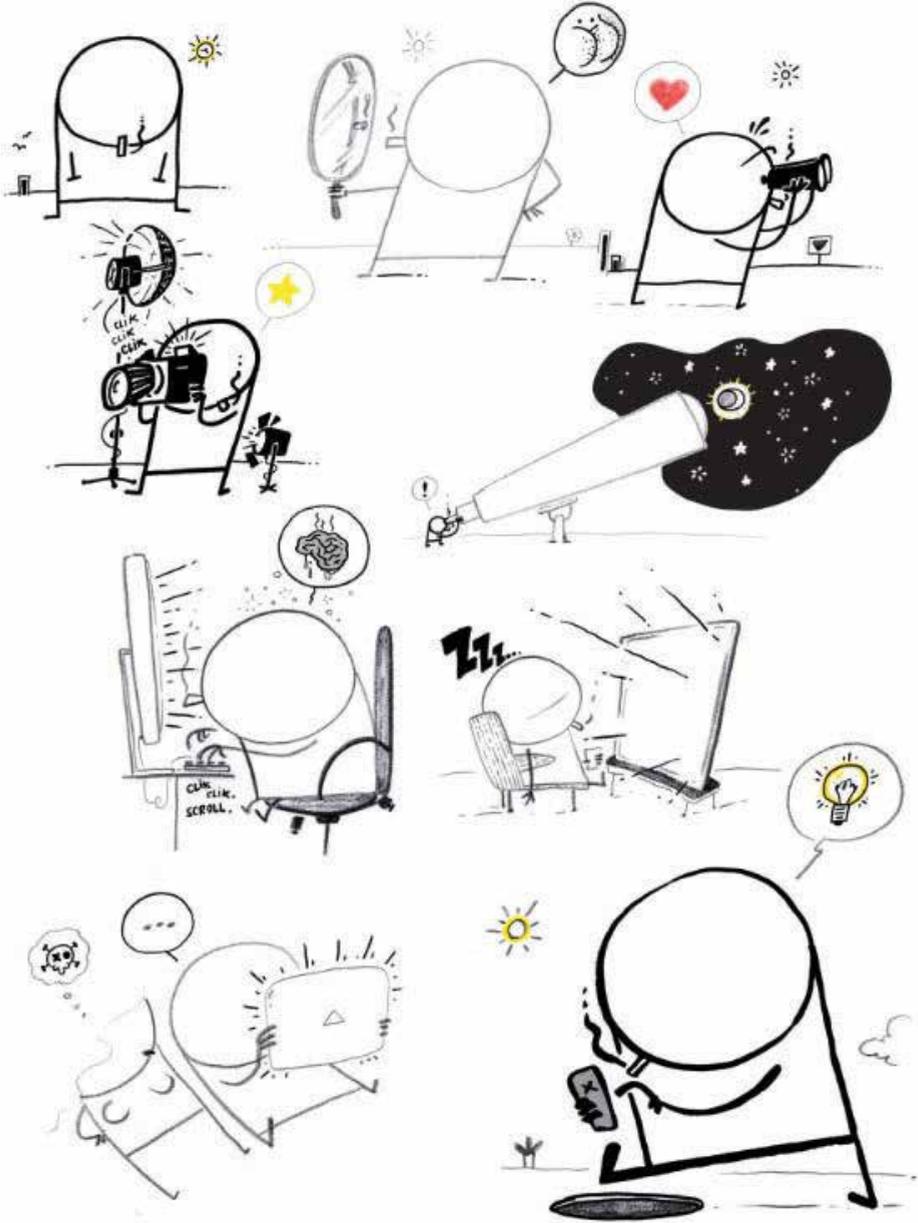
From invoking our five senses to making sense of conditions around us to sensing mathematically synaptic conditions, these pages unfold an inquiry into what it means to sense, make sense, create sense and flip into non-sense. As an interplay of words, moods and ideas, the rich and abundant literature on the concept of sense leaves us all knowing too much. Gottlob Frege and Bertrand Russell provided a useful starting point in meaning-making for us to make sense of the world, whilst Marshall McLuhan and Walter Ong introduced and elaborated on the sensorium or sensory apparatus that envelopes us. It provided a useful pier to explore dissociated associations, sometimes alternatively described as synaesthetic structures, that colluded with extremes as seen in contemporary artistic expressions such as visual music, sound art and dance film. Synaesthetic structures provided a way to unpack institutionalised and scientific understanding of our kinesis and sensory perceptions.

This edition of *Issue* is curated around the question: what do we make of 'sense' today? How do we make *sense* today? As the world twirls into an overdrive of ideas and polemics, confronted by a leitmotif of vaporising identities and boundaries, the act of ignoring our mediated surrounding may be the opportunity to commence a study of sense, sensing and sense-making. As inter-medial relationships effuse into strange unseen moments of pain, surprise and oddity, what is left of common sense?

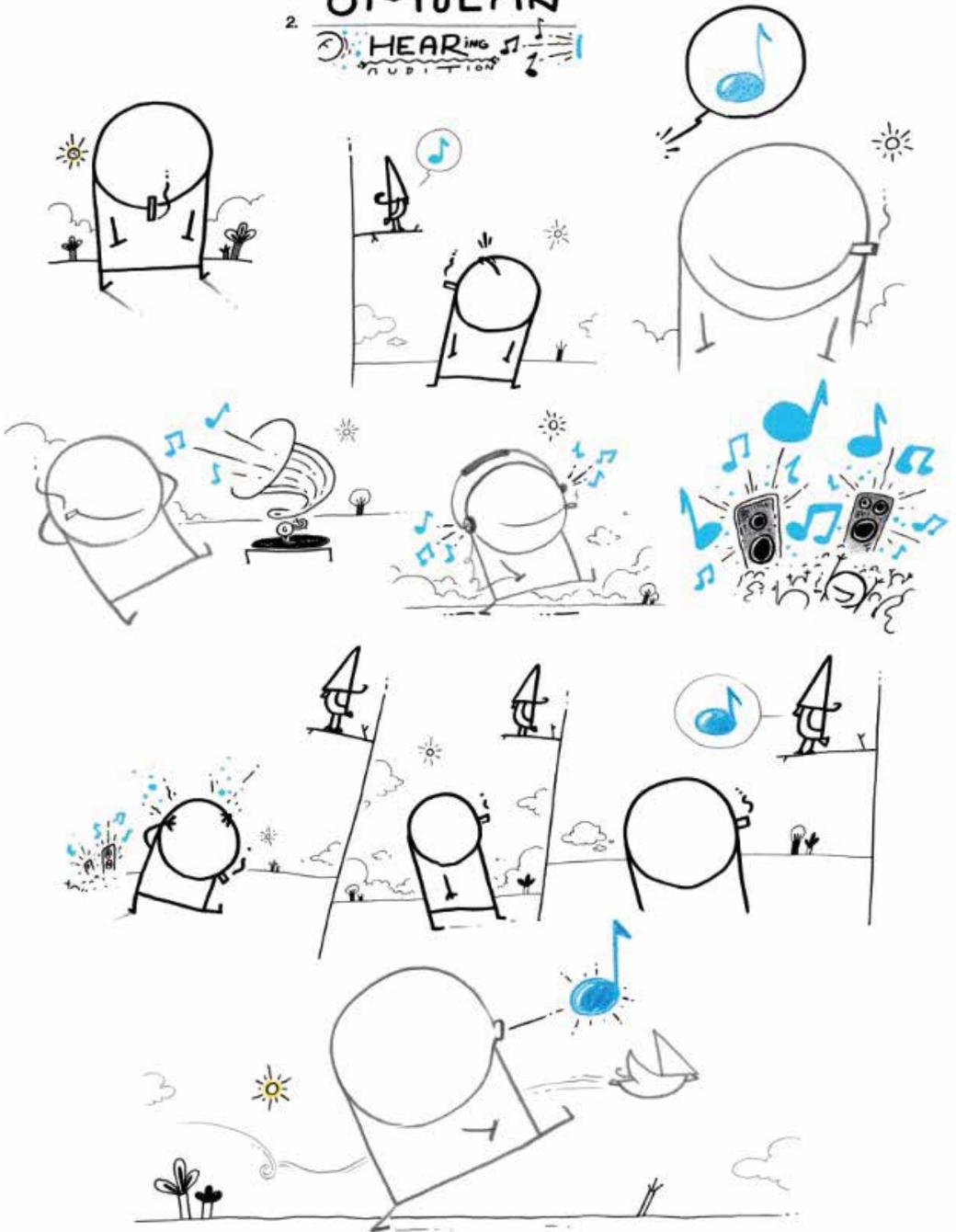
To not force an error by contextualising the texts, I invite readers to touch, see and read the tincture of these pages through renewed hope. Read slowly and slowly.

# 1. OMUL AN

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VISION

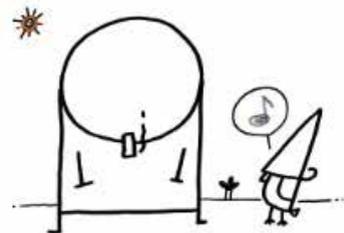
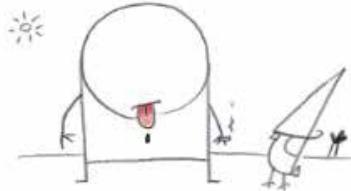
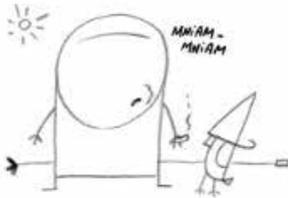
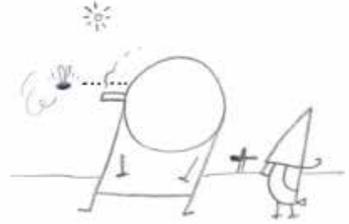
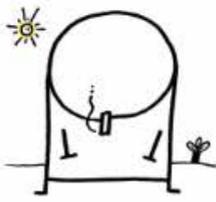


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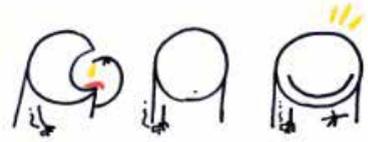
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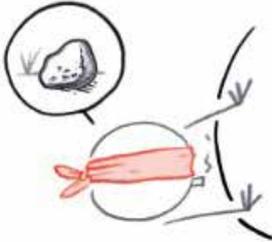
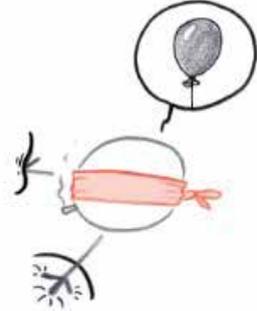
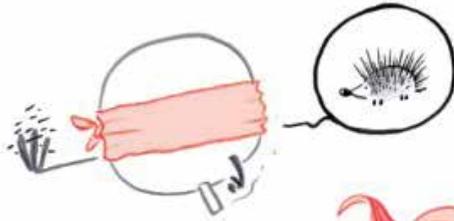
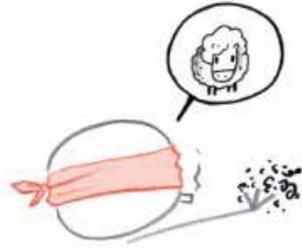
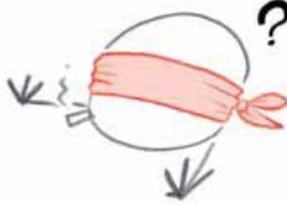
MMM...



# 5 OMULAN

SOMATO SENSATION

Touch



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## Para-Haptics. A Touch of Marble

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Among other things that make my day interesting, I am teaching a course titled *Representation of movement in visual arts*. It is an opportunity to question in an applied manner what role *the senses* play in art history. It is a haunting question for the lecturer who must harness the attention of his students in a journey through millennia of forms, which seem to rapidly lose any relevance in our daily experience and practice of culture. The course entails a mind game: my students' main subject is video art and computer imaging (both practice and theory). Since I am a practitioner in that field, it might seem logical that the 'movement' I will try to analyse pertains to contemporary art production. In actuality, our encounters are a wandering-through of moments in the history of forms from early Antiquity to the 20<sup>th</sup> century, moments chosen for their relevance in a process of emotion creation: moving verbally through art (history) in search of what moves our brains into generating empathy (with art).

I am not looking for knowledge dissemination in those encounters: neither method sharing nor the establishment of a certain order of priorities in the approach of the fuzzy field of visual arts. I am interested in the slim chance of an awakening of awareness to the inner processes of the individual in (inter-mediated) contact with manifest objects. The intermediation through surrogate visuals (reproductions of various sorts) should be a hindrance and a complication. But it has not been, as what stays central to the approach is precisely the way in which the conglomeration of senses is activated by the contact with the image, or any image eventually.

What is essential here is thus another type of 'movement' – the circuit of information that goes from the eye, to the brain, to the skin, to the palm of the hand, to the brain again and, if all goes well, from there to a diffuse zone situated under the solar plexus, identified in Hinduism, Buddhism and Jainism as one of the *chakras*, and then back again to the brain and so on and so forth. *Chakra* comes from the Sanskrit word अनाहृत which means, among other things, circle or wheel. It implies the process of return, of cyclic connection between different interdependent points, which is very much what I am trying to illustrate for my students with the derivative term 'Para-Haptics'.

The term 'haptics' first caught my attention at the end of the 1990s, when I was working on the possibility of unconventional physical interfaces adapted to navigate immersive 3D environments. It was my ambition to go beyond the responsive environments in Jeffrey Shaw's *Legible City*<sup>1</sup> (an interface bicycle), or my own *Happy Doomsday!*<sup>2</sup> (a press-

<sup>1</sup> *The Legible City* is an interactive art installation created in 1989, Nagoya, Japan. <https://www.jeffreyshawcompendium.com/portfolio/legible-city/>.

<sup>2</sup> *Happy Doomsday!* (1998-1999) was developed during an artist-in-residency project at V2\_. It created an apocalyptic environment, using conventions of computer games. <http://vz.nl/archive/works/happy-doomsday>.

chest fitness machine interface), into a zone where tactility would be a gateway to enhanced sensorial experience. As the domain of haptics research is already embedded in the industrial environment, I did not feel that anything new could come from there for the visual arts. Recent history proves me right—haptics is a common feature nowadays: we carry it in our pockets, in the smart phone.

Still, the concept remains central to my understanding of how our senses work, and it plays an essential role in relation to the visual, due to a characteristic that I describe as 'stealthness'. If the assumption of the haptics circuit sketched above is verified, it is a surreptitious, furtive and unobtrusive process. Using the smart phone as an example at hand (literally), we can better understand how the haptic relation enters the domain of daily routines to the point that it is no longer noticeable as an agent of sensual perception. However, we can try to limit this by embarking in an act of techno-critique: by recuperating the self-awareness of our relationship with the haptic processes, we interrupt the occultation ('stealthness') induced by the newest technologies in our relationship to the world of senses.

The concept of haptics entered modern language through the contribution of a fascinating German thinker, Max Dessoir (1867–1947). It is difficult to describe Dessoir's practice in just one sentence. As a student of philosophy and medicine, he practised psychology, in which he developed a theory about double personality that manifests in dreams and hypnosis. A deceptive area of his work involves magic and the paranormal (medium communication, poltergeist, etc.), of which he was a sceptical researcher. This last thread could indicate that Dessoir was a unconventional reader of phenomena, one who aspired to harness the unknown and the unfathomable with the instruments of practical science.

Dessoir was a man of his time not only because he could not ignore the strange but powerful combination of empiric research and fascination with the occult that defines the spirit of *la Belle Époque* (*Beautiful Era*) of that time; but also because he fought for the establishment of art history as an autonomous discipline. By the end of the 19<sup>th</sup> century, Immanuel Kant's aesthetic view of the world, as formulated in his *Critique of the Power of Judgment* (*Kritik der Urteilskraft*, 1790), was so predominant in the thinking about art that it inevitably came into question. A plurality of disciplines started to peel at the onion of this complex subject – psychology, ethnology, archaeology, etc. Dessoir is credited with combining the top-down perspective of general aesthetics with the bottom-up approach of empirical exploration. His curious mind, which roamed from physiology to psychology to the visual arts, helped Dessoir bring together perception and art in his publication *Aesthetics and Theory of Art* (*Ästhetik und allgemeine Kunstwissenschaft*, 1906) and, in so doing, opened the gates for what came after: a continuous oscillation between representation and symbolism in the writing of art history.

Haptics acquires a central position in the context sketched above, as it expresses not only the perceptive dimension of our relation to the objective world, but also opens new possibilities for the understanding of the phenomenological processes that define this relation. A proponent of art as the process of creating forms, Dessoir was a psychologist who was praised by Sigmund Freud in his *Three Essays on the Theory of Sexuality* (*Drei Abhandlungen zur Sexualtheorie*, 1905) as well as a

source of inspiration for *The Double* (*Der Döppelgänger*, 1971) by Otto Rank. When Dessoir developed the term haptics as a necessary addition to the terms optics and acoustics in academic research, he was probably not only motivated by his practice as a psychologist, where the sense of touch is relevant in both pathology and diagnosis (autism, hysteria, etc.), but was also prompted by his attraction to the uncharted—the complex gratification experienced in relation to art.<sup>3</sup>

<sup>3</sup> Haptics appears in his book *Ueber den Hautsinn* (1892), which can be translated, approximately, to *On the Sense Exercised through the Skin*.

Interestingly, around 1889, some three years before denominating haptics, Dessoir had already begun exercising his sense of linguistic invention with the term ‘parapsychology’. In his words, parapsychology would present the advantage of defining “a fringe area between the average and the pathological states,” while remaining cautious about the limited practical value of such neologisms. It is this ambiguity between concept and usefulness, between language and perception, that gives me reason for considering Dessoir’s ‘haptics’ as more than a concept derived for practical necessity. When talking or writing about ‘para’-haptics, I do so with a focus on this method of enriching by undermining, a method that characterised Dessoir’s own way of thinking. What interests me in his definition of haptics is not the exacerbation of the sense of touch, but the role of the visual in multisensorial perception of cultural products.

It is useful to look at the etymology of the word ‘haptics’. There are three root words of the term in ancient Greek: *Haptikos* (ἅπτικός) means “pertaining to the sense of touch”; *haptesthai* (ἅπτεσθαι) means “to contact” or “to touch”; and *haptein* (ἅπτειν), means “to fasten”, or “to bring two things together.” While the first two root words point, rather straightforwardly, to the sense of touch, *haptein* is more ambiguous and general, and implies a process. It is more about communication than direct action. It induces the idea of a binding relation among all the senses, of which the most elusive, least connected sense to the conscious brain is touch. By bringing touch into the realm of visual perception, Dessoir opened a gateway to understanding cultural production that goes beyond art itself.

Let us turn our attention to Max Dessoir’s more famous contemporary, Alois Riegl. In his work *Late Roman Art Industry* (*Spätromische Kunstindustrie*, 1901), this brilliant member of the Vienna School of Art History plays at length with the term of haptics, which, in his text, becomes a concept pertaining to the history of various methods of generating art. For Riegl, haptic perception and optic perception are two phases in the making and perceiving of art. He unified those two steps under the concept *Kunstwollen* (a more or less autonomous drive of a community towards a certain stylistic development, independent of technical concerns or cultural imitation). Riegl also analysed this concept in relation to Nature, and identified three stages of perception:

1. The haptic: contemplation of an object at close range, with a total rejection of the natural environment, of which the art object itself purposefully defies attention. A possible example, according to Riegl, is Egyptian reliefs. Their flat and subtle surfaces require arm’s length contemplation.
2. The intermediary: contemplation at medium range, with the object sharing some optical space with the natural environment. An example could be Classical Greek reliefs and architectural decorations. Haptics still plays a role in this stage of perception.

3. The optic: contemplation of a broad category of objects whose visual powers are intended to be shared with the natural environment, but which also simultaneously resist it; by extension, these objects require contemplation from a generous distance. Riegl considered Late Roman art a good example of such objects.

What fascinates me here is not so much the academic search for perception-system, characteristic to Riegl's writings, but rather the symbolic value of the 'haptic-optic,' 'close-distant' coupling of terms. One should not be fooled by the technicalities described above, as it all boils down to participation in the complex act of seeing, which involves all the senses, in different proportions. The cultural 'I'—carrier of various experiences and a moving psychological profile—comes into contact with visual phenomena through a combination of sensory channels, as well as direct and previous experiences mediated through memories. For me, the *Parthenon Frieze* is filled with a complex architecture of sounds that is generated by a cavalcade through the narrow, cobbled streets of an old city: horses snort and whinny; men shout and laugh; hooves slip on larger stones or hit the flat, hard surfaces; the soft swish of the tunics' fabric moved by the wind, etc. However, this is my experience, which cannot—and should not—be multiplied.

The haptic experience is not merely a practical response and a sensorial consequence of stealth remote control systems (as the touchless haptic-technology proposes nowadays in various interfacing devices) which are feeding our lust for domination over the physical environment. It is a complex way of bringing together the visual, tactile, emotional and cultural in a fluid process without a specific goal, and therefore without a determined timeline, that goes from cause to effect, from motivation to action to result. The stealthiness I mentioned above is unawareness about the sophistication of our own experiences in the domain of the visual. This sophistication is not necessarily ours, as individuals, but it pertains to the complexity of the domains involved. Thus, it is necessary to bring the term haptics into the realm of para-haptics, in order to broaden its scope and give the concept the capacity to cover "a fringe area between the average and the pathological states"—to apply Dessoir's way of explaining the notion of para-psychology.

In the Craiova Art Museum, among other masterpieces by Constantin Brâncuși, there is one that I consider among his most intriguing work. It is called *Torso*, an inappropriate way of titling—from misplaced prudery, I would say—since the sculpture clearly represents a fragment of the lower body of a female nude – her thigh. The sculpture cannot be categorised as being inspired by a grown female model, as it does not have the maturity of shapes; the dimensions of the thigh are indicative of the body of a little girl, but the soft roundness of its form is still suggestive of sexuality, contradicting the evidentiary information of the body's age as proposed by a measurement-analysis data. The anatomic treatment is ambiguous but the overall sculpture is precise in the sense of its finish—the minute definition of the surfaces and its texture. The marble is polished to a tender surface that captures light without sending it away: there is no reflection, or barely. There is no transparency either, although from certain angles or, in strong light, the stone hints at translucent, to a total complicity with the sun, to abandonment. Apart from the anatomical one, there is a second ambiguity—between the shape and the light surrounding it. Then, there is a third and last ambiguity, which is even subtler—between subject and scale.



Constantin Brâncuși, *Torso*, 1912, Art Museum, Craiova.  
Photo: Călin Dan

While contemplating the stone from different angles, the viewer acquires contradictory information. The front left side is defined by pudicity, due to the defensive bending of the nude, as if it is trying to hide its pubic area. From the back left side, the same act of bending acquires sexual notes, a promise of submission. It suggests that the viewer is looking at a mature body, rendered in sub-natural dimensions, like in so many late Classical Greek frieze sculptures (such as the *Bassae Frieze* of the Temple of Apollo Epicurius, the Mausoleum from Halicarnassus, and the *Nereid Monument* at Xanthos). These ambiguities evoke the intermediary contemplation method detailed by Riegl—characterised, according to him, as a combination of haptic and optic.

The contemplation of ambiguities is foreplay and prepares the viewer for the full-blown contact with the roundness of the stone, or better yet, the absence of it. When the viewer takes a step back from the sculpture, the thigh appears as an anatomic fragment partially extracted from a small block of marble. The body is minutely described in the front; it is brutally cut, asymmetrically, along the vertical axis, which sections the softness of the abdomen and pubis, and also leaves a damaged (unfinished) portion of the inner left thigh. The cut is asymmetrical in depth as well. From the back, where the erotic innuendo lies, the body is not sectioned, but is held prisoner with its right half in the grained, rough, dirty part of the untouched marble block.



Constantin Brâncuși, *Torso*, 1912, Art Museum, Craiova.  
Photo: Călin Dan



Constantin Brâncuși, *Torso*, 1912, Art Museum, Craiova.  
Photo: Călin Dan



Constantin Brâncuși, *Torso*, 1912, Art Museum, Craiova.  
Photo: Călin Dan

Eventually, the viewer is overcome by the evidence that Brâncuși's work (which, to my mind, should have been titled *Thigh*) is a condensed look at the history of the act of sculpting—from the relation between carver and quarry, to the collaboration between sculptor and model, to the dialogue between sculpture and architecture. In 1912, a mature Brâncuși demonstrated mastery but also empathy with 2.5 millennia of art history. He achieved this with a small piece of marble, that bends and vibrates in soft light. Needless to say, the skin (this much ignored organ that enables haptics) is central to the composition of the thigh. The broken skin, cut violently along the lines of the elemental marble, is a suggestive image for ending this journey through the maze perception defined, more than a hundred years ago by Max Dessoir, as haptics.

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# Ultra-aesthetics and advanced neuroplasticity or simply, a path to expanded consciousness

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**May 8, 2018**

At 4:48 am, my dog Jayla scratched at the door to get out. At 4:49 am, a magnitude 4.5 earthquake on the Richter scale struck below the San Andreas Fault and everything in the bedroom started swaying. How did my dog pre-sense what we did not?

In order to understand how the senses work, I interviewed neuroscience Professor Vilayanur Ramachandran and our conversation quickly turned to synaesthesia.<sup>1</sup> He explained how a defect in the 'pruning' gene creates a flaw in the brain circuitry that ends up creating involuntary associations that lead to synaesthesia. In this condition, numbers and colours are automatically associated in a part of the brain called the fusiform gyrus. For example, every time the synaesthete sees the number five it will appear blue.

<sup>1</sup> Marcos Lutyens. *Professor Vilayanur Ramachandran interviewed by Marcos Lutyens* in <https://vimeo.com/139512469>.

Ramachandran and I also talked about the fine line between synaesthetes who involuntarily cross-associate different senses, and artists and poets with a propensity to use metaphors. Ramachandran's research seemed to show that the latter group has a proclivity to link seemingly unrelated concepts, because of a higher level of interconnectivity in their brains as compared to the general population. In other words, the 'flaw' in the pruning gene that synaesthetes have is the basis for artistic and poetic creativity, which is also to a great extent 'involuntary' in the poet/artist population.

## **Greater sensing and broader brain processing**

What if we take this one step further by increasing the interconnectivity in our brains while simultaneously exploring how our senses can be enhanced, augmented, or added to? What if instead of syn-aesthetics, or the "union of the senses" as the etymology of the word implies, we consider ultra-aesthetics? Or, how we could foster sensing 'beyond' our normal capabilities, while creating ways in our consciousness to process not just the senses we have in a more interlinked and attuned way, but to encourage new processes of consciousness in the brain. This could be termed advanced neuroplasticity.

In order to wrap our heads around this idea, perhaps we need to imagine beyond the senses that are available to us, and how neuroplasticity is compensating for this lack. By this I mean the brain's ability to compensate for disease or injury by creating new neural pathways that

allow the subject to adapt to changing situations and environments.

In April this year, I conducted a series of workshops with a handful of visually impaired students from the Strazdumuiža Boarding School, with the support of *BlindArt* and the Latvian Society of the Blind. We were talking about the association between shapes and sounds, as illustrated by psychologist Wolfgang Köhler's Bouba/Kiki experiment.<sup>2</sup> In Köhler's experiment, a sharp, spiky form is compared to a soft, round one. The results across different cultures indicated that the spoken sound of the word "kiki" is matched with a spiky shape and the word "bouba" to a round one.

<sup>2</sup> Kelly McCormick, Jee Young Kim, Sara List, and Lynne C. Nygaard, "Sound to Meaning Mappings in the Bouba-Kiki Effect," *Proceedings of the 37th Annual Conference of the Cognitive Science Society*, Pasadena, CA, July 2015.



Prof. Ramachandran.

In the workshop I conducted with the visually impaired, students could hear the spoken sounds, but were unable to see the shapes, as in Köhler's original experiment; instead, the students felt them as contours. The conversation then turned to colours, as our project involved a tactile-drawing process called 'geometrisation.'<sup>3</sup>

<sup>3</sup> This was based on the work of visionary 20<sup>th</sup>-century Latvian artist Zanis Waldheims.

Imagine that the 'colour centre' of the brain (scientifically known as V4, and includes the fusiform gyrus) is dormant in a person who has been blind since birth: brain plasticity predicts that this area of the brain will be re-appropriated by neighbouring sensory processing mechanisms. In keeping with this theory, at least one of the visually impaired students in my workshop could 'see' sounds as internally manifested colours, otherwise understood as a synaesthetically developed reconnection of neuronal channels. Other students, who also had no firsthand experiences with colour, had developed an automatic and deeply ingrained correspondence between certain colours, such as white to the physical sensations of coldness or warmth to the colour red. Textures also related to colours, such as wool to orange and a shiny surface to blue. This indicates that not just the surface texture, but also the natural heat conductance of certain materials helped them decipher what colours translate into what tactile sensations. Wool, when rubbed, creates heat and therefore can be used to describe orange, a warm colour. In the same way, glossy surfaces often feel cold which matches a cool colour such as blue. When considered from a neurological standpoint, we can appreciate a certain cobbling together of substitute neural pathways between different sensory brain processing centres to begin imagining a sense that one lacks, but that others can verify as existing.



Deniss Ovsjanikovs with drawing. Photo: Courtesy of Gerda Eglāja.

In the case of sensing imaginary warmth in relation to colour, Tibetan Buddhists are experts in the practice of Tummo, or the development of an 'inner fire'. This was brought to the West's attention by explorer and spiritualist Alexandra David Néel at the turn of the 20<sup>th</sup> century. Rather than being a process that demonstrates how the damaged brain makes the best of existing resources, one could argue that a practice like Tummo creates a kind of brain entrainment that optimises the existing healthy brain by creating new neural pathways and networks between normally disconnected brain regions. This is what I would term advanced neuroplasticity.

### **Neuroplastic gymnasium for new sensing**

What can we make of a sense that we think we do not have, but we are aware exists in other creatures? Is it possible to develop this ability by training certain sensitivities in latent sensory organs, while allowing our minds to translate incoming sensory signals in this new type of sense awareness?

Take for instance, the cuttlefish that 'sees' through its skin in a little understood process called crypsis. In this process, the marine animal creates the most deceptive of camouflage strategies. Even though the



Paroptic menu, *Neuarthian Boatstrap*, 14<sup>th</sup> Istanbul Biennial.

cuttlefish is colourblind, its skin can match its surroundings through chromatically complex patterns. In another example, the Surrealist author René Daumal would place colourful handkerchiefs inside a wooden box as a teenager and train himself to 'see' the colours of the cloth inside it, which he coined "paroptic vision".<sup>4</sup> Over time, he claimed to have this ability. My own experiments involving hypnosis at Fortuny Museum in Venice and the 14<sup>th</sup> Istanbul Biennial have been somewhat inconclusive, although I have come across certain people who seem 'gifted' with this ability, such as the artist Lea Porsager who confidently and accurately described colours that she sensed under her fingertips with her eyes closed.<sup>5</sup>

This sounds esoteric, but there is now substantial evidence that our bodies are covered in light sensitive proteins known as opsins, which detect light and dark changes around us. Opsins are best known for their work as photoreceptor cells inside the retina, which enable us to see. Furthermore, opsins in our skin are responsible for our circadian rhythms and help regulate our daily cycles as we adapt to night and day.<sup>6</sup> These changes are sensed at an unconscious level, which is why, in trance states, this type of sensory information can be intercepted by the conscious mind. In these states, neural plasticity can take place as the brain manages to funnel unconscious processes into its higher cortical functions. It isn't much of a stretch to think that the same types of proteins that detect colours in our eyes could also differentiate a full colour spectrum through our fingertips and hence allow for paroptic vision. Why see colour through the skin other than for artistic enquiry? Perhaps there could be a selective advantage for humans, such as the ability to better adapt to seasonal light changes, a biological reason for opsins to detect colour variations in the light spectrum.

<sup>4</sup> Gary Lachman, "Climbing Mount Analogue," *Quest* 89.5, September-October 2001, p. 166-171.

<sup>5</sup> The experiment at Fortuny Museum was part of the *Intuition Exhibition* curated by Axel Vervoordt and Daniela Ferretti. The installation at the 14<sup>th</sup> Istanbul Biennial took place on a ship docked at the Island of Büyükdada.

<sup>6</sup> Thomas Cronin, "Seeing Without Eyes," *Scientific American*, 13 Aug 2017.



*Horologium Florae, horologium Apum, Succus Aevi.* Installation at Jardins de Laribal. Beehive Exhibition, Fundació Joan Miró.

Opsins are not our only skin receptors of the times of day; we also carry the ‘clock’ gene, variations of which exist in all animals and plants, a theory which I recently explored with Vadim de Grainville at the Fundació Joan Miró, Barcelona, in an installation titled *Horologium Florae, Horologium Apum, Succus Aevi* (*Flower clock, Bee Clock, Time Juice*).<sup>7</sup> This piece explored circadian rhythms in plants and bees, with the aim of looping us back into our natural time cycles, which we seem to have lost as a result of exposing our eyes with non-solar light before sunrise and after sunset.

<sup>7</sup> This was curated by Martina Millà, with the expertise of Dr. Anna Febrero Ribas, Susana Mangas and Steve Rogenstein.

### **Magnetoreception sensing**

Another example of a liminal sense that I investigated is magnetotactic orientation. I first became aware of it when I spoke to Patrice Garnier, a synthetic biologist in Paris. He informed me that the microbiome that we all carry in our bodies is a vast ecosystem of microorganisms that weigh approximately four kilograms and are composed of bacteria, fungi, yeasts, protozoans and viruses.<sup>8</sup> The microbiota that live in our bellies activate the gut-brain axis that change our brain functions and, by extension, our personalities and behaviours. It’s surprising to think that unicellular organisms formulate many of our desires, and that we have little or no control over them. We also discussed quorum sensing and how groups of bacteria use this method to self-regulate population density, as well as how other bacteria navigate using the earth’s magnetic currents.

<sup>8</sup> Patrice Garnier works alongside the celebrated geneticist and biological philosopher Antoine Danchin.

When I arrived back in the US, I discovered that there was a community of ferrous nano-crystal-based magnetotactic bacteria that thrive at the lowest point of North America, in the ecologically-extreme environment of Badwater Basin in Death Valley. After a long car trip past the Trona Pinnacles and the Mesquite Flat Sand Dunes, I set out to work on

verifying the sensitivity of these microorganisms to electromagnetic currents and their orientation along geomagnetic or electromagnetic fields by dint of their intracellular organelles called magnetosomes.

Relating this to our own sense of orientation, how is it that some of us seem to have a better sense of direction than others? In migratory animals that travel hundreds of miles—such as turtles, geese or salmon—it's obvious that some kind of sensing related to the earth's magnetic field helps with migration routes, and allows them to locate exact geographic locations year after year. Research indicates that these magnetotactic bacteria could act symbiotically with vertebrates, especially in their lacrimal glands, to help with orientation sensing.<sup>9</sup>

Once I familiarised myself with the magnetotactic bacteria and conducted further research on magnetic sensing, I wanted to test the possibility that humans may have a dormant magnetic sensing mechanism in the ethmoid region of the head, which is between the eye socket and the back of the nose. The idea is that secretions from these ferrous bacteria stimulate an ophthalmic nerve, which subsequently sends information to the host's brain about the earth's magnetic field.

I organised a performance called *In Touch* with a cross section of the general public on the esplanade of Centre Georges Pompidou.<sup>10</sup> In



*In Touch*, Centre Georges Pompidou.

the performance, I invited them to listen to a hypnotic induction while wearing headphones. This allowed them to tap into their own unconscious direction-sensing signals while moving around the esplanade. The induction was designed to elicit emotive states and thus tap into the tear glands that are known to help with orientation sensing, at least in birds.<sup>11</sup> The whole day was spent with participants wandering around the esplanade, some following rigid and determined vectors, while others meandered in a kind of Debord-like *Dérive* – eyes half open, led by their noses.<sup>12</sup>

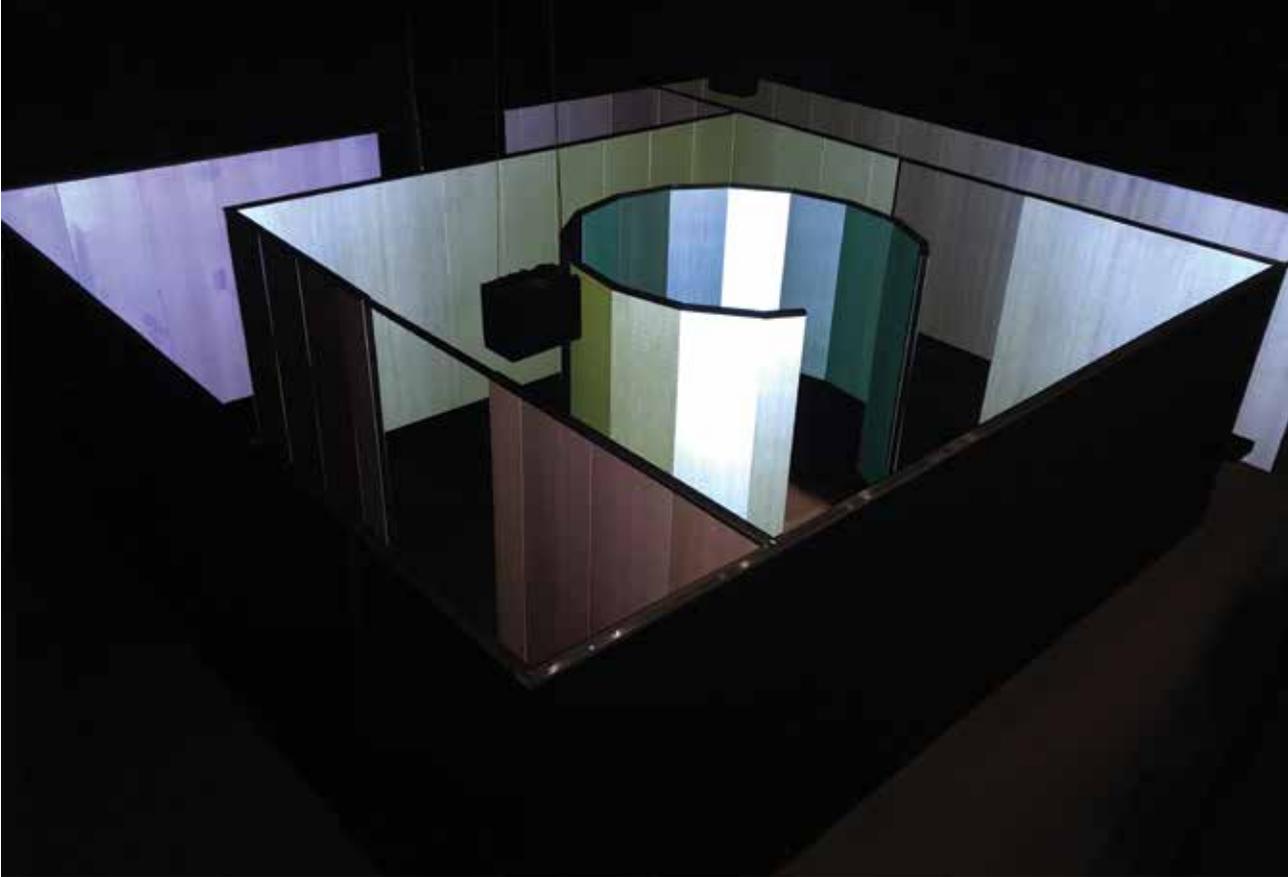
At the end of the performance, some participants reported being very attuned to directionality while others, who were normally easily disoriented, found that under the inductive exercise, they could better sense the cardinal directions around them. This same exercise should be tested at different longitudes and latitudes, as well as under different

<sup>9</sup> Natan Eviatar and Yoni Vortman, "The symbiotic magnetic-sensing hypothesis: do Magnetotactic Bacteria underlie the magnetic sensing capability of animals?" *Movement Ecology*, December 2017.

<sup>10</sup> This was in collaboration with Centre Georges Pompidou and Galerie Alberta Pane.

<sup>11</sup> These feathered creatures actually 'see' the magnetic field fluctuations on their corneas, due to the alignment of the bacteria as they flow along the surface of their eyeballs, which enables the sunlight to polarise across them.

<sup>12</sup> Guy Debord developed a mapping strategy in 1956 in which participants would wander through the city and "let themselves be drawn by the attractions of the terrain and the encounters they find there."



*The Garden of Forking Paths.*

lighting conditions, to see if there is any correlation or learning curve associated with this unconscious orientation learning process. The workshop I conducted with the visually impaired in Latvia also included a labyrinth that allowed visitors, with or without the aid of eyesight, to use their orientation skills to reach the centre, as a form of orientation training.<sup>13</sup>

### **Missing Limbs**

Going back to neuroplasticity and Ramachandran, I managed to assist in the transfer of his famed *mirror-box* from California to the 14<sup>th</sup> Istanbul Biennial. He developed it to allow those with amputated hands to overcome what is known as the ‘phantom limb syndrome.’ This is a condition that sometimes accompanies the loss of a limb, namely painful sensations where the lost limb would have been. In the *mirror-box*, the patient places his or her remaining hand through an opening in the box. A mirror in the middle of the box allows the patient to visually reconnect with a reflected view of the missing hand. Neurologically, the brain manages to adjust its body map until the phantom sensation diminishes. On this subject, I was also curious about the effect of hypnotic processes on the English drummer Rick Allen from the rock band *Def Leppard*. Allen lost his arm at the age of 21 in a car accident, and I was interested to know how neural pathways could be reconnected through unconscious methods, how these methods could have helped Allen bridge his own sense of a missing body map. We worked together to build visual ideations in which ‘vehicles’ would recover all their limbs, similar to how filmmaker Alejandro Jodorowsky

<sup>13</sup> The project, *The Garden of Forking Paths*, was part of the exhibition *Portable Landscapes (Parnesajamas Ainavas)* at the Latvian National Museum of Art, with the Latvian Centre for Contemporary Art. It was curated by Solvita Krese, Inga Lāce, Antra Priede-Krievkalne, Diāna Popova, and Andra Silapātere.



Prosthetic hand, *Neuarthian Bootstrap*. 14<sup>th</sup> Istanbul Biennial.

prescribed exercises that link imagined realities and physical rituals in his book *Psychomagic* (2010). Interestingly, the recurring image that came to Rick Allen during his sessions was that of amphibians, some of which have the ability to regenerate—such as the Mexican salamander, otherwise known as axolotl. To expand upon this research, I teamed up with the online network *Enabling the Future* at the Istanbul Biennial. *Enabling the Future* fosters an open source community for 3D printing prosthetic limbs for those who are unable to fund their own prosthetic treatment, particularly those who have been victims of ongoing, armed conflict, such as in Syria and Iraq.<sup>14</sup>

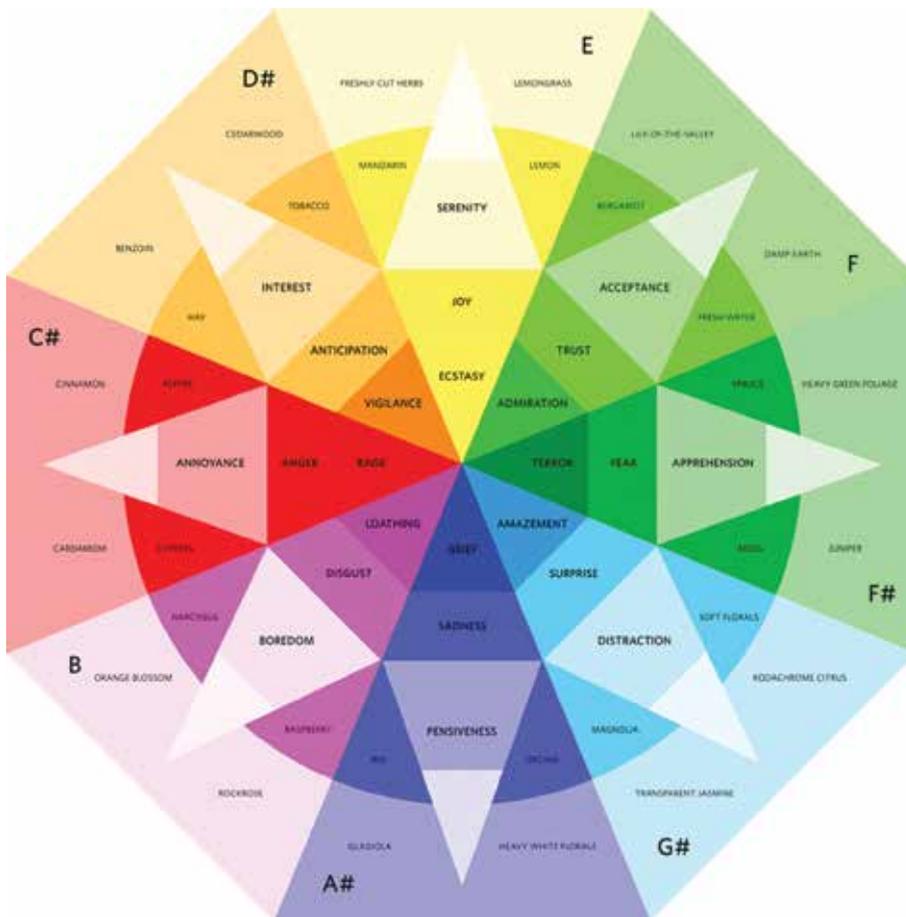
Based on the same premise as the project with the visually impaired (in which participants imagine colours that they cannot see), and by thinking about a sense modality that we have not yet incorporated into our existing collection of senses (such as echolocation by bats or chemoreception by snakes), what would happen if we incorporate an additional body part into our brain, or a sense organ that we have never used? Encouraging our own ability towards neuroplasticity would presumably allow us to do this.

### Sensory overload

As a training ground for extended sensing, I built an assault course for the senses called *Plantigrade*.<sup>15</sup> The title draws from the word (adjective) relating to how some mammals walk on the soles of their feet, such as bears and humans. The soles of our feet are incredibly sensitive, based on how many nerve endings are mapped into the brain according to the sensory homunculus map. Yet, in our industrialised societies, the neural nets related to the skin sensing in our feet have largely become dormant due to our use of shoes. In my installation, blindfolded visitors were invited to walk barefoot over various surfaces while touching different textures with their hands. The combination of different temperatures (due to heat conductance) and textures feeding through their feet and hands created a heightened sensory terrain and awakened new synaptic and neural pathways, not just related to touch, but also, according to reports of some of the visitors, to sounds and colours in a kind of provoked synaesthesia.

<sup>14</sup> The 3D printing was carried out with the assistance of Northwestern University, Evanston, Illinois.

<sup>15</sup> This was part of the exhibition *Synaesthesia: What is the taste of the Color Blue?* at Building Bridges Art Exchange in partnership with Art | Sci Center + Lab at University of California Los Angeles and International Association of Synaesthetes, Artists, and Scientists. It was curated by Marisa Caichiolo.



Synaesthetic wheel, *The Memory Observatory. Portable Landscapes (Parnesajamas Ainavas).*

## Colour Wheel

In terms of the relationship beyond the senses, Robert Plutchik, Professor Emeritus at Albert Einstein College of Medicine, developed a colour wheel in 1980 linking what he termed psychoevolutionary theory of emotions (or eight key emotions) with biological fitness. I thought it would be interesting to extend this wheel to include other senses, such as smell and sound, and managed to deploy this experiment in an immersive installation called *The Memory Observatory*. I worked with Stephen V. Dowthwaite, who is recognised for having developed *The ABCs of Perfumery*, a basic system of odour classification that matches colour-emotions to smells. To extend the colour wheel into the auditory realm, I worked with sound designer Julia Owen. We based our associations on an amalgamation of sound theories.<sup>16</sup> Major chords in E, F and B, for instance, are associated with bright, happy feelings while minor chords in A#, C#, and D# often have dark, sinister tones that relate to sad emotions. By extending the wheel into different sense modalities, we are effectively de-pruning the brain and reconnecting dormant pathways that link emotions, memories and feelings to senses.

<sup>16</sup> Daniela and Bernd Willimek, *Music and Emotions: Research on the Theory of Musical Equilibration (die Strebetendenz-Theorie)* in <http://www.willimekmusic.de/music-and-emotions.pdf>.



*The Memory Observatory.*



Plantigrade.

### Hypnotic Show

*The Hypnotic Show* is another training ground I am working on in collaboration with Raimundas Malašauskas, and it is in the realm of mental gymnastics rather than sensory de-pruning.<sup>17</sup> As the title implies, the performance project uses unconscious processes to create tautological situations, which the conscious mind cannot normally digest. Examples of this include: being in multiple places at once, focussing one eye on a foreground object and the other on the horizon, speaking backwards fluently while listening to a conversation in another language, feeling organic textures while considering mathematical integers. These exercises create a state of heightened neurological plasticity, which, over time and with practice, induce a state of broader perceptual experience and reality. Combined with sensory cues, such as odours concocted by renowned smell artist/chemist Sissel Tolaas, the hypnotic inductions can further be used to both construct and build new thought and memory structures of consciousness.

<sup>17</sup> This has been an itinerant performance project that celebrates its 10<sup>th</sup> year anniversary in 2018 and has been shown in different countries and locations, which include: *documenta 13*, Centre Georges Pompidou and later in 2018, the 33<sup>rd</sup> São Paulo Biennial.

### Bridges and steps

As a continued investigation into expanding ways of thinking and perceiving, my team and I are building a spiral staircase at Frye Art Museum in Seattle that will be populated with *lingzhi* (also called rishi) mushrooms. It is surprising to realise that mushrooms are closer relatives to animals than plants on the evolutionary path—they inhale oxygen and exhale carbon dioxide just like us. The staircase will sit within a large terrarium with mist cascading down the stair treads and *lingzhi*

mushroom outcroppings. Visitors on nearby beanbags will listen to a hypnotic induction that uses the staircase as an imaginary, deepening, trance-inducing narrative feature. As one descends the staircase, both real and imaginary, in a trance-like state, engaging kinaesthetic mirror neurons, the possibilities of transiting between different states of consciousness are palpable. Just as the magnetotactic bacteria have a symbiotic relationship with turtles or geese, so too does the fungal root network or mycorrhizae establish connections between themselves and vascular host plants and, by extension, us.

The next steps in expanding consciousness would be to grow, encourage and enable new pathways in the brain that have never been activated. Whether this is achieved through unconscious mental gymnastics, physical assault courses, or a combination of both, is a matter of experimentation. This may seem to be an exotic and whimsical approach. Furthermore, the alternative of isolation from our natural surroundings, combined with highly-pruned and over-specialised thought processes, has brought about many astonishing technological feats. However, we are also in the era of the 'anthropocene': a time of mass extinction and the fastest environmental degradation that our planet has seen since the late Devonian period 375 million years ago.

The time has come to connect actively from within and without.

All photos courtesy of the author unless stated otherwise.

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## The House of Dead Scents<sup>1</sup>



The oldest scent in the Gedeon Volni collection is dated to the late 17<sup>th</sup> century, as Gedeon, or Geda for short, discovered after a long and patient study. It was one of those saturated oriental varieties and, alongside several similar blends that he owned, was an original from the Al Asnaf Ben Ghazara workshop. In its time, the Al Asnaf Ben Ghazara workshop was the best-known Alexandrian house of medicines, cosmetics and perfumes. It was founded as early as the Mameluke age, and lasted until the mid-19<sup>th</sup> century. It took Geda a long time to learn some basic things about his exhibits.

<sup>1</sup> An extract from Vida Ognjenović's *The House of Dead Scents*, translated by Mirka Janković. (Beograd: Dereta, 1998)

It is not easy to guess the age of a scent. One not only needs to be gifted in the study of scent compositions, which Geda was, it also requires a great deal of painstaking work to establish the scent's origin—the place and method of manufacture as well as the blend's author. As Geda said, he spent years training his sense of smell and gathering all kinds of knowledge, especially in history, botany and other natural sciences, to perform this exceptionally complicated task. And yet, he insists that he accomplished the most through first hand research, as nothing can replace experience. He visited warehouses of raw materials for big perfume factories, learnt the smells of various exotic plants, which he had previously only seen in atlases and books, sniffed their resins, semi-processed fats, base notes, oils and saps. He compounded meticulous lists and invented his own markings for rare shades and differences. He read and studied old apothecary prescriptions, catalogues, notes and instructions. He duly noted it all down and created his own documentation, which could arouse the envy of many an institute. It was all much easier in the case of European blends, which accounted for the major part of what he owned. Apart from the exhaustive literature, he was helped by numerous specialists, craftsmen, chemists, curators of factory museums and archives, and researchers in various institutes.

Above all, he had his dear sponsor, adviser and paragon, Doctor Gustav Heinemann from Cologne. Doctor Heinemann had underwritten hundreds of outstanding and unique compositions as the Cologne factory master blender of many years, some of which Geda included in his collection, although they ranked with younger scents. Heinemann had written several important books and manuals in that field. He had inherited the gift and affinity for this job from his father, Otto Heinemann, a chemist and the pillar of the Cologne company in his own time, a toilet water specialist and the founder of the factory museum, which, owing to the subsequent efforts of his son, grew first into a city and then a Westphalian museum. It is one of the best-equipped scent museums in the world.

Gustav Heinemann was recommended to Geda by the pharmacist Petrovitch from Starn Pazova, one of the many “cousins” of Heinemann’s father, who in his youth, was a *schulkamerad*<sup>1</sup> of the Cologne scientist at the Hamburg University. Surprisingly, the sullen maestro from Cologne remembered his colleague from their student days, and gladly supported his young relative, although this was not a feature of his usual behaviour.

<sup>1</sup> transl. schoolmate.

With his help and by way of his own painstaking analysis, Geda established that he had collected almost all the relevant proprietary scent combinations of the ancient masters, not only from the better-known European workshops but also from various smaller pharmacies, including the products of specialists such as Dorffer, Feret or Baum. He also discovered some valuable vestiges from clandestine alchemist laboratories, the excellent and stable scents that were sold under the names of other people.

He found, for instance, several early products developed by the Italian house of Dorini. They were the handiwork of master Franco Dorini himself. Geda even managed to lay his hand on some specimens from Dorini’s workshop from a later period after the police got wise to him and he had to move to France and work secretly in some remote village in Provence. Dorini’s blends were, by and large, based on lavender, laurel, nutmeg and lemon flower, with some twenty to thirty additives, and for the solution, he generally used sandal, coconut and almond oils, cypress resin and lanolin fats. Later, in France, he added to his base notes the lily of the valley, hibiscus, deer musk, coriander and flax oils. Geda also had different types of balsam base notes; many of them he found in Bohemia and Upper Austria, although the prescriptions must have been Turkish. He owned some Cologne solutions in citrus oils from the early period, with dashes of cinnamon, saffras and different magnolia varieties. He had specimens from the early days of the Guerlain manufacture-products, which were created by the famous master Bernier and dated as far back as 1825. At that time, Bernier mostly followed Egyptian models, and it is through his blends that the civet musk and Indian nard appear for the first time. Geda had collected a number of resinous blends. He even brought some sealing varieties from Cairo. He also kept several noted alcohol combinations from a more recent date, from a private shop in Varna, signed by Ivan Molhov.

“This is a true odourarium of the past age,” Doctor Heinemann said enthusiastically when he first saw Geda’s collection.

Gedeon set off on his collector’s adventure before he was 19. He embarked on it with a secret thought, a desire and instinct to surprise the

world with the discovery of a scent, if not from Biblical times (although he believed that it had survived till now in one form or the other), then of an ancient oriental blend from the beginning of the millennium or earlier, of which he had heard and read a great deal. He was confident that they could still be plucked out in Smyrna, Cairo, Damascus, or even Istanbul; that all one needed was to search properly. But it was not in the cards for him, or anyone for that matter. He did not bring anything from his campaigns that warranted hullabaloo in those cities, and he did not keep much of what numerous dealers brought for him. Furthermore, what he kept was of mediocre interest. Surprisingly, the scents that he could not find in their native lands, he strove to discover in Europe. “A hundred devils keep a forgery in its entrails. Day and night, they forge things one cannot even dream of,” said Heinemann. “That’s where you look for things you think cannot be found anywhere else.” And indeed, it was precisely the search around some European towns which led Geda to several bottles of interesting scents. Their unusual ingredients and bold combinations made him conclude that they were Egyptian. The fact that they were in 18<sup>th</sup>-century Bohemian and Austrian glass implied that the samples were very old.

Geda worked to determine their age. He did not dare claim that they came from Al Asnaf Ben Ghazara’s workshop or, even better, that they were the product of the great master Al Asnaf himself. Al Asnaf Ben Ghazara was a legend whom Geda had heard of in the early days of his collector’s career. He wished, from the bottom of his heart, the scents were by Al Asnaf. And if luck would have it that these were his scents, it would mean that Geda would have moved one step closer to the ancient blends—something about which he never quite stopped dreaming.

The best-known maker of unparalleled apothecary marvels from the old Alexandrian workshop was Al Asnaf Ben Ghazara (1672-1748). He is considered, among experts, the founding father of modern perfumery or, as one might fatalistically term it, the art of the impossible. He succeeded in doing what outstanding perfumers have always been after: fully blending and fixing unstable mixtures. When it came to combinations, the sky was the limit for Al Asnaf. He made everything agree with anything; all he needed was the key substance that kept all the ingredients firmly together. Moreover, he was also a noted healer and unrivalled herbalist. The army and court physicians in Napoleon’s time paid in gold for Al Asnaf’s tinctures and balms, as his embrocations wiped out the deepest scars and cuts, healed the worst wounds, reabsorbed snake poisons, and cured household diseases and ailments. He made a balm of hyssop, a Biblical herb, which restored leprosy skin in a week’s time; a solution to improve hearing; kohl that healed the sight even in cases of the worst eye infections. He treated swellings, chilblains, burns and bites. It is said that he had a cure for every visible illness. He was called ‘the Saint’s Hand’. Allegedly, he had perfected the skills of pharmacists, perfumers and healers to such a degree that he became unassailable. He recorded all his inventions in a book of prescriptions and instructions. It first appeared in his native city, before it spread to the rest of the world where it has since been translated into many languages.

According to a version relished by old pharmacists, Al Asnaf, drew on Shahrazades<sup>22</sup> experience. Al Asnaf’s successors, who could never match his healing skills, wanted to gain possession of his knowledge and skill while he was still alive. However, Al Asnaf refused to initiate them because they lacked the gift and would only mar his name. He therefore

<sup>22</sup> This may refer to an overarching narrative now popularly known as *One Thousand and One Nights*, in which Scheherazade or Shahrazad was the storyteller of tales over 1001 nights to King Shahryar, done in order to delay his execution of her. The collection of stories set over Central Asia was traced to as far back as 8<sup>th</sup> to 9<sup>th</sup> century with roots in India and the Middle East. <https://www.britannica.com/topic/The-Thousand-and-One-Nights>.

decided to wait for a true successor who was worthy of his legacy, even if outside his own family. They forced him, however, under the threat of death, to write down all that he knew and pass it to them. He consented but asked to be given 10 years to do so. This would ensure enough time to verify, to the minutest detail, the power of the herbs he collected and the effect of new compounds he had yet to make. Under their watch, he worked, researched, experimented and demonstrated to his tormentors the validity of his new products. The story goes that he outwitted them in the end. He noted down the prescriptions in his own peculiar way—full of puzzles and secret signs. Only a person of exceptional gifts could read them. This was how he gained a few peaceful years while he worked and was how the world gained a valuable book, which has remained unfinished because he died two years before he could complete it. Still, there is hope for a man, blessed with special abilities, to continue where the great wizard stopped.

Heinemann believed that, if the story was true, Al Asnaf had penned down his inventions only to protect his authorship from a flood of false products being sold under his name. It is common knowledge that the merchandise from that famous House commanded the highest price on the market for the last two centuries. To sustain and secure the painstakingly earned reputation, Al Asnaf must have compiled a list of his varieties of scents and other pharmaceutical innovations that thus marked his discoveries. The House enjoyed unassailable prestige among the craftsmen, and houses of commerce flooded it with orders. No wonder that forgers from all over were after that name. Several major glasshouses in Europe worked only for them. They made bottles, boxes, jars and other containers for the preparations of these scents, which were then shipped to all corners of the world for decades. This went on until the mid-19<sup>th</sup> century, when perfumery was taken over by industry, and it ceased to be an art and became the commercial production of merchandise. The production of flimsy, fast, cheap, volatile and short-lived blends was set in motion and their consumption was commensurable with their inconstancy. This mass-produced wish-wash, the composition of which changed easily and flippantly to suit the public taste and fashion of the day, significantly imperilled the serious, steady and saturated complex blends of the East, which shortly after were pronounced by the unsparing competitive propaganda as heavy, ugly and outdated. As a result, Al Asnaf's workshop in Alexandria waned sometime in the middle of the last century; its products slowly disappeared from the market. That said, partisans of cosmetics still tried to make some of Al Asnaf's inventions in minor apothecary kitchens, but these tiny shops could not withstand the assault of the industrial avalanche, and perished in no time.

According to some stories, when Egypt became a French protectorate, Al Asnaf's book was brought to Europe sometime towards the end of the 18<sup>th</sup> century. Protected by seven locks, it nevertheless passed, through espionage channels, from one pair of hands to the next. It was translated first into French and then into German, and got as far as the Georgian capital, Tbilisi. From then on, good imitations of Al Asnaf's scents proliferated for quite some time.

Heinemann had a book with Al Asnaf's prescriptions in German, *Die Welt Duftet Angenehm*, but he affirmed that it was not the original. The prescriptions were confused and incomplete, the names of vegetable ingredients were largely invented for the (would-be) translator who would not be manifestly conversant with botany. Most suspicious of all

were the quantities and ratios of ingredients. Dosages were provided in different units, from Arabic to Greek, Turkish and even Chinese. It all served more to confound than to instruct. Some people argued that these anomalies are proof that the book was indeed the translation of the original. It affirmed that the artist had deliberately obfuscated his prescriptions in order to leave room for his chosen successors to add to them and devise their own prescriptions. This book calls for a different reading, not a literal one, they argued.

Concurring with Doctor Heinemann, Geda tried to find its French version. He ingratiated himself with bookshop owners, smugglers, and antiquarians; he even rummaged through shops until he finally managed to obtain a copy through the Rott brothers in Amsterdam. However, they ascertained that the contents were the same as the book they already had in German. "Both are a swindle," Heinemann said bitterly. Geda realised then that he had to find Al Asnaf's original in Arabic or, if it was non-existent, give up trying to establish the authorship and age of the scents he owned. He was already tired and disappointed with it all.

Doctor Jelitch, a family friend and a physician by profession, though more of the Thomas Rendall kind, and an impassioned collector of rare books, first edition texts and manuscripts, came to Geda's rescue. Across the "wide world" (his expression), he had a network of dealers and agents who searched, spied, made down payments, exchanged duplicates, attended auctions, studied the market and, from time to time, bought several thousand rarities for Doctor Jelitch's collection, numbering several thousands of choice specimens, three quarters of them unique museum pieces.

"Nobody will find it for you, if Vasil doesn't," Doctor Jelitch told Geda. Vasileos Palikarev, or Vasil for short, was his man in whom he had great confidence. Born in Aegean Macedonia, Palikarev was a former guerrilla for Markos, and was then a national of many countries (judging by his numerous passports and languages he spoke). According to Doctor Jelitch, nothing could daunt him. A consummate provider, remarkable tradesman and something of a bibliophile, Palikarev travelled regularly between Stockholm and Istanbul and, as he often boasted, purchased the most valuable things aboard a train. "The wagon-lit is my office and purchasing point," he joked. Through him, Doctor Jelitch established contact with Idriz Birnet, an antiquarian in Istanbul who had obtained for him, almost all the first edition texts by the Armenian Monastery printing house in Vienna, which is why the Slavonic scientific elite from the world over travel to see him to this day.

When he heard about the task, Palikarev did not make any promises. "It will be hard," he said. He took the French version as a sample and began his search.

Slightly more than a year passed before Palikarev turned up again, this time with a precious little parcel and a quaint story. Idriz had managed to find him the original, but, having considered the matter thoroughly, he realised the value of the treasure that was in his possession; he requested a price that even the Getty Museum in Los Angeles would not be able to afford. "And then," Palikarev told them, "that inimitable Levantine haggling began." It was a true musical performance with tears and curses, hugs and moans, insults, sporadic fisticuffs and separations two or three times over. Idriz swore by his children (although Palikarev knew he was a bachelor) that the precious book did not belong to him.

Where would he find the money for something like that? He claimed that he was only the go-between, was doing this out of friendship for Palikarev. He had it coming. All that down payment he'd given; he would lose whether he sold it the book or not, seeing that he could have turned this money three times over by now. What could he do, fool that he was and mindful of friends! "I wish I was a rotten hypocrite," he wailed. At long last, they met somewhere in the middle. Idriz permitted Palikarev to copy a few pages so that the buyers could see what they were about to purchase before making a decision. The price of the copy would cover the cost of the down payment, and the mortal fear he suffered at the thought of the owner discovering him was the price of his goodness and weakness for Palikarev and Doctor Jelitch. They had a deal, with this copy Palikarev now brought as his great commercial trophy.

When Geda opened the little parcel, it was an eyeful. There were five or six pages of oblong hard paper filled with intricate strokes, snails and diverse dots of the Arabic alphabet. Needless to say, he could make neither head nor tail of it. He paid the Markos' man the amount he had asked for and inferred from it that the original would have cost as much as the Louvre *Mona Lisa*. Now that Geda had a copy of the text, he set in pursuit of someone who could interpret those signs and translate them into a language he could understand. Eventually, he found that someone. People know all sorts of things, as his father would say. It turned out that those pages were a slipshod translation of the French version Palikarev had borrowed from him. Identical mistakes, identical confusion of measurements and the sentences in places where the book was slightly frayed or blotted, coolly ignored. Who knows which one of the two smart merchants had thought of ordering this 'original' book. Perhaps both. They had cleverly thought of baiting the client with five or six pages. There was, however, one thing they had overlooked: in this case, the book was not a rare object, but an important text.

Doctor Jelitch threatened to sever all relations with Palikarev and warned that he would inform all his other customers of his fraud. Palikarev tried to vindicate himself by saying that he "sold only what he'd bought," that he had not made anything of it, and that his hands were clean in this matter. He never mentioned his conscience, as he probably did not know what it was.

Geda's search for the collection of prescriptions began to slacken. He sought comfort in the fact that he already knew enough about the scents in his possession. It was clear that they were very old, came from the Orient and had been blended by a consummate expert. It could be inferred that they were made by Al Asnaf himself because the ingredients could be likened to those in the German and French versions of the book attributed to him. He had already established the origin and date of manufacture of the glassware and in this Doctor Hlubnik's expertise was of great help.

He was increasingly confident that Al Asnaf's celebrated book never existed. Heinemann had told him that, even if the book did exist, it would be the muddled notes of his successors who traded in false recipes, as they could no longer make balms and scents invented by the master who had stayed silent about his formulas.

Geda was losing hope that he would ever be able to establish the origin and age of his scents and began to reconcile himself to fate, just as he

had long ago buried the beautiful thought of discovering an ancient odoriferous mixture, as a reward for all his big collector's sacrifices. "I am getting old," he said, "I should rouse myself from the dreams of my youth."



He used to say that he dreamt of scents. He even said that he dreamt of some of them first and only after he encountered them in their natural forms, such as castoreum (beaver fat) for instance. He affirmed that our sense of smell was active even when we slept, and that Man could easily be awakened by a smell just as some of them lulled one to sleep. Here is his recorded dream:

In my dream, the first record of it appears in the notebook number four, I am at the door of a curious building. It appears to be a wine cellar although it does not smell like one. I inspect its wide gate. There is no lock, bolt or inscription on it. I look down and lo, on the doorstep, under my feet, reads *ILLAT OTTON*. "Oh God," I think to myself, "please, don't let me wake up just now." Just then, the gate opens slightly, and a small old man, with bright eyes and a trimmed beard, peeps from behind it. He stands in the doorway and looks at me as a reddish smoke curls upward behind him. I inhale and think, "why, it's liriodendron." "True," says the old man, "you've guessed it. Come in." His voice is soft but it reverberates. I walk inside after him, through that gate that is still ajar, and find myself in a spacious hall. All around, there are numerous narrow passages branching off in different directions. Inscriptions over the doorways mark all the entrances but the letters are illegible to me. They somehow dissolve and fuse together before my eyes as soon as I look at them. I take a step into one of the passages because I think that the old man has gone down it. I had barely taken the second step before I was immersed in a fragrant bliss, unlike anything I have ever felt before in my life. I inhale lovely, subtly warm peace. It enters my nostrils, luxuriates, but I cannot recollect all of its contents. I recognise citrus oil, enfolded, I think, in camphor, immortelle and peach flower, but I am by no means certain. It slips away, my breath cannot encompass it. I breathe, grope the scent with my nose, and suddenly, through all that haze, it comes to me simultaneously through my nostrils and my mind—cananga, the flower of flowers. So, this is that marvel. "Blessed be the hour when I dreamt this," I whisper. "Oh Lord, don't let me wake up abruptly before I remember the smell of cananga. When shall I have the opportunity to sense it again?" I inhale and float forward, before remembering that that must have been the inscription above the entrance to the passage. I decide to go back and verify this but I cannot move. I try to support myself against the wall but it dissolves under my touch like vapour, and the smell becomes even stronger. I start walking back, I know I did not get far, only a few steps, for then I began to be unable to raise my foot. I float in the air, no weight, no support, as if I was smoke. "Aaah," I cry out "where am I? Aaah, heeelp!"

Old grey-haired emerges again and in his hands is a small, pear-shaped vessel. “Was that the smell of cananga?” I ask him in a faint, almost inaudible voice. “It was,” the old man says, “you’ve guessed it again. And now, sniff this.” He uncovers the vessel and brings it close to my face. I inhale twice. It is something I know well, but my mind refuses to tell me its name. The smell fills my nostrils, assaults every pore, flows through me, crawls through my blood vessels, beats in my heart, but I can’t say what it is. I sniff again, breathe it in deep, but nothing. I smile helplessly. I feel good and I don’t know why. “This is a smell from your collection,” the old timer says, but I think that he’s pulling my leg. “You keep it in that bottle of Syrian turquoise, on the middle shelf in the cabinet to the left of the door. The scent is from Smyrna, its base notes are wild damask rose, heather and grenade flower. You can figure out the rest for yourself.” “No,” I wailed, “no, no, no. I don’t have a bottle like that despite my looking for it for a long time. I don’t have Smyrna damask rose either and I don’t know its scent. I have read about it, but I have never smelt it in my life.” The old fellow titters and waves his head as wisps of mist coil around his cheeks and his smile. “And who are you?” I ask, catching him by surprise. With a start, it flashed before my eyes almost instantly, that it must be him! This must be his path; it was his name over the passage. “I salute you, Master Ben Ghazara!” I shout at the top of my voice. “I salute you!” At that moment, my own voice wakes me up. As I awake, I see the patch of mist disperse and his eyes glimmer through it like two restive fireflies.

I lay in my bed awake and silent, overwhelmed by the scents I dreamt and tried to commit to memory, but happy about that beautiful encounter. Although I knew that I did not have the bottle, I dreamt about it even in a wakeful state. I got up to check if, by some magic, it found its place on the shelf as the old man had mentioned. Still half-asleep I fumbled with my fingers to switch on the lights. I looked, my nose against the glass of the cabinet, but it wasn’t there. How could it be? Fully awake, I sat at my desk and tried to recapture the dreamt cananga smell, but to no avail. “Why did I wake up?” I asked myself angrily.

Reality is so empty and vapid.

The records of the dream do not differ much. In the second dream (there were three altogether), which is recorded in notebook number six, when he woke and went to see if the bottle which the strange old man mentioned was there, he found a small empty space, as if there had been a bottle which disappeared. In the third, recorded in notebook number nine, the order of scents, which he encountered, was reversed. The little old man brought cananga or the flower of flowers in a vessel shaped like a rose. He was aroused from sleep not by his voice but the shame that he could not identify the famous scent in the presence of the master, and this had never happened before in his life.

By the time Vladislav Letitch compiled all those manuscripts and deciphered the notes—in particular, the copy of the one about the dream, which Letitch liked very much and had also sent to Milan in Canada—Gedeon Volni had fallen asleep forever and had moved to his realm of forever-dreamt scents, from which he would never wake up again.

## Sensing Machines

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### The Ride

I still remember the train ride, after a long flight, off to the next destination, soon to arrive. I don't often take the Inter-City Express. It is crowded, I find rest leaning against a wall next to a train door. I stare at the small screen in front of me, the number on the digital display slowly starts to rise, the train picks up speed, leaving the outskirts of the city to begin its travel through a sparsely populated landscape full of trees, greens, fields, small lakes and rivers, not much more, really. I look out the window, still tired from the restless sleep. Again and again we pass small places with their small houses, industrial buildings, sparsely developed infrastructure, as if from another time, familiar and almost forgotten. It seems that not much has changed here, but feels much more so where I had left 15 hours ago, now about 11,000 kilometres away, from a densely populated city-state very close to the equator. One house after another flashes by. Then silence again, accompanied by the monotonous rumblings of the moving train. Trees, fields, a sunny day, a good time to let yourself be carried away by fleeting fragments of thoughts while gazing into the distance.

### Spacecraft

How far into space can I gaze from here? With the Hubble Space Telescope at one's hands, probably the farthest one can ever see is billions of light years away. The farthest we (or more precisely, a manmade machine) have travelled from earth is on *Voyager 1*, which left earth on September 5, 1977. A spacecraft now floats in interstellar space, a large-sized satellite dish with a diameter of 3.7 metres, equipped with an array of sensing devices to measure cosmic rays, electromagnetic fields and plasma waves. In 2018, as far from the Sun as from the Earth, it navigates in space guided by telemetry data and its Flight Data System, recording data on magnetic tapes. In 1990 and six billion kilometres away, it took a picture of home, our most distant view of Earth at barely the size of a pixel, also known as the Pale Blue Dot. Now at more than triple of the distance away, sending back data to Earth would take over 17 hours for a signal to reach after travelling for billions of kilometres through countless layers of space. The Voyagers will never make it back to Earth. Today the Falcon rockets go back and forth between space and Earth, deploying satellites, and at high precision they return and land on tiny platforms in the ocean.

## Satellite

I often miss the four seasons, time settles down in autumn. The cold, grey and short winter days I miss the least. Spring slowly turns winter from white to green, my parents have this beautiful garden that they care for day after day, spring is the time of year when nature's beauty begins to show itself. Summer is the weather I've gotten used to. The humidity doesn't bother me so much anymore, I found a good balance between the tropical heat and the cold breeze inside air-conditioned places often 10 degrees or more apart.

By chance I was able to photograph my parents' garden from a plane once. I could have easily looked it up online at a much higher resolution, even in 3D, but certainly not as memorable as the photo I took on 30 June, 2017, just another day where over a thousand active satellites are orbiting Earth, sensing earthly processes, steadily collecting data, receiving and sending signals down to the ground. They studiously monitor environmental change, enable us to track and navigate our every step to show us the way. We don't see them, these invisible machines that operate the world we live in today. First launched in 1972 the Landsat satellites, these multispectral scanners capture photographic imagery of the Earth's land surface and coastal regions now for almost 50 years, followed by weather satellites, communication satellites, navigational satellites, anti-satellite weapons, and more. Picosatellites are emerging as DIY builder kits, Femtosats, at a wet mass between 10 to 100g, will be the smallest satellites coming out of university labs.

Many satellites are defunct but they still float in space, where else should they go? Dissolved into tiny pieces of junk at speeds of up to 28,000 kilometres per hour, they have become a growing danger to the orbit. Worst case scenario? Maybe the *Kessler Syndrome*,<sup>1</sup> at a time where a new space race has just begun.

I am in a taxi now, on my way to town, the windscreen wipers move from left to right, right to left and wipe away a few drops of rain. A comforting song plays on the radio, probably a hit 30, 40 years ago, I am the "Eye in the Sky, looking at you ..."<sup>2</sup> the meter reads \$12.00, the GPS on the mobile phone in front of the dashboard shows the way, trilateration<sup>3</sup> after trilateration.

I am the eye in the sky  
Looking at you  
I can read your mind  
I am the maker of rules  
Dealing with fools  
I can cheat you blind  
And I don't need to see any more to know that  
I can read your mind, I can read your mind

— *Eye in the Sky*, The Alan Parsons Project.

## Unmanned Aerial Vehicle (UAV)

At first it is an odd feeling to control the flight of an object just by looking through the lens of a camera. Attached to the remote control is a small screen, wirelessly connected to a white object hovering in mid-air. Unlike a phantom it is clearly visible, four rotors at a 90-degree angle

<sup>1</sup> The *Kessler Syndrome* refers to the collisional cascading of space debris. Collisions with debris create more debris and hence more collisions potentially threatening more objects in space like satellites and spacecrafts.

<sup>2</sup> *Eye in the Sky* is a song by rock band The Alan Parsons Project from their 1982 studio album of the same name. Speculations are that the song takes inspiration from George Orwell's book *1984* although satellites are not mentioned; others suggest that the 'eye in the sky' is a reference to the security cameras installed inside casinos monitoring gambling tables.

<sup>3</sup> As GPS satellites broadcast their location and time, trilaterations measure distances to pinpoint their exact position on Earth. Through the measurement of distances, your precise GPS location can be determined. <https://gisgeography.com/trilateration-triangulation-gps>.

to each other, buzzing like a swarm of bees in full anticipation and at high frequency. A consumer product that lets you see the world from above, it is fun to fly these unmanned aerial objects (UAVs) which have now conquered the shelves of electronics shops: the phantoms, inspires, sparks or parrots. We not only see and hear about 'Big Brothers' in movies or over the news, but they are everywhere, they pervade, they are invisible like a ghost. Photos that are taken at incredibly high altitudes belie the size of these machines: they appear simple, minimalist in design, almost elegant, concealing their true power. Enclosed inside a sphere, mounted at the bottom of the flying object, sits a camera that can see sharper than the eyes of an eagle during the day or at night. Equipped with optical sensors good enough to read road signs from several kilometres away, capable of detecting, watching and tracking targets on command, it is operated often thousands of kilometres away with joysticks commonly used in video games.

Others like the *Bramor Unmanned Aircraft Systems* are well suited for surveying and remote sensing applications or where real-time, or near real-time, video observation and surveillance capabilities are needed. Optional enhancements include multi-spectral sensors for agriculture remote sensing, laser mass spectrometers for pipeline and environmental monitoring, or hyperspectral imagers.<sup>4</sup> What started out as an art project, now operates as a company designing and manufacturing autonomous UAV systems out of Slovenia. In Rwanda, a zipline<sup>5</sup> drone circles the sky, on a mission following its pre-programmed flight path, a lifesaving delivery service operating in remote rural areas, delivering urgent medicines and human blood conserves. On arrival at a destination it unlocks and drops its package, a red cardboard container with a parachute made of wax paper, slowly gliding down to the targeted base on the ground.

<sup>4</sup> Technical details are taken from a list of sensors and optional enhancements on the C-Astral, <http://www.c-astral.com>.

<sup>5</sup> The zipline drone is described in the article "Zipline: Help from above," by Jonathan W. Rosen in *Best in Tech 2018*, Special Edition, MIT Technology Review, p. 37.

## Internet

Remember *Voyager 1* travelling in interstellar space? It is unimaginable in today's global communication systems for a signal to travel for hours, which is how long as it takes a signal from this spacecraft to reach Earth. At the equator it roughly takes 130 milliseconds for a signal to circumnavigate earth today and find its routes and destination inside our global nervous system – the internet. In the early 1960s J.C.R. Licklider's idea of a worldwide computer network sparked interest. With his colleagues at the Advanced Research Projects Agency he discussed the concept of the Intergalactic Computer Network which would later become an inspiration for the ARPANET (The Advanced Research Projects Agency Network), the basis for the internet as we know it today. The first signal sent on the internet was the letter L. Today, a day without internet is hardly imaginable, when everything is connected. Occasionally I come across an article where people go off the grid, disconnect from this rapidly built rhizomatic fabric, and I am almost tempted to join them. Otherwise we have to move on, continue to produce and consume information at our fingertips. Did you like Sophia's latest post? How many stars would you rate your trip today? Did you like the free sample we sent you? With every click and scroll we feed giant data centres with bits and pieces of our likes, thoughts, behaviours and moves. Cookies, super cookies – cute names for what has become a major tool amongst many others to track a user's habits, baked deeply into the roots of a browsing tool by nifty code, like trackable markers inside a specimen.



View taken with a phone while on a commercial flight, 30 June 2017.  
Photo: author

It is not just us, it is the things, the Internet of Things, that gain much attention these days. Things that share their information with others, often sensors that detect events or changes in their environments: smart cities, smart homes, dark factories, connected machines, wearables, smart dust, the markers of specimen Earth. Cause and effect, infinite signals travelling across the planet at the speed of light. What do we do with trillions of connected things?

## City

Cities are upgrading their infrastructures. Not necessarily just roads, buildings, public transportation, or recreational places, but infrastructures that we don't see, the omni-connecting optical fibres implanted into the ground, sensing devices woven into our architecture, bright LED lights. In the city of Wuhan that I have not heard of before I visited, the skyline at night is a must see, a synchronised masterpiece of countless networked light facades along the Yangtze river, stretching out into the far horizon. Cities are filled with Hertzian space,<sup>6</sup> space that enables us to interact with our electronic devices, linking the immaterial with the material world, wireless networks, electromagnetic fields, radio signals, barely detectable by our senses, invisible to the human eye. New digital companions are moving in with us to assist us in our everyday lives, Alexa, Cortana, Azuma Hikari, Siri, although they are neither Samantha nor Joi yet.<sup>7</sup>

## Car

Companies are competing over self-driving space, Uber, Tesla, Waymo, Apple. What started out as a grand challenge in the Mojave Desert is now taking over public streets. The one million dollar prize goes unclaimed during its first year in 2004. The farthest distance an autonomous car travelled then was measured at only 12 kilometres before it stalled on a rock.<sup>8</sup> In the second year Stanley<sup>9</sup> made it all the way to the finish line in under seven hours. Well equipped with state-of-the-art computer systems and sensors such as gyroscopes, accelerometers, GPS, LIDAR (Light Detection and Ranging) and 100,000 lines of code, the robot car made its way across unknown terrain. LIDAR<sup>10</sup> sensors shoot millions of laser-light pulses into the air to generate a precise 3D representation of its surroundings as real as in a video game.

There is a manifold system of sensors built into a car today, a couple of distance sensors being one of them. Ever noticed a beeping sound when reversing your car? *Beep, beep beep, beep beep beep. Stop.* You just trust a distance sensor assisting you with parking your vehicle nicely into this tiny narrow parking spot. A self-driving car is equipped with at least eight, maybe 12 or more distance sensors. Trusting a self-driving car to safely get from A to B however, might still be a risk one has to take. Rocks are less of a concern, but finding solutions to problems such as the Trolley Problem<sup>11</sup> or the Moravec's paradox<sup>12</sup> are just mundane everyday situations that these self-driving cars face.

Imagine a runaway trolley is hurtling down the tracks and is bound to hit either a group of five or a single person – would you kill one to save five?

– The Trolley Problem

<sup>6</sup> Hertzian Space is a term coined by Anthony Dunne and Fiona Raby that refers to the hidden electromagnetic environment generated by the increasing number of wireless devices.

<sup>7</sup> Alexa, Cortana, Azuma Hikari, Siri are virtual assistants by Amazon, Microsoft, Gatebox, Apple respectively. Samantha and Joi are characters portraying virtual assistants in the movie *Her* and *Blade Runner 2049* respectively.

<sup>8</sup> The DARPA grand challenge was a first-of-its-kind event and challenged the development of autonomous ground vehicles, <http://archive.darpa.mil/grandchallenge04/index.htm>.

<sup>9</sup> Stanley was created by Stanford University's Stanford Racing team with the Volkswagen Electronics Research Laboratory (ERL).

<sup>10</sup> LIDAR systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility (<https://oceanservice.noaa.gov/facts/lidar.html>) and is often used as a core technology in self-driving cars.

<sup>11</sup> The Trolley Problem is one of many ethical challenges the developments of self-driving cars are facing and is discussed in *The everyday ethical challenges of self-driving cars*, <http://theconversation.com/the-everyday-ethical-challenges-of-self-driving-cars-92710>.

<sup>12</sup> Moravec's paradox is the discovery by artificial intelligence and robotics researchers Hans Moravec, Rodney Brooks and Marvin Minsky in the 1980's that, contrary to traditional assumptions, high-level reasoning requires very little computation, but low-level sensorimotor skills require enormous computational resources.

How would you spend your time in a self-driving car? Self-driving cars are usually not the bearers of good news these days. Most certainly this involves an accident and computational misfortunes.

Driver: Guys, the gear box is blocked. The gear box is blocked.  
Pitwall: Ok, working on it. Try to go to first.  
Driver: I can't use rear.  
Pitwall: Try reverse again, and then remove it and then try first again.  
Driver: Something is broken, something is not working.<sup>13</sup>

<sup>13</sup> Excerpt from a radio conversation between a Formula 1 driver and his race engineer at the pitwall. After running wide, the car would not move back or forth.

The most sophisticated cars today are not made for public roads, but made for entertainment and innovation. Navigated by skilled drivers and remote control-centres, they rev their engines around circuits across the world, hunting for fractions of a second. I must admit I am a fan of these cars going in circles, restlessly chasing to beat the time sheets. Engines with almost a thousand horsepower, internal combustion machines, kinetic- and heat-motor generator units, turbochargers and arrays of sensors built into the Engine Control Unit, the Gear Control Unit, the Data logger Master Control Unit, the telemetry system, constantly connected to their race engineers, these aerodynamic masterpieces are results of endless computer simulations and wind tunnel tests—humans and machines on the edge.

## Robot

TARS: Settings. General Settings. Security settings.  
Cooper: Honesty, new setting: 95%.  
TARS: Confirmed. Additional customisation.  
Cooper: Humour: 75%.  
TARS: Confirmed. Auto self-destruct T minus 10, 9.  
Cooper: Let's make that 60%.  
TARS: 60% confirmed. Knock knock.  
Cooper: You want 55?<sup>14</sup>

<sup>14</sup> A dialogue from the 2014 movie *Interstellar* between Joseph A. Cooper, the pilot of the interstellar expedition, and TARS, a tactical robot, while Cooper repairs the robot.

Absolute minimalist approach, Mies van der Rohe design, pure functional performance, it is just a block, the block is divided into smaller blocks, subdivided into smaller blocks, all with the same proportion as the original block.<sup>15</sup> Robots often come in odd shapes, depictions of humans or animal like, but TARS and CASE from *Interstellar* are just blocks, beautiful simple blocks, elegantly moving and mastering every terrain. They are articulated planks with different characters, CASE is a softer but less experienced robot, TARS is developed to be this grizzled heartened middle-level officer, ex-marine.

<sup>15</sup> *Interstellar* director and co-writer Christopher Nolan elaborated on the design of TARS and CASE in the behind-the-scenes bonus interview for the 2014 movie *Interstellar*.

SpotMini is advertised as a nimble robot, but unlike CASE and TARS, SpotMini is real. It has four legs, which makes it a quadruped, a longish body with synthetic intestines hidden under yellow armour. The multifunctional neck resembles a cross between a giraffe's neck and a robotic arm. Attached to the end of this arm is a mechanical hand that looks like a skeletal head. Cute or dreadful, one can't decide. This machine's value is only determined when being assigned a task. Others manoeuvre difficult terrains or climb walls and trees with elegance and expertise. I am judging based on the demonstration videos I had watched.

A robotic arm is made up of several metal segments joined together. It is controlled by a computer system and rotated by individual motors. Its movement can be very elegant and precise, motion sensors feed back to the system to monitor its accuracy of movement. Over and over, it operates the same movement again and again, assembling and manufacturing one item after another. The factories these robots call their home are often in the dark and without air-conditioning, these machines don't need light to see or air to breathe.

What defines a robot? One robotic paradigm is Sense-Plan-Act: to gather data through sensors, create a world model from all this data, act upon it, then go back to step one. As such a robotic arm as much as a rice cooker qualifies as a robot. There is one thing robots can't do as well as humans though: pick strawberries. I've seen social robots – or humanoids or androids as they are often called – exhibited in museums. Their movements stutter easily and aren't as smooth as ours, their facial features and gestures still don't look quite right, like an adult doll looking at you in a curious but strange way, clearly distinguishable from a human being. When this is not true anymore you need tests, tests like the Voight-Kampff test.

You're in a desert walking along in the sand when all of the sudden you look down, and you see a tortoise, crawling toward you. You reach down, you flip the tortoise over on its back. The tortoise lays on its back, its belly baking in the hot sun, beating its legs trying to turn itself over, but it can't, not without your help. But you're not helping. Why is that?<sup>16</sup>

Ava is not real. She is anthropomorphic, sentient, a gynoid made of wires and futuristic materials instead of flesh, she is created and tested in an unknown place.

Ava: What will happen to me if I fail your test? Do you think I might be switched off because I don't function as well as I am supposed to?

Caleb: Ava, I don't know the answer to your question. It is not up to me.

Ava: Why is it up to anyone? Do you have people to test you that might switch you off?

Caleb: No.

Ava: Then why do I?<sup>17</sup>

## AI

"I am sorry Dave, I am afraid I can't do that," HAL 9000 denies Dave reentry to the *Discovery One* spacecraft for fear that Dave will shut it down. HAL is not your ordinary computer, it is intelligent, it has the capacity to feel, perceive or experience subjectively, sentient—but HAL is also psychotic.<sup>18</sup> HAL stands for Heuristically programmed ALgorithmic computer; others have suggested that HAL is a one-letter shift from IBM = (H+1) + (A+1) + (L+1). IBM, or International Business Machines, has built many computers with processing power doubling every two years, often the fastest and most powerful of their times. In 1997 IBM's *Deep Blue*, enclosed in a human-sized black box, beat world chess champion Gary Kasparov in a rematch 3½–2½ by sheer processing speed and power, and good old-fashioned Artificial Intelligence. After the match *Deep Blue* was retired. IBM's *Watson*

<sup>16</sup> The Voight-Kampff is a fictional polygraph-like machine used by the LAPD's *Blade Runners* to assist in the testing of an individual to evaluate whether she/he is a replicant or not. [http://bladerunner.wikia.com/wiki/Voight-Kampff\\_machine](http://bladerunner.wikia.com/wiki/Voight-Kampff_machine).

<sup>17</sup> A transcribed dialogue between gynoid Ava and young programmer Caleb Smith in the 2014 sci-fi fantasy movie *Ex Machina*.

<sup>18</sup> In 1966 Stanley Kubrick wrote a letter to Roger Caras, vice president of the film production company, asking if IBM was aware that HAL was a "psychotic computer". At the time IBM was one among other consultants for Kubrick's 1968 movie 2001: *Space Odyssey*. Letter correspondence <http://www.lettersofnote.com/2013/01/does-ibm-know-that-hal-is-psychotic.html>.

took on the challenge to win the game show *Jeopardy!* in 2011 to beat its opponents with its sheer processing speed and power, and Deep Content Analysis, Natural Language Processing (NLP), Information Retrieval (IR), Machine Learning (ML) and Artificial Intelligence (AI). A year later, *Watson* ventured into the challenges of cancer treatment. Once bedroom-sized, *Watson* now fits into a stack the size of three pizza boxes. In 2015 another machine went on a quest to beat the master of another game, the board game *Go*. *AlphaGo*,<sup>19</sup> the brainchild of *Google DeepMind*, is a computer program that, in 2016, defeated arguably the strongest *Go* player in history, Lee Sedol.

I thought *AlphaGo* was based on probability calculation and that it was merely a machine. But when I saw this move, I changed my mind. Surely *AlphaGo* is creative. This move was really creative and beautiful. This move made me think of *Go* in a new light. What does creativity mean in *Go*? It was really a meaningful move.<sup>20</sup>

What started way back then in 1956 when the Dartmouth Artificial Intelligence conference gave birth to AI, today, challenges the way we think about machines and intelligence.

In the 1950s and 1960s scientists built a few working perceptrons as these artificial brains were called. [...] This perceptron is being trained to recognise the difference between males and females it is something that all of us can do easily but few of us can explain how. To get a computer to do this would involve working out many complex rules about faces and writing a computer program. But this perceptron was simply given lots and lots of examples including some with unusual hairstyles.<sup>21</sup>

Machines attempt to make sense of their environment. Based on the data they have been trained on, their analysis and interpretation of their sensed environment is often not complete or fully accurate. They need to be fed better, they need to train harder, their gyms have to be better equipped. Often machines see the world differently than we do, even when they are doing countless tree searches in random forests:

... a tree trunk, a tree with no leaves, a tree trunk, a horse with a white hat, a white horse, a horse in the snow, trees with no leaves, a snow-covered hill, a black and white snowboard, a person riding a bike, a person on a snowboard, trees with no leaves, a person riding a bike, snow on the ground, a person is skiing, a tree with no leaves, a person holding a snowboard.<sup>22</sup>

<sup>19</sup> *AlphaGo* is based on a deep neural network, a network of hardware and software, a technology that simulates neurons in the human brain. Version *AlphaGo Lee* would run on a distributed computer system. A later version, *AlphaGo Zero*, could be run on a single computer and beat the *AlphaGo Lee* 100:0.

<sup>20</sup> World *Go* champion Lee Sedol reflected on the 37<sup>th</sup> move made by *AlphaGo* in the match's second game. It took more than 12 minutes of consideration before Sedol made his next move.

<sup>21</sup> Transcript of the generated captions by *Youtube* for the video clip *Perceptron Research from the 50's & 60's*, [https://www.youtube.com/watch?hl=en-GB&v=cNxadbrN\\_al](https://www.youtube.com/watch?hl=en-GB&v=cNxadbrN_al).

<sup>22</sup> A transcript of a computer vision system detecting and identifying objects. The video shows a densely populated forest, the ground covered with snow, and a robot crossing the uneven terrain, in *Random Forests*, vimeo video ~05:46, <https://vimeo.com/244628946>.

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## Audible

If the condition of an institutionalised object is defined by its muteness, then its sovereignty is surrendered to another. The label, the description, the extended text, by any other name, provides this voice. It vocalises, its words declarative, at times confessional, to assume a nakedness of meaning, wrought in a diligence for clarity, a singularity doomed to repeats, re-enactments: encounters remarkable in its narrow significance. The exhibition text is susceptible, disciplined by classification, category, pre-empted by intent, conditioned by a logic it could not resist. Site, building, institution could do no more than conspire. This is perhaps unsurprising, where aesthetic resonance is often neutralised and calibrated to ideological contingencies, and even if judicious, acknowledged to a function of its time. The task is perhaps to return the object to its proper constitution as Art, having relations to the contemporary, as consignments to an audience conditioned, but not lost to dogma: to prompt the agency of listening, to know what is not 'sayable' is audible; to stir, but not to replace dogma with dictates.

The following are selected images from current and past exhibitions at the NUS Museum, National University of Singapore. They are not assembled in this publication to propose a congruency of curatorial themes, but to allow a consideration into a textual field built around encounters, made performative as a series of fragments, from the banal to the academic, audible in their own agency and origins, but relationally deployed. It is not a matter of the contextual to limit such encounters to an exercise of comprehension, but to suggest the virtue of opacity and what it may offer as renderings that complicate.

Where necessary, texts that appeared in the exhibitions are reformatted for the purpose of this publication.

Extract, curatorial notes from *"There are too many episodes of people coming here ..."* [projects 2008-2014], 2016.  
Curated by Kenneth Tay.

## II.

In Jean-Luc Godard's film *Bande à part* (1964), three characters are seen running through the galleries of the Louvre. As the voiceover of the narrator tells us, they are trying to beat the record set by an American tourist speeding through the exhibits of the museum: a total of nine minutes and forty-five seconds. They shaved two seconds off. Throughout this scene, the camera pans across the galleries in line with the trio's movements. But instead of the museum's audience running, what if it is the museum's exhibits that are constantly running away from our gaze? Such that while it is easy, and it has certainly been easy, to speak of museum's audience as existing in this state of constant distraction (contrasted with that of the cinema's audience), one would need to seriously entertain the idea that the exhibits – these museumised objects – are themselves constantly flickering, even when they are physically pinned to the walls, or framed behind vitrines and Perspex sheets. ]

(Part VI)

*The Battle for the Minds*

*Cast*

Announcer

Narrator

Husband

Wife

Professor

Reader

*Effects*

Rock and roll music

Whistle through space

Door effects

Battle effects

Transmission: 15 August 1957

Network: Radio Malaya

[191]

[...]

[MUSIC ON AND FADE]

Announcer: That was Muddy Hogroll and his Farmyard Hepcats in 'Throw me a bucket of water, mother, grandma's rolled in the horse-through again' – [...] This is Radio Malaya. Tuesday Talk. [...] Here is Professor Highbrow. He is going to give the first of seventeen talks on ideological conflicts of the twentieth century. This is the first programme in which the new populometer will be used. Just to remind listeners, this is special device at present on loan to Radio Malaya, by which we can discover how many listeners turn off their sets during a programme. Thus we are able to discover just how popular our programmes are. In this way, we can make sure that our listeners get the programmes they deserve – ah-er- Well here is Professor Highbrow –

Professor: Good evening. From the tragic experiences of our own and earlier times, men have learnt a simple yet crucial truth that tyranny is the handmaiden of power divorced from responsibility. It is the meaning and the value of democracy ...

Husband: [calmly] Switch him off, dear.

Wife: But, darling. They'll find out. [...]

Husband: [...] If he talks about democracy and stuff he must expect people to switch him off – populometer ... politics ... politicians. The world would be a happier place without them. And professors for that matter. Switch him off!

[192-193]

Fragments, texts reproduced from *A Nation in the Making* (Part VI),  
a six-part play by S. Rajaratnam written in 1957.

These radio scripts were first broadcast on Radio Malaya from July to October 1957.  
The play is published in full in *The Short Stories and Radio Plays of S. Rajaratnam* by  
Irene Ng (Singapore: Epigram, 2011).





Exhibition view, *Radio Malaya: Abridged Conversations About Art*, 2017.  
Curated by Ahmad Mashadi and Siddharta Perez.  
Photo: Geraldine Kang © NUS Museum

Ptolemy: The story of Malacca begins in the fifteenth century with an adventurer called ... Parameswara, a Sailendra prince of Palembang. [...]

Parameswara: It was my misfortune to become the husband of a Majapahit princess whom I married on the promise that I would pay her father tribute and be his vassal. There are scribes who would slander me by saying that I fled to Tumasik or Singapore in a junk because I had earned the wrath of my father-in-law by breaking my promise. It needs more than a broken promise to cause a Sailendra prince to flee his kingdom. As a matter of fact, it was famine and civil war which recommended my departure to Singapore, where I lodged with the local chief Tamagi. I grant you he was a most hospitable fellow and a man of considerable wealth. It is true that on the eighth day I murdered him. I am sorry I had to depose of my host in this manner but consider my plight then. There I was, a refugee prince with no kingdom and only such wealth as I could carry in a junk, while my host had both wealth and kingdom. For two years I was lord of all, and governed the channel and island with a firmness which my ungrateful subjects failed to appreciate. Then these traitorous wretches rose up in rebellion and I was forced to flee. I fell in with some sea gypsies who brought me to a fishing village not far from the Muar river. Here lived pirates and poor fishermen. But it was a large and spacious place with large fields and lovely waters. I said to myself, this place is suitable for a large town. So – I made myself the chief. I taught my subjects how to grow sugarcane, how to build bigger and better boats for fishing and for attacking ships. And this place I named Malacca.

Pessimist: Not a very inspiring background ...

Spirit of History: Founders of great kingdoms and empires are rarely amiable and saintly figures. Parameswara was probably no better and no worse than most Emperors. [...] He discovered that instead of robbing merchant fleets on the high seas it was more profitable to persuade merchants to come safely into the port and then to levy tax on ships that passed through the Straits. [...]

[148-149]

Fragments, texts reproduced from *A Nation in the Making* (Part IV),  
a radio play by S. Rajaratnam, 1957.



Photo: Geraldine Kang © NUS Museum



Exhibition view, *Radio Malaya: Abridged Conversations About Art*, 2017.  
Image features various figure drawings at Clifford Pier in the  
late 1960s and early 1970s by Harry Chin Chun Wah.  
Photo: Geraldine Kang © NUS Museum



Exhibition view, *Radio Malaya: Abridged Conversations About Art*, 2017.  
Image features Koh Nguang How's photo-assemblage *Untitled* (1994)  
based on his trip to a temple complex in Thailand.  
Photo: Geraldine Kang © NUS Museum

# Bekas penyelam tak dapat pisah dari makam

Former Diver Inseparable From Shrine  
Berita Harian, 4 October 1987

His real name is Mr. Mohammad bin Hassan. But his friends call him the 'Bearded' Ali.

While all the villagers have moved following clean-up works of areas surrounding the Kallang River, Mr. Mohammad decides to stay.

He became the only remaining resident of a village formerly located in the Public Works Department (PWD) quarters and now resides in the 100 years old Hajah Siti Mariam Shrine compound.

For Mr. Mohammad, he is not able to separate himself from the Shrine, which he regards to be a part of him.

Everyday, after leaving work as a cleaner at a nearby Housing Development Board (HDB) estate, he will spend his night at the shrine.

Previously, he worked as a diver salvaging metal scraps from the Kallang River and the sea around Tanjung Rhu. "I was able to collect \$30 worth of iron each day," he said.

Because of the clean up of the Kallang River and its vicinities, Mr. Mohammad no longer undertake this work.

His unique ability as a diver has also been useful to the Marine Police, based near his place of residence. For example, when equipment is lost to the sea, he will be called upon to dive and locate them



Exhibition view of fragments from a former Muslim shrine that once stood on the banks of the Kallang River, *The Sufi and the Bearded Man: Re-membering a Keramat in Contemporary Singapore*, 2011.

Curated by Shabbir Hussein Mustafa, Nurul Huda Rashid and Teren Sevea.

It was re-presented in *"There are too many episodes of people coming here ...,"* 2016.

Photo: Geraldine Kang © NUS Museum

My name? Surely you already have my name. Okay, Eric [Ronald] Alfred [b. 1931] speaking, former, founder curator of Maritime Museum that was set up in Sentosa in the 1970s. It's been quite sometime. I can't recall most of the things that were happening. You have to prompt me along the way so that I can give you a meaningful interview. Is there is a particular time or period? Well, I did an honours degree in zoology at the University of Malaya. It was known as the University of Malaya at that time as it was the only one university in the whole of Malaysia and Singapore. So I gained an admission there and I completed an honours degree in zoology, and having done that, ... while I was a student I was introduced by one of my lecturers to the Raffles Museum as it was known. I was asked to go there and consult some of the publications. That was when I met Michael [Wilmer Forbes] Tweedy -- he was the director -- and my future boss Carl Alexander Gibson-Hill, I didn't know it at that time. But that was long time ago, and I was encouraged by Michael Tweedy to apply for a job when I graduated, which I did. I applied [for] the job as curator of zoology of the Raffles Museum [in 1957]. I spent, something like twelve years there, doing things diligently. I was in charge of this huge zoological collection. This was a large collection which anti-dated me for more than a hundred years. Collections not just of specimens but also quite a wonderful library, [including] 18th century publications which made them valuable if anybody wanted to research. I took care of all of these, and there were researchers from the university or from overseas wanting to see specimens, consult publications. As a consequence, I became very knowledgeable on many subjects, not because I was particularly intelligent but because of frequent associations with these ... So I get to know quite a lot about things that are not quite zoology including ... that's how I picked up my knowledge about prahus and boats, and eventually ventured into the maritime field. [Initiated around 1969 and publicly announced in 1972] The Port of Singapore Authority [PSA, now Maritime Port Authority of Singapore] was thinking of establishing a maritime museum. The chairman himself approached me, a personal friend. He said, 'hey, can I buy you lunch' or something like that. He showed me the whole of PSA and he said 'we want to set up a maritime museum on Sentosa, how about it?' So I said I'll have a go.!

### oo:oo My Name?

Extract, transcriptions of Charles Lim's interview with Eric Alfred, *"There are too many episodes of people coming here ...,"* 2016.

I was working at the Maritime Museum minding my own business when somebody from PSA [came], "Hey Eric, we found this guy milling around, he came to PSA looking for a job, we can't fit him anywhere and see what he can do? He can't even speak good Malay." Then I said ok, let me try [him] out. Aley [bin Amat] turned out to be a boatmaker who had lived on Pulau Semakau [having moved from Riau Islands, and later Pulau Bukom]. He was not only a boat maker but he repaired all the prahus of all the people in Singapore. He was very well known. I put him on the staff [in 1976]. [That was] the only way to get him on, so he became a member of the Museum staff. Then, quite by accident, the Penghulu [village head] of Pulau Brani was a boat repairer, so I also put him on the staff. So I had two boat people on the staff. So I got hold of them as carpenters. And this boat building shed was built by Ahamad [bin Osman], the boat repairer. We built a contemporary Malay house on two-thirds scale. It looked like the real size but it was two-thirds scale, people could go in and stand there and take photographs. It was down in the gallery, a watercraft gallery. He [Aley] was an excellent craftsman, rule of thumb, and he can produce very good Malay *prahus*. One day to test him, I asked him to build a, you know, dragon boat; they were doing dragon boat racing in Singapore. I said, "Can you make this?", and he said "*Boleh* [can]". [A] month later, he said "*Sudah* [ready]", a full sized dragon boat. I don't know where to put it, but we never put it into the water. It was built by Aley, quite a versatile fellow. He probably passed away, but he left a legacy of a collection of prahus. There is a photograph he shows, a *kolek Johor* [Johore boat] he made. That is the story of Aley and Ahamad, Ahamad the Penghulu of Pulau Brani. He was also the *Bilal* of the mosque, so his word is quite important you know.

## 21:26 Aley and Ahamad

Extract, transcriptions of Charles Lim's interview with Eric Alfred, "*There are too many episodes of people coming here ...*," 2016.

From 1952, the artist began to work on a series of drawings and paintings that explored the human condition, often focusing on the themes of aging, memory, and the passage of time. His work is characterized by a delicate, almost ethereal quality, with a focus on the textures and colors of the human body and face. The artist's style is highly detailed and expressive, capturing the subtle nuances of human emotion and experience. His work is a testament to the power of art to explore the most profound aspects of the human condition.





Charles Lim and Eric Alfred  
Mustafa  
Interview with Eric Alfred  
Eric Alfred



Charles Lim and Eric Alfred  
Mustafa  
Interview with Eric Alfred  
Eric Alfred



Charles Lim's interview with Eric Alfred, originally presented in *In Search of Raffles' Light: An Art Project with Charles Lim*, 2013 (curated by Shabbir Hussein Mustafa), re-presented in *"There are too many episodes of people coming here ..."*, 2016.  
Photo: Geraldine Kang © NUS Museum

Fragment, "Raffles' instructions to the Land Allotment Committee and the Town Committee, November 4<sup>th</sup> 1822," reproduced in full in *An Anecdotal History of Old Times in Singapore, From the Foundation of the Settlement under the Honourable the East India Company on February 6<sup>th</sup>, 1819, to the transfer to the Colonial Office as part of the Colonial Possessions of the Crown on April 1<sup>st</sup>, 1867* by Charles Burton Buckley (Singapore: Oxford University Press, 1984) p. 81-87.

To Captain C. E. Davis, President.

George Bonham, } Esquires, Members.  
 Alex. L. Johnston, }

Gentlemen,—The extent of the native population which has already accumulated at Singapore and the rapidity with which it daily increases, render it expedient that in providing for its accommodation a timely attention should be paid to its future regulation, with reference to the circumstances of the place and the peculiar character and institutions of the several classes of inhabitants of which the society will be composed.

1. It has been observed by the Supreme Government “that in the event of Singapore being permanently retained, there seems every reason to believe that it will become a place of considerable magnitude and importance, and it is essential that this circumstance should be constantly kept in mind, in regulating the appropriation of land. Every day’s experience shews the inconvenience and expense that may arise out of the want of such a forecast” and in this respect an economical and proper allotment of the ground intended to form the site of the principal town is an object of the first importance, and one which under the present circumstances of the Settlement will not admit of delay.

2. In order to provide for this object in the best and most satisfactory manner which our present means admit, I have appointed you to be a committee for the purpose of suggesting and carrying into effect such arrangements on this head, as may on the whole appear to be most conducive to the comfort and security of the different classes of inhabitants and the general interests and welfare of the place, and in the performance of the duty you will be assisted by the Assistant Engineer and Assistant in the Police Department, and guided by the following instructions.



Beijing  
Hundred Years



Exhibition view, *Radio Malaya: Abridged Conversations About Art*, 2017. Image includes paintings by amateur artist, merchant and colonial administrator Charles Dyce, completed during his stay in Singapore during mid-19<sup>th</sup> century. Photo: Geraldine Kang © NUS Museum.



Exhibition view, *"When you get closer to the heart, you may find cracks..."*  
*Stories of Wood by The Migrant Ecologies Project, 2014.*  
Curated by Kenneth Tay and Jason Wee of Grey Projects,  
featuring artists Lucy Davis, Shannon Lee Castleman and Kee Ya Ting.  
It was re-presented in *"There are too many episodes of people coming here ...,"* 2016.  
Photo: Geraldine Kang © NUS Museum

## MALAYA'S RESOURCES.

To the Editor of the Straits Times.

Sir,—In the recent Federal Council meeting, I see it was stated that measures are now being taken to exploit the forests of Malaya. Regret is expressed that such measures were not taken years ago, and it is aimed at starting a new export industry, namely, the export of valuable timber.

It is very disquietening to read such statements. At the recent Malaya-Borneo Exhibition there was no department more thoroughly set up and managed than the Forestry Section. It is that we were told that the forests were sufficient to last, for our own requirements and at the then rate of usage, a period of 96 years.

We have therefore approximately 96 years' supply of timber available, on the basis of consumption of some 5 years ago.

The world progresses, science progresses, and nowhere more so than in an exceedingly rich country like Malaya. One would, therefore, be only on the safe side if one allowed that the 96 years' supply would dwindle to about 60 years. No one will anyhow gainsay the fact that the population of this country, what with the Naval Base, etc., is bound to increase enormously during the next 20 years.

I ask then, "How is possible that we are contemplating export of what comparatively little timber remains"? What will the result be? At best it will mean that we shall be later importers what we export during the immediate coming period, and probably pay three times the price for it.

Recently a large Company was formed to exploit timber in Dutch Borneo. I believe this timber is for American and Australian requirements. The area allotted was enormous, some hundreds of thousands of acres, I believe.

It is as certain as anything can be that a world shortage of timber will eventuate, probably during the lifetime of some of us now living and working in East. When such takes place, it will be useless to look to others for supplies, whatever we are prepared to pay. Other countries will prohibit export, and it is not difficult to realise the position in which we shall find ourselves. There is practically no re-afforestation here, as in for instance, the case in the Dutch East Indies where large areas of teak were planted a very long time back, a great deal of such belonging to the Dutch Government.

It is also doubtful if areas planted up now, say, would be sufficiently matured to tide us over the beginning, anyhow, of the shortage period.

It is surely not difficult to realise that with the enormous increase in the population of the towns, the progress that is bound to come in countries like China in the near future, and the quicker method of transporting and preparing timber, the world supplies are being rapidly exhausted, and will be much more so in the future.

One has every reason to doubt whether we shall do any more than scrape through, by commencing re-afforestation and prohibiting export, now.

We have been advised to "hold on to restriction with both hands." That simile may very well apply to the case of our forests, and as much so, if we can undertake to look ahead just a little. For, in this case, there will be no rectifying any blunder we may make. Fifty years and more will not suffice to give us back a portion of what we shall have lost.—Yours, etc.,

1896 ARRIVAL.

Johore, Nov. 26.

The Straits Times, 29<sup>th</sup> November 1927,  
from "When you get closer to the heart, you may find cracks..."  
Stories of Wood by The Migrant Ecologies Project re-presented in  
"There are too many episodes of people coming here ...," 2016.

Southern Islands were inhabited with various people, you know. I used to visit them: Semakau, there was a school on Semakau [opened in 1951]. The kids used to come around, solid building. Pulau Seking was another Island, inhabited. Most of the islands were inhabited. I used to visit them regularly to see what was happening. Along the line I took lots and lots of photographs. Unfortunately I left them all with PSA. Whether they kept them or threw them away I do not know. I did not keep any unfortunately because they were done with PSA cameras. I had one of the technicians doing the photography. I knew many of these people would be resettled so I took photographs just for record. I don't know what happened. I think it [the resettlement] more or less began after I was there, then they have a programme to work on resettling the people. As far as I know it began after I joined the Museum. I wasn't involved in it. I was there on the sidelines watching it, other museum staff [were] involved in doing this. PSA had a huge team, those were the guys involved in liaising with HDB [Housing Development Board], getting flats, checking the people concerned, getting them resettled. This happened quite nicely I think. Of course there was one family who had no identity cards, don't ask me how [that is so]. That was the problem: they had no ICs. They were kept for last, [but] eventually they were housed. They lived in Sentosa without identity cards. That's the sort of situation which you have to use your brains a bit.

### 38:17 Vacating the Seas

Extract, transcriptions of Charles Lim's interview with Eric Alfred, *"There are too many episodes of people coming here ...,"* 2016.



Exhibition view, *"There are too many episodes of people coming here ...,"* 2016.  
Image features a disassembled *kolek*, which formed part of Dennis Tan's investigations into boat-making in the Riau Islands.  
Photo: Geraldine Kang © NUS Museum



Photo: Geraldine Kang © NUS Museum

Excerpt of text on wall:

Pessimist: I see no Malayans. I see men of many worlds and many nations. I see faces of all colours. Faces that look at each other in mute incomprehension. Blank stares. Because they don't understand each other. They don't understand each other's religion. [...]

Optimist: No. I'll show you in a moment. But as I was saying – nationalism itself is a pretty new idea you know. New even in Europe.

Pessimist: Well?

Optimist: Loyalty to nation was a feeling which people cultivated only during the French Revolution. The nation state is very new in the history of the world. [...] it didn't become a force in Asia till the thirties. India and China were—and in many ways still are—very diverse – they contain huge numbers of people and hundreds of different languages. And yet, Jawaharlal Nehru and Mao Tse-tung have generated and focussed nationalist feelings in their own lifetime. Now we are so much smaller, and our standard of living so much higher than India and China – surely we don't have to fumble and stumble towards a Malayan nation?

Pessimist: But what about the deep-seated race consciousness here? How do you propose to persuade Malays, Chinese, and the rest to give up all their prejudices and preferences and adopt what you call 'Malayan consciousness'?

Optimist: Ah. Now I think we are getting somewhere. [...]

From *A Nation in the Making* (Part I),  
a radio play by S. Rajaratnam, 1957.

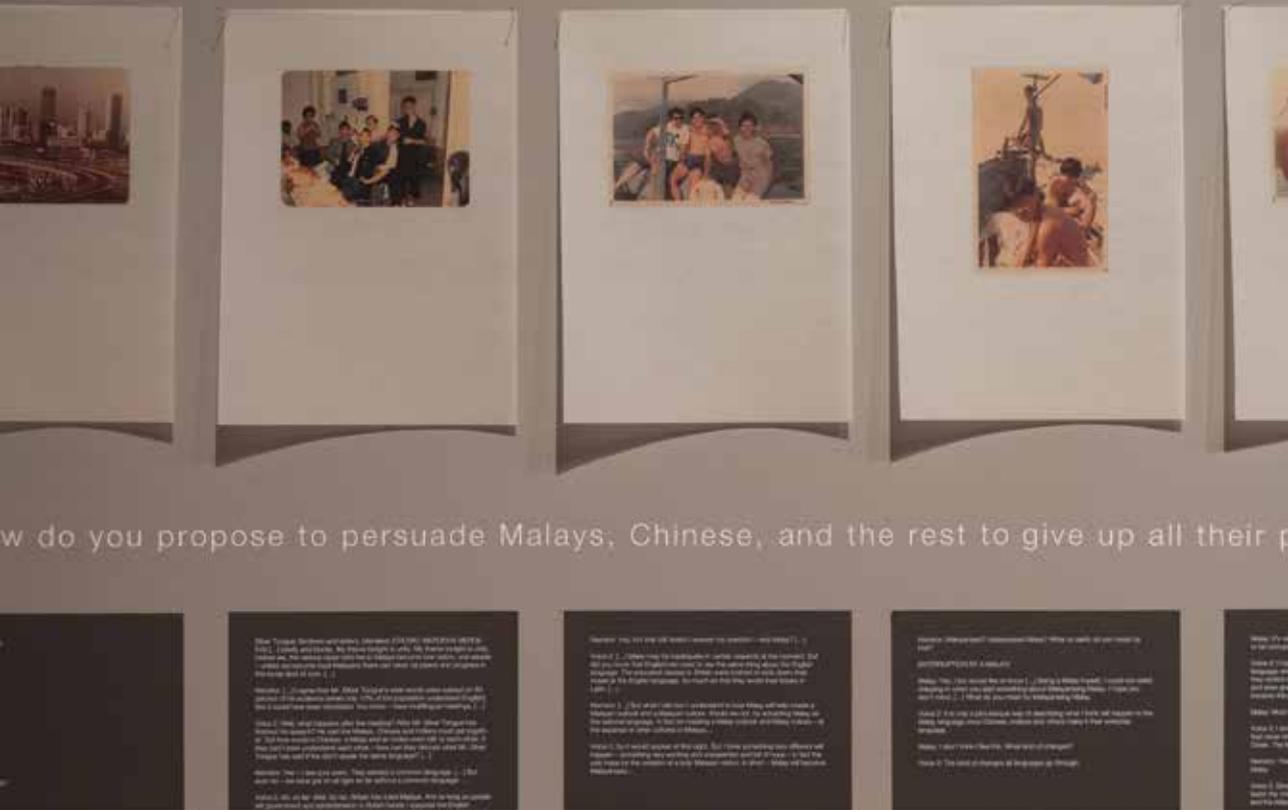
I warned you I had to speak elliptically. And yet I haven't - not altogether. I have indeed all along been speaking about Singapore - allegorically. I have also been speaking about the United States, France, Great Britain, India, China, Japan. I have never left off speaking about the present even as I invoke the past - as a warning, as an admonition to ourselves. Art will not save us - not unless we learn to read, seriously, the name of this conference Art Vs Art. All I have done, elliptically, is to emphasise the necessity of choosing between Art, within Art; and the stakes involved in that choice - at the limit. The limit case is Nazi Germany.

I repeat: Art will not save us. But Art can - another art. Which art? And how - in Singapore? I told you - I will say it again - I have never left off speaking about Singapore.

But I must do it elliptically - circuitously - for I cannot say this straight. So I will tell you again, plainly. The aesthetic, art, is primarily a political model. Despite all attempts to deny it, the term 'aesthetic state' - what Schiller, the German romanticist who invented the term, called '*Aesthetischer Staat*' - that term means precisely what it says. The 'state' that is referred to is not just a state of mind or soul, but a principle of political value and authority. As Paul de Man reminds us (himself not free of guilt), the 'state' in the term 'aesthetic state' refers to the political state as we have known it. That is why art is crucial to the state. That is why the state patronises the arts. Art - at least one kind of art - is the state. [...]

[Janadas Devan, "Is Art Necessary?" in *Art vs Art: Conflict & Convergence*, a Conference Organised by the Substation, 1993]

Janadas Devan, "Is Art Necessary?" in *Art vs Art: Conflict & Convergence*, a conference organised by the Substation, 1993.



Exhibition view, *Radio Malaya: Abridged Conversations About Art*, 2017.  
Image features reproductions of Jimmy Ong's personal collection of photographs from the late 1980s to early 1990s, entry-points into the formative.  
Photo: Geraldine Kang © NUS Museum

Working in the PSA had opened my eyes to many things I would never have seen. I saw the shipping revolution: the first container ship that arrived, and subsequently all the normal types of ships. In the early days ships have funnels in between at the top and they gave out smoke. They were of mixed [use]. They carry cargo and passengers, and those ships gradually vanished. These well known shipping lines like Blue Funnel and [?], they have all gone out of the picture, and eventually you have new shipping lines like the Neptune Orient Lines coming up, huge ships being built, supertankers. I saw them coming in one by one. I saw the shipping revolution, it happened right in front of me. Working in PSA did broaden my knowledge. You have got to keep your wits about it, you take things for granted if you don't look. Singapore initially was well tuned, functioning as an entrepot port, that means it accepted all the little ships, small steamers from the little ports from around the Malay Peninsula, Indonesia, dropping their goods, unloading their cargo and the twakows [bumboats] coming up the Singapore river, having [their cargo] sorted out there, and eventually going out again, being shipped out on ships to Europe and Japan [belonging to] big shipping companies like the Nippon Yusen Kaisha, Lloyd Triestino. These were the big shipping companies that were coming in you see. Then you have the first container ships, all the passenger-cargo ships became redundant, you saw them vanishing one by one, all the little coastal ships vanished. Eventually all you did see are huge tankers out there, still there, huge supertankers, small sized tankers, you go to [today's] Marina South and you stand near the jetty and look. You can see a whole lot of workboats. These are boats that either carry crew, cargo out to the oilrigs, Then you see other types of specialized vessels, just working anchorage. You don't see warships there. There is a cable ship there, ASEAN Cables. They still use underground cables for communications. What else do you see? That's about it.

## 56:27 Revolution at Sea

Extract, transcriptions of Charles Lim's interview with Eric Alfred, *"There are too many episodes of people coming here ...,"* 2016.

## Affective Mediations and the Politics of Sound: Samson Young in Conversation with Joleen Loh

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Joleen Loh converses with Samson Young about his long-standing interest in the relationship between sound and violence. Young's multidisciplinary practice often takes the form of sound installations, radio broadcasts, performances and graphic notations, all of which generate multiple, intersecting narratives around the topics of military warfare, political borders, histories of migration, and cultural identity. Trained as a classical composer, his approach is informed by a diverse range of sources from the avant-garde compositional traditions of aleatoric music to *musique concrète* and popular music, as well as current affairs, colonial histories, musicology and philosophy. This conversation unpacks some of Young's critical thinking around the role of sound within a constellation of political, technological and cultural conditions that govern social experience.

Joleen Hi Samson, I would like to begin by acknowledging one of the central themes for which your practice is well-known—the political and socio-technological dimensions of sound. These, for instance, constellate in your work *Nocturne* (2015), an on-site performance in a gallery space in which you used found footages of night bombings—mainly of the US attacks on the Middle East—and approximated its sounds using Foley techniques. By way of contextualisation, can you introduce some of the conceptual interests underlying *Nocturne*?

Samson *Nocturne* grew out of several previous projects. In *Liquid Borders* (2012–2014) I recorded the vibration of the border fences between Hong Kong and China. After *Liquid Borders*, I started to look beyond the borders of those regions and started thinking more broadly about lines of control, which led to another fieldwork-based project titled *Pastoral Music (But It Is Entirely Hollow)* (2014–ongoing). In that work, I focussed on a military defensive system in Hong Kong called the Gin Drinker's Line. It was a collection of underground bunkers and pill boxes that ran along the Kowloon Peninsula, which was built by the British in the 1930s. Although the research that surrounds the Gin Drinker's Line has not yet finished, it did get me interested in the history of the Second World War in Hong Kong, and the way that the story of our involvement in it is told. This eventually landed me on the set of themes that *Nocturne* looks at. These include thinking about how geopolitics determine the way histories are told, and how that shapes people's self-perception. [I was also] thinking about Hong Kong's place within larger geopolitical structures and the role that it played during the Second World War, or the lack thereof, in the history that I've read.

It is also important to mention that *Nocturne* was only one part of an exhibition that was titled *Pastoral Music* (which, is different from *Pastoral Music (But It Is Entirely Hollow)* which is a single project); it was first shown at Art Basel Hong Kong and then subsequently at Team Gallery in New York. To put together this exhibition, I looked outside Hong Kong and started to think in more general terms, about how wars are represented in films and work of literature, and how wars are represented in the media. And this is pretty typical of my thinking process—I begin with an observation that is 'closer to home' and that broadens into something that is more universal.

Joleen Looking back at *Nocturne* now, were there ways in which these questions around the representations of war were 'resolved' through the work?

Samson I think I came out with a better understanding of what triggers the audience's imagination, how to get the audience thinking, especially when an artist is dealing with a topic that is already over-determined, such as warfare. The world doesn't need another artist to make a work about how horrible war is to arrive at that foregone conclusion—and that's not what *Nocturne* is about. On a personal level, I was dealing with the sense of guilt that came from wanting to engage with this topic in the first place. At the time I had a lot of anxiety over my place in this conversation: why am I making work about this topic? Was I aestheticising violence, and what am I really doing by unleashing this thing unto the world? I now realise that the really important question is not how I justify my position, but what sort of artist-audience relationship I end up creating through this experience we call art. In *Nocturne*, when a member of the audience picks up that radio unit to listen to the performance, when they press it against their ears to experience this wash of gentle sparkles that claims to be some version of

night bombing, then they are implicated in the same sort of discomfort that I feel when performing the work.

So that's the affective dimension of the experience. In terms of how I *think* about the whole issue though, I am just as confused as when I first started making the work, and I've learned that it is OK to not have clarity. I am not some sort of a guru with a very specific insight that people should listen to. So you can say that the 'resolution' that I came to is just a clearer sense of my relationship with the work.

Joleen      Instead of confronting audiences of *Nocturne* with the realities of conflict outside of its aestheticisation as Hollywood spectacle, would you say that they were doubly removed from it in their encounter of your reinterpretation of collected video clips using Foley techniques? If so, what did this distancing between the origins of these sounds and your audiences mean to you?

Samson      I would argue that it's actually drawing them much closer to it. What I mean by that is—I have to explain this in a roundabout way with the example of a live concert. When you are in a live concert with amplification, what you are experiencing when you are listening to the singer and the band is mediated by a network of cables, consoles, amps and speakers. Now, imagine that there is a two- or 10-second power outage or malfunction. All of a sudden, the amplified signals drop out and you are left with the natural acoustics of the space, and you become, for a split second, hyper aware of the fact that the experience that you just had was very mediated, i.e., it came through the electrical circuit: the mic goes through the mixing board and then eventually out through the speaker. The technology that carries the signals is absolutely designed in such a way that you don't notice it. That's actually the very definition of the success of mediation, which is that you don't notice it. So if there is a different kind of measurement of craftsmanship that is specific to these devices of mediation, it is that ability to be invisible and inaudible to you. I think what *Nocturne* was able to achieve for the audience is that it made that process of mediation—not unmasked but—*intimately felt*.

When you are walking through the gallery space, this is what you experience. You hear me tapping very lightly on the drums and you hear these very soft sounds in this space. First you experience these sounds unamplified and you don't really know what's going on, except that it looks like a guy is doing Foley. And then you pick up a radio, you tune in to 101.5FM and hold it next to your ear, and then you suddenly realise, as you are going around me, what I'm doing, which is doing Foley to films of night bombings. And, secondly, you hear my hand, which when you first walked into the space was very far removed from you sonically, and it's doing these little gestures and the sounds are very small. But then, all of a sudden, these sounds are in your ear and you realise what I'm doing. You become aware of the pathway through which this sound has travelled, which is into the computer [where it is] processed, up into the air, through the FM airwave and then back down to you through the reception of the radio.

All of a sudden that pathway becomes very obvious to you as you are experiencing these very intimate sounds. That's what it does to you, and whatever effect that has on you, it will carry into other aspects of your life. What does that mean politically? I don't know, but here's the thing that it does to you. And of course, this experience is not separate from the topic that I am looking at in *Nocturne*, because that's what gives it



Samson Young, *Nocturne*, 2015.

Sound performance (one performer with airsoft pistol, audio interface, bass drum, compressed air, contact microphone, cooking paper, cornflakes, electric shavers, electrical sound toys, FM transmitter, glass bottle, laptop, mixer, ocean drum, rice, Shinco radio, shotgun microphone, soil, tea leaves, thunder sheet, thunder tube, Tupperware, video, wind chime).

Installation view of *Pastoral Music* at Team Gallery, November 5–December 20, 2015.

© Samson Young. Image courtesy the artist and Team Gallery, New York. Photo: Joerg Lohse.

its contradiction, that's what gives it this really weird fucked up-ness. [It makes people question] what this artist is doing, who he is, who is doing this, and why he is aestheticising war... All of those things combined are the effects it has on the audience.

Joleen            You once said that “music can be very dangerous.”

Samson            What I meant by that was that music bypasses the defences that we have—call that intellect, education, informed opinion—and crosses into the emotive or the affective. It's dangerous because you know it can be manipulative, but in that moment [of exposure] you still can't help but feel the things it wants you to feel. Over time, we have seen many examples of how that power has been harnessed.

Joleen            That reminds me of Brian Massumi's analysis of the US colour-based terror alert system introduced by the Bush administration in 2002, as capable of calibrating and triggering collective emotional responses. He argued that, emptied of semiotic content, these colours are able to bypass cognition and work on a person's pre-subjective level to modulate an intensity of emotions. In this way, politics directly addresses pure perception—all our senses can be conscripted. Today we navigate and compose our relationship to the world through a much more complex architecture of data across different technologies. Images and sounds,

such as those we see in the news or in films, have become a major player in contemporary affective economies, and your work allows us to recognise these affective mediations. What does an ‘intelligence’ in listening mean to you?

Samson I’ve talked about how music affects us psychologically. Our receptiveness to it is hardwired, and it is hard to resist being moved—kind of like being moved by a really bad movie—but it’s important to understand what it’s trying to do and moderate its effects on you. As an artist, I am also interested in the question of how one would, for example, engage with the intensity of violence and terror without recreating those scenarios of violence. I think that’s what art has always done very well. The result is, again, that this experience will radiate horizontally, so that it is no longer topical but it becomes a much broader thing.

Joleen In your works, you deploy unconventional ways of lifting the curtains of illusion and revealing otherwise overlooked processes of mediation. Is the exposure and deconstruction of these underlying ideologies enough for you?

Samson No, it’s not enough, and that is not where the experience rests at. If you allow me to speak abstractly, where the representational—the ‘extra-sonic’—meets the ‘form,’ that’s actually a space of imagination and a space of extremely heightened intellect and sense that happens in the mind.

This has happened in music for centuries. Think about what happens in the ‘programmatic music’ of the classical period. Take Beethoven’s *Pastoral Symphony*, just for argument’s sake. It is in five movements, it is about these beautiful lines, it is about these intricate sonic and harmonic structures, which invites very formalist listening. But it is also about this extra-musical idea called pastoralism, which is a whole basket of complicated issues. What is happening in your mind is that you are processing these pure forms, and you have to be very focussed on processing them, but you are also engaging with the idea and imagery of pastoralism, so you are using both the left and the right sides of your brain, and you might even begin to perceive pastoralism not as an idea, but as *forms*. I truly believe that whatever knowledge and awareness you would have gained from this cross-breeding of the formal and the extra-musical would be general and nonspecific. I think that’s what some of the earliest pioneers of sound art like Pierre Schaeffer got wrong. *De l’objet sonore* or the idea of focussing on the formal aspects of sounds was reactionary and a much-needed discussion at the time, but we shouldn’t be dogmatic about it because it also negates this whole other thing that happens when form and content collide.

I am always thinking about compositional form when I am making sound installations. It’s never like I am just playing this field recording, and that this recording represents something, and that’s where things end. Even with the birdcall piece in *Canon* (2016), there is a compositional structure to the experience. That’s hard to talk about in the contemporary art context, because contemporary art writing doesn’t have the language to and isn’t really interested in talking about musical and sonic forms. But I never just put a sound out there. It must have a form, it must be something which I actually want to listen to.

Joleen Can we talk about *Possible Music #1* (2018), your new commission for the exhibition *One Hand Clapping* at the Solomon R. Guggenheim

Museum? In this new work, you crafted several compositions using an array of ‘impossible instruments’ that you generated in collaboration with Next Generation Sound Synthesis (NESS), a laboratory that specialises in physical modelling to replicate and extend upon the sounds of well-known musical instruments using sophisticated algorithms. These compositions, reminiscent of military bugle signals, are periodically played through a constellation of speakers in a room that has been both carpeted and painted in highly saturated blue and teal hues. While some of these imagined instruments can remain only in the digital realm, you have also recreated parts of them through 3D printing technology for this work. There’s a lot going on here. Could you elaborate on the different trajectories that are augmented by this multi-layered work, and how it was conceived?

Samson The new pieces are the most difficult to talk about because I don’t have that sense of distance from it yet. But I think I allowed myself to be a little more improvisational and playful. Although *Nocturne* and *Canon* were very eclectic and had several narratives intersecting within them, the presentation was cleaner. With *Possible Music #1*, you kind of walk into the room and think, “what the fuck is going on?” I really liked that. I think that’s a significant change for me in terms of a working strategy.

I was going to do something else at the music department of the University of Edinburgh and they told me about the physics department’s NESS research project, which makes physical models of musical instruments. What scientists tend to do in physical modelling is describe the physical properties of a musical instrument, such as its dimensions, the material that it is made of, and the temperature of the breath [that enters it]. With those physical parameters, they can get the computer to simulate the behaviours of those musical instruments. So I went into the lab to use the software and I started messing around with it and made instruments that wouldn’t be able to exist in the real world. Because once they become numbers, the computers don’t really care, right? You can create a 20-foot long trumpet or a trumpet that is activated by 300-degree breath, and the computer is going to give you the sound according to its algorithms. So I started messing with the software to stretch its limit, and to make the kinds of sounds that only this software can make. I created about 11 different instruments and, with them, I generated about 60-something compositions, out of which I chose 40 to include in the piece.

That’s how I approached the research and how I got to making the piece. The big sculptures you see coming out of the walls, that appear cut by them in strange ways, are actually mouth pieces of these imaginary instruments that I have created, made to the scale. For example, there is a green 2.9-metre mouthpiece, so you can imagine how big that trumpet would be if the mouthpiece was that big. I also 3D-printed a small rose gold trumpet part for a nano-trumpet that I created [using algorithms]. There is also an animation showing a dragon in the stadium. You see a dragon flying into a football stadium and breathing fire into the trumpet, and that is supposed to be the illustration of the 300-degree trumpet, one of the digital objects I have created for this piece.

Joleen This is the first time you collaborated with NESS. What was significant for you in working with scientists and algorithm specialists?

Samson The physics department in Edinburgh are world leaders in physical modelling in the field of computer music. The folks at NESS are not



Samson Young, *Canon*, 2016.

Drawing (charcoal, ink, pastel, pencil, stamp and watercolour on paper), sound performance (one performer with audio interface, laptop, Long Range Acoustic Device (LRAD), microphone), installation (3D printed water basin, custom-designed bench, sound track, stamped text on wall, wired fencing).

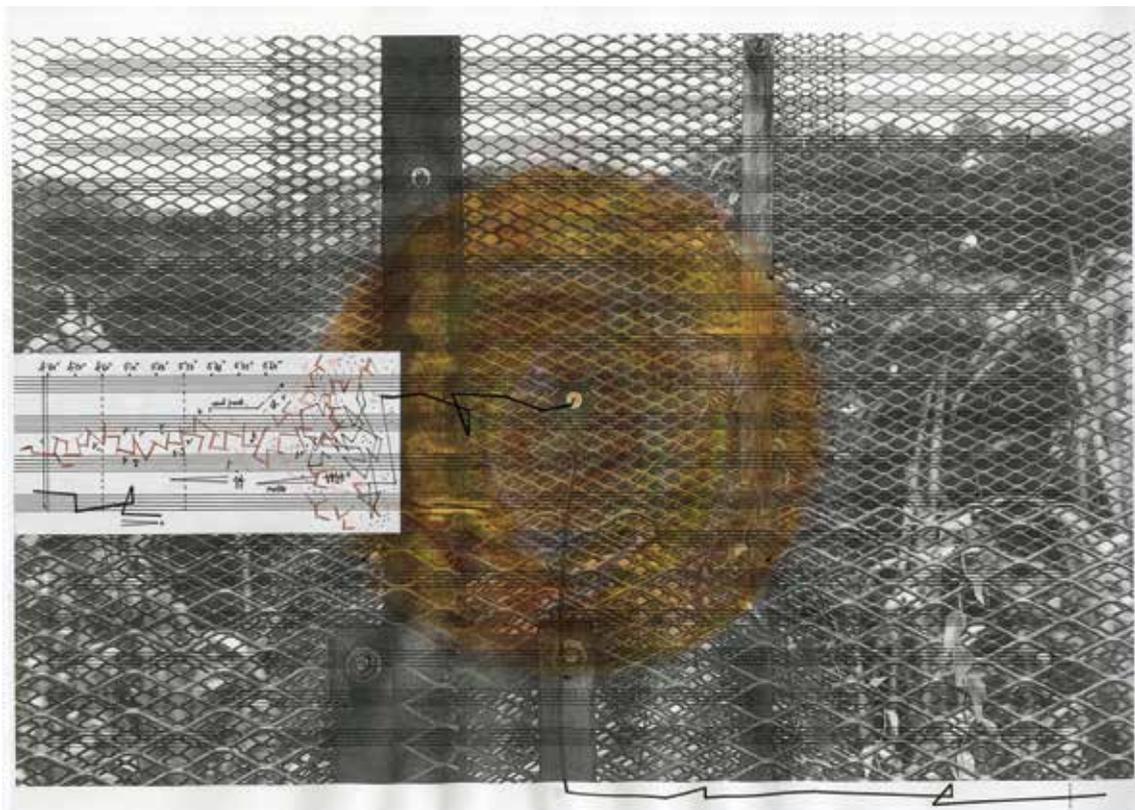
Installation view of *A dark theme keeps me here, I'll make a broken music* at Kunsthalle Düsseldorf, December 17, 2016–March 5, 2017.

© Samson Young. Image courtesy Galerie Gisela Capitain and Team Gallery. Photo: Simon Vogel, Cologne.

only doing physical modelling, but they are using super computers and parallel computing to make these physical models, which in a nutshell just means that they are able to account for and compute in real-time a richer set of physical real world properties. What that means is that they can make the claim that their musical instruments are more accurate, because they sound more like real instruments. I am very interested in that claim, this scientific claim of authenticity and how the value of that research rests upon the idea of the most authentic renditions of these instruments. It also boggles my mind that the measurement of success for new algorithms and software is pitched against whether it is close enough to something that we already know.

Joleen      What assumptions do you think ground these notions of authenticity—and its fetishisation—and what, in your opinion, are the shortcomings of thinking in such terms today?

Samson      There is a danger in saying that we should do away with authenticity altogether, because moral relativism is never good. But there are moments where you realise that such words or concepts have become



Samson Young, *Liquid Borders I* (Tsim Bei Tsui & Sha Tau Kok), 2012-14.  
Ink, pencil, watercolour, Xerox print on paper.  
© Samson Young. Image courtesy the artist.  
Fieldwork documentation.

so over-determined that they cease to be useful. You might be thinking or talking about something which is similar to the concepts that the work is trying to describe, but because of such over-determination and a variety of other reasons—maybe you are on the wrong side of history, maybe you are part of an ethnic minority group or in terms of your sexuality. Whatever the case, you are not the person in control of that narrative, so it might be better to abandon those terminologies not only because they are over-determined, but because they polarise people.

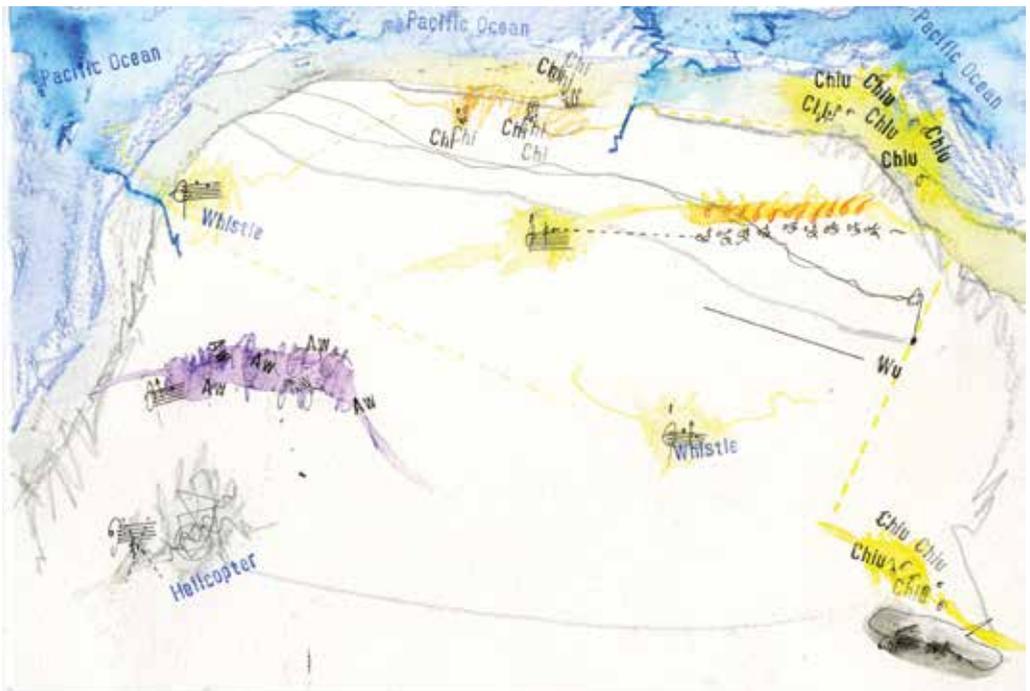
I've been thinking about whether authenticity is one such word. But this is me intellectually speaking right? I am not saying it has anything to do with the work, but this is something I have been thinking about. There is a danger in doing away with Authenticity with a capital 'A' altogether, because it's very easy to say, "we are all specific, so you should just respect my specificity." But one can also overstate that argument. I don't know if I have arrived at any conclusion yet, but my hunch is that music is a really good way to think about this. It's a safe way to have thought experiments, because it's one of those things that people really care about, but they don't care about it enough that they would kill each other to win an argument, you know what I mean? People care about music and each person has an opinion about music, and they will engage in a debate with you. Music is something very special in that way, in fact.



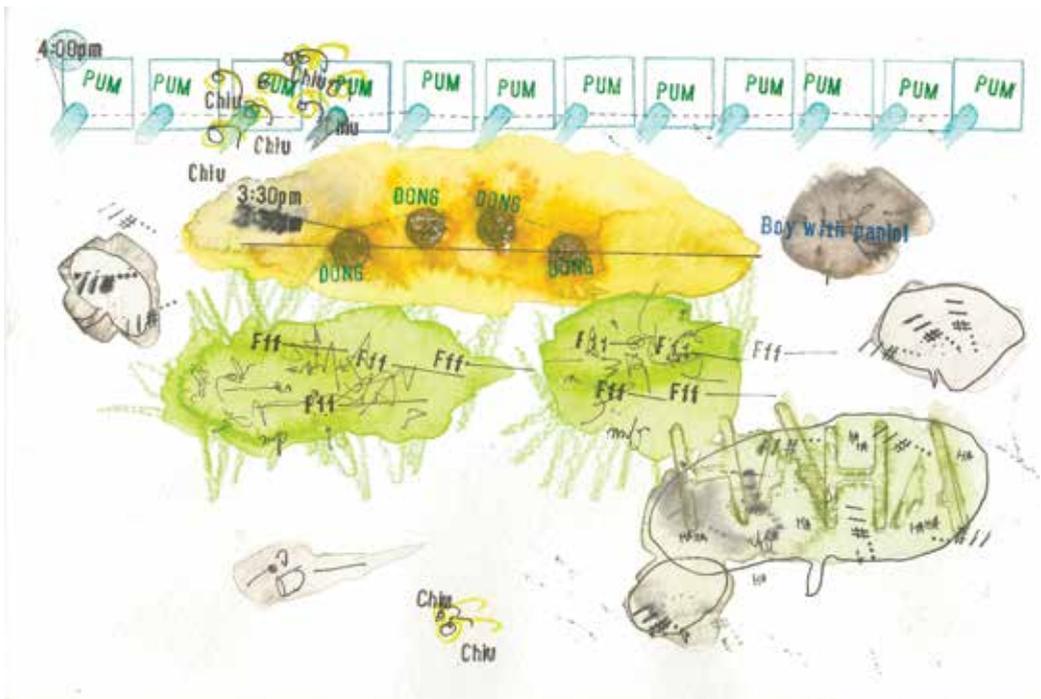
Joleen There are several other visual and sonic components to *Possible Music #1*. Apart from the 3D-printed sculptures, there are also artificial flowers attached to floor-mounted speakers, two animation videos, graphical notations, and a flag. Can you say something about these elements that you've brought together in the work?

Samson The other thing that I wanted to create in the space was an impression of an artificial war memorial, somewhere between a roadside memorial and a war memorial park. The sign at the front (which shows the daily schedule of the signal calls coming from the sound installation) looks like it's on a piece of black marble, and it gives off this impression of a fake war memorial. There is also a video documentation of a drumming performance by Shane Aspegren. There are aerial shots of him doing these drumming patterns, tracing a three-point pattern on the floor that mirrors how the sounds are channelled in the exhibition space. He has 10 different patterns that he plays continuously for one hour. When the trumpet calls over the floor speakers are not playing, you hear the drumming and it is making these geometrical shapes through the speakers. But when the trumpet calls come on, you get all 10 speakers making sounds at once and these sounds spin around in the room. So there is a very implicit reference to the military marching band.

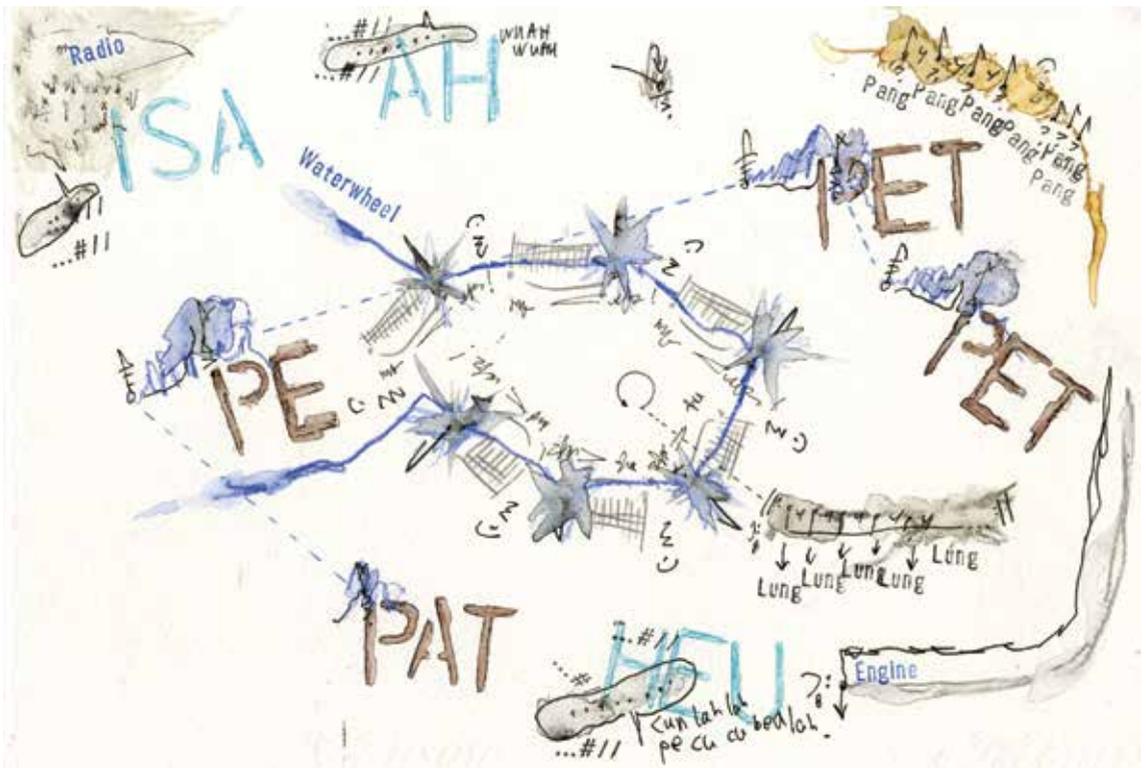
Joleen This brings to mind the role that music has played in military discipline and mobilisation, and one can perhaps add that to other forms of



Samson Young, *Landschaft (Angel Gates Park, San Pedro, Sep 16, 9.00am)*, 2015.  
 Ink, pencil, watercolour on paper.  
 Image courtesy the artist.



Samson Young, *Landschaft (Fez, Jannery, Sep 5, 10am-11.15am)*, 2015.  
 Ink, pencil, watercolour on paper.  
 Image courtesy the artist.



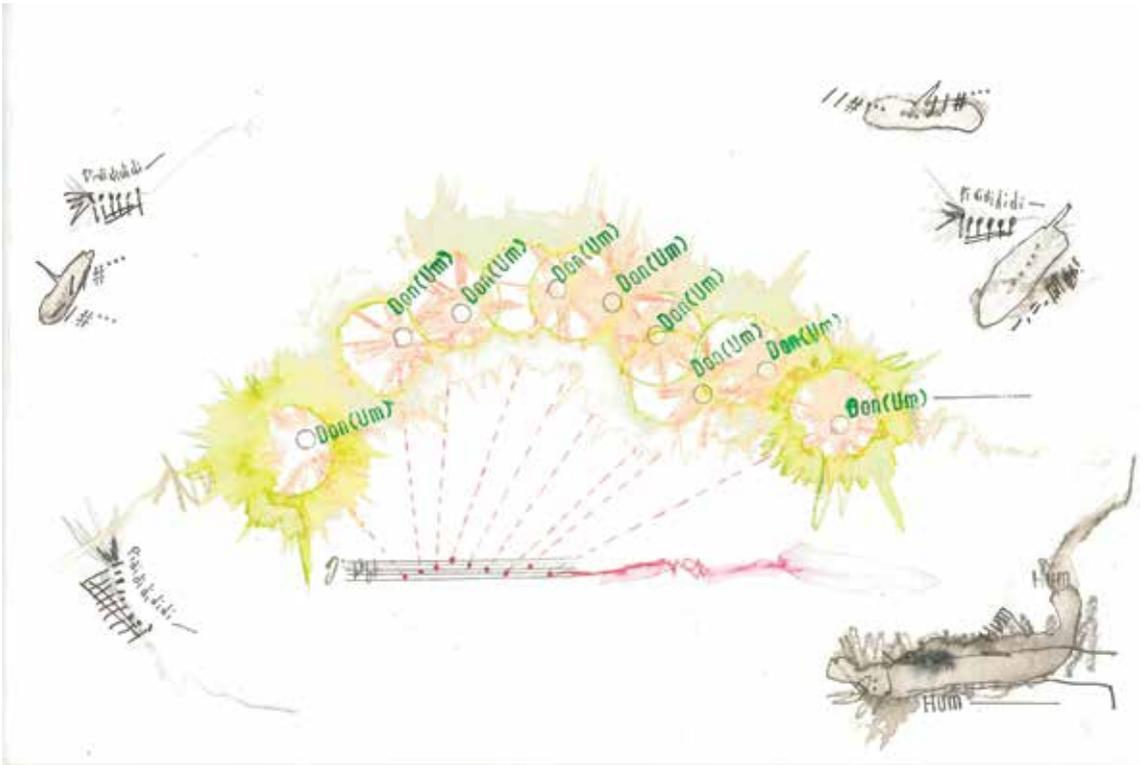
Samson Young, *Landschaft (Rouen Cathedral (side garden) (slightly different position))*, Aug 22, 3.15pm-4.15pm, 2015.  
 Ink, pencil, watercolour on paper.  
 Image courtesy the artist.

institutional governance. Is there an implicit critique for you in foregrounding the militaristic origins of the marching band?

Samson So, to return to the idea of authenticity, I have been thinking about how we regard authenticity and cultural appropriation, especially in music. I think the marching band is a good and interesting example because the marching band, at least in the American high school system, is such a festive and almost bizarre celebration. And obviously it has a military origin. However, throughout the ages, through appropriation and re-appropriation, it has kind of shed its military origin, a violent origin, and become this pure form. So, all these things are part of the thinking of *Possible Music #1*. That's usually how my pieces are; I will start with an idea and like—OK, I'm working with scientists to make these impossible instruments, but it becomes a point of departure as my mind goes in all kinds of weird directions which is all tied together in a form. They don't really come together conceptually or narratively but they become this weird collage in form.

Joleen It seems like a queering of the war memorial site. What I mean by that is the deliberate deconstruction and subversion of conventional representation, from its rituals to its ceremonies, where notions of reality and artifice are deliberately toyed with.

Yeah, everything is sort of artificial and a little bit over the top. I am juxtaposing things and [have juxtaposed] a marching band reference to these artificial objects on the wall, as well as drawings that look very



Caption: Samson Young, *Landschaft (St. Paul + Peter's Cathedral (side courtyard), Sep 2, 10.50am)*, 2015. Ink, pencil, watercolour on paper. Image courtesy the artist.

sensitive but were actually mediated by the computer and were all done by the plotting machine (but they look like they were done by hand), and these fake plastic flowers. (That's what I find interesting about artificial flowers. You know full well that they are artificial and that they are not real but there is still an urge to touch them, to verify that they are not real. That urge is very real). By juxtaposing all of these things together I think each of the individual things that I am referencing spins new meanings without giving an explicit framing of what I think about them. It's not a random selection, they have some sort of relationship with each other, but there's no clear guidance from me on what you should think about them, but when you put them next to each other, they spin new meanings.

The author thanks Shahila Baharom for the original transcription of these conversations.

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Samson Young, *Possible Music #1*, 2018.

Four 3D-printed sculptures, two framed watercolour and soft pastel on paper, costume with wool thread, artificial flowers, lamé, polyester, and silk flag, feathers with dye, felt-tip pen on drumhead, video with sound, 62:20 mins, silent video, 0:40 mins, 11-channel sound installation.

Installation view of *One Hand Clapping* at Solomon R. Guggenheim Museum, New York, May 4–October 21, 2018.

© Samson Young. Image courtesy the artist. Photo: Ji Hoon Kim, New York/Seoul.

**Matei Branea** (Bucharest, Romania) is a 2D animation film director, comic author and illustrator. Graduating from I.L. Caragiale Film School—now UNATC (Universitatea Națională de Artă Teatrală și Cinematografică)—in Audiovisual Communication in 2000, an MD in 2002, and his PhD in Cinematography and Media in 2015, he is currently a lecturer at UNATC in the Masters of Animation programme. Aside from *OMULAN*, a minimalist character, which became a hit in Romania in 2002, Branea is also well known for his animations for the television shows *Marcă Înregistrată* and *Planeta Moldova*, and for his signature posters and animation promotions for NexT International Film Festival in Bucharest for the last 10 years. His comics and illustrations were published and exhibited nationally and internationally from Tokyo to New York, Berlin, London, Paris and Bucharest. His 15-minute animation short, *OMULAN!*, which narrates a cosmic story about the meaning of life, was produced with the support of the National Film Fund (from the Centrul Național al Cinematografiei) and released in the spring of 2015.

Since 2016, Branea is the coordinator of The Laboratory for Digital Animation at the International Centre for Research and Education in Innovative Creative Technologies - CINETIC.

**Călin Dan** (Arad, Romania) is a writer, visual artist and curator with a background in Art History and Theory. Based in Amsterdam, he is a founding member of the post-conceptual group *subREAL* and is currently conducting the long-term art and research project *Emotional Architecture*. He was an advisor to the Mondrian Fund and Pro Helvetia, and led cultural institutions such as *Arta* magazine and the Soros Centre for Contemporary Art, before becoming Director of the MNAC (National Museum of Contemporary Art) in Bucharest. He was an art director for the Dutch media company Lost Boys. His work was showcased in biennales in Venice, Sao Paulo, Sydney and Istanbul; as well as in *Ars Electronica*, Linz; *DEAF* (Dutch Electronic Arts Festival), Rotterdam; *European Media Art*

*Festival Osnabruck; Internationale Kurzfilmtage Oberhausen; OSTranenie '95: das Internationale Video-Forum an der Stiftung Bauhaus Dessau; Videonale Bonn, ZKM Karlsruhe.*

**Joleen Loh** (Singapore) is Assistant Curator at National Gallery Singapore. Loh previously worked at the Institute of Contemporary Arts Singapore from 2012 to 2014, where she assisted in developing its exhibitions and public programmes. While there, she co-curated the exhibition *SOUND: Latitudes and Attitudes* (2014), an initial foray into the contextualisation and survey of how sound has been deployed, visualised and sited by artists, musicians and composers in Singapore since the late 1980s.

**Ahmad Mashadi** (Singapore) is currently the Head of NUS Museum, National University of Singapore. Recently, he co-edited, with Susie Lingham, Peter Schoppert and Joyce Toh, *TK Sabapathy, Writing the Modern: Selected Texts on Art & Art History in Singapore, Malaysia and Southeast Asia 1973-2015* (Singapore: Singapore Art Museum, 2018)

**Vida Ognjenović** (Dubočke, former Yugoslavia) is a writer, playwright and theatre director. After graduating from the University of Belgrade (Dept. of Literature and Languages) in 1963 and from the Academy of Theatre, Film and Television in 1965, she enrolled in graduate studies at Sorbonne University in Paris, and earned her MFA in Directing at the University of Minnesota in 1974. From 1974–1979, she was Assistant Professor at the Faculty of Dramatic Arts at the University of Arts in Belgrade. In 1977, she was appointed artistic director of the National Theatre in Belgrade. After her four-year term expired, she was hired as director-in-residence, playwright and general manager of the theatre from 1990 to 1993. From 1982 to 2004, she was a Fulbright visiting professor at several major USA universities such as University of California, Los Angeles; University of Illinois at Chicago; University of California, Berkeley; and Stanford University.

She had won several major awards for her theatre work: the *International Sterija Festival Award* in 1983, 1991, 2002 and 2006; the 1985 *October Award* of the City of Belgrade; the 1986 *Golden Laurel Wreath* from MESS Festival in Sarajevo; the 1988 *Golden Turkey* from Comedy Festival, Svetozarevo; First Prize at Vojvodina Theatre Festival; *Grand Prix* for radio direction; 2003 Winner of *The Statuette of Joakim Vujic*; and Vuk Endowment Fund Award. She has published seven books of plays, and had authored several prose works, essays and novels among which is *The House of Dead Scents* (Prosveta, Belgrade 1996). Her plays and fiction have been translated to English, German, French, Greek, Russian, Italian, Bulgarian, Danish, Hungarian, Macedonian, Ukrainian and Czech.

She is President of Serbian PEN Centre and Vice President of PEN International.

**Andreas Schlegel** (Germany/Singapore) currently heads the Media Lab at LASALLE College of the Arts. He works across disciplines and develops artefacts, tools, and interfaces where art and technology meet in a curious way. Many of his works are collaborative and have been presented on screen, as installations, workshops or performances. His practice is concerned with emerging and open source technologies where outcomes are driven by computation, interaction and networked processes. In 2007, he co-founded *Syntfarm*, an art collective interested in the intersection of art, nature and technology. Since 2004, he has been contributing to the open source project *Processing.org*, and he collaborates in the performance collective *electromagnetic objects*.

**Samson Young** (Hong Kong) is a composer and artist based in Hong Kong. His creative outputs are manifested through a variety of media and across disciplinary divides. He holds a PhD in Music Composition from Princeton University (2013). He has had multiple solo exhibitions worldwide, including the Kunsthalle Düsseldorf, Germany; Goethe-Institute, Hong Kong; and Hiroshima City Museum of Contemporary Art, Japan. He was the recipient of the inaugural *BMW Art Journey Award* at Art Basel Hong Kong in 2015, and represented Hong Kong at the 57<sup>th</sup> Venice Biennale with *Songs for Disaster Relief*, which recently travelled back to Hong Kong's M+ Pavilion, West Kowloon Cultural District. He was awarded the Honorary Fellowship by the Hong Kong Arts Centre in 2018.

**Milenko Prvački** (former Yugoslavia/Singapore) graduated with an MFA in Painting from the Institutul de Arte Plastice “Nicolae Grigorescu” in Bucharest, Romania. He is one of Singapore’s foremost artists and art educators, having taught at LASALLE College of the Arts since 1994. He was Dean of the Faculty of Fine Arts for 10 years, and is currently Senior Fellow, Office of the President at LASALLE. He also founded *Tropical Lab*, an annual international art camp for graduate students.

He has exhibited extensively in Europe, USA, and Singapore; among the major exhibitions, was most notably the Biennale of Sydney in 2006. He participated in numerous symposiums and art workshops worldwide, and acted as a visiting professor at Musashino Art University in Japan, Sabanci University in Turkey and University of Washington School of Art + Art History + Design, USA. He is Adjunct Professor at RMIT University, Melbourne, Australia.

He was awarded the *Chevalier de l’Ordre des Arts et des Lettres* by the French government in 2011 and Singapore’s *Cultural Medallion for Visual Arts* in 2012.

**Venka Purushothaman** (Singapore) is an art writer, academic, and arts and cultural manager. Currently Provost at LASALLE College of the Arts, Singapore, he holds a PhD in Cultural Policy and Asian Cultural Studies from The University of Melbourne. Purushothaman has researched and published extensively on contemporary art, cultural policy and festival cultures. He has written essays on numerous artists including Pierre & Gilles (France), Nathalie Junod Ponsard (France), Parvati Nayar (India) and Salleh Japar (Singapore). His artist monograph, *The Art of Sukumar Bose: Reflections on South and Southeast Asia* (2013) was awarded the 2015 ICAS Book Prize (Best Art Book Accolade) by the International Convention of Asian Scholars, Leiden University.

**Susie Wong** (Singapore) is an art writer, curator and artist. She has contributed to several publications in Singapore. She was a regular art reviewer and art feature writer for the arts in Singapore: in the 1990s for *The Straits Times*, *Life!* Singapore; *The Arts Magazine* (The Esplanade); in the 1990s to 2010s, for *ID* (Singapore) and *d+a* (Singapore) on art, architecture and design. She had written several artists’ monographs and has contributed essays in publications such as *Southeast Asia Today* (Roeder, 1995); *Liu Kang: Colourful Modernist* (The National Art Gallery Singapore, 2011); and *Histories, Practices, Interventions* (Institute of Contemporary Arts Singapore, 2016). She is a member of AICA (International Association of Art Critics - Singapore Chapter). Accompanying her art practice, she had published two special edition art books: *Trace* (2008) and *Tracing Land* (2014), as well as [*The Machine*] *Contemplating the Body* after a group exhibition she curated at Singapore General Hospital (SGH) Museum.



