

20 ヨコハマ
トリエンナーレ
20 YOKOHAMA
TRIENNALE
AFTERGLOW
光の破片をつかまえる

S
O
U
R
C
E
B
O
O
K

- 10 INTRODUCTION TO THE SOURCEBOOK
FOR YOKOHAMA TRIENNALE 2020
Organizing Committee for Yokohama Triennale
- 13 SHARING OUR SOURCES
Raqs Media Collective,
Artistic Director of Yokohama Triennale 2020
- 27 YOKOHAMA STREET LIFE:
THE PRECARIOUS CAREER OF
A JAPANESE DAY LABORER
Tom Gill
- 38 BONGOMOHILAR JAPAN JATRA
[A BENGALI WOMAN'S VOYAGE
TO JAPAN]
Hariprabha Takeda
- 45 SCENOGRAPHY OF FRIENDSHIP
Svetlana Boym
- 48 THE AUTHORSHIP AND SIGNIFICANCE
OF THE NUJŪM AL-'ULŪM:
A SIXTEENTH-CENTURY
ASTROLOGICAL ENCYCLOPEDIA
FROM BIJAPUR
Emma Flatt
- 56 NUJŪM AL-'ULŪM
[illustrations]
- 68 LUMINOUS PURSUIT: JELLYFISH, GFP,
AND THE UNFORESEEN PATH TO
THE NOBEL PRIZE
Osamu Shimomura, Sachi Shimomura,
John H Brinegar
- 81 CONTRIBUTORS TO THE SOURCES
- 84 YOKOHAMA TRIENNALE 2020
TO START WITH THE EPISÓDOS
Raqs Media Collective

INTRODUCTION TO THE SOURCEBOOK FOR YOKOHAMA TRIENNALE 2020

Organizing Committee for
Yokohama Triennale

In directing and curating Yokohama Triennale 2020, the Raqs Media Collective made a request to start with the sources. They claimed that while titles and themes propel us to narrow down and mold our thoughts within a set of fixed parameters, the sources encourage us to do the exact opposite: open up and share with others so as to elaborate in their own ways. In short, their curatorial concept is to start with the sources.

Hence, we herewith present this sourcebook, which is a compilation of words, text, experiences, and visions that Raqs Media Collective see as resonating with their thoughts. It is meant to be shared and reverberated throughout their curatorial journey, while they converse with artists and collaborators, among others, “as catalysts that provoke us to think, to ignite, to learn, and unlearn.”

In “Sharing Our Sources,” an introductory text to the source, Raqs Media Collective makes various references to light and luminosity. As they explain how the radiation that appeared in the analog televisions in our living room was, in fact, remnants of the Big Bang, they imply how the glow can go far in time and space. They also discuss how luminous organisms glow while they take in toxicity. Light, in this case, provides us a way to live with and care for things that may threaten us yet could not be wholly excluded from our lives. Most importantly, as they describe how “life is a luminous autodidact,” and introduce the lives of humble individuals and historical figures as sources, it is not about their power and knowledge, but about their ways of caring for life and friends that they see as worth sharing.

The *Sourcebook* is a set of open sources shared by Raqs Media Collective. It provides some thoughts to start conversations that would eventually become what they call a “thicket,” or a thick and dense space of rich and enchanting ideas, thoughts, and many more.

With this book in their hands, we hope that the readers will embark on the journey with Raqs Media Collective to find their own luminous ways to care for life and friends.

SHARING OUR SOURCES

Raqs Media Collective
Artistic Director of
Yokohama Triennale 2020

WHITE NOISE

In the days of analog television, when broadcast signals went off-air, we would stare at what was called 'white noise' on our TV screens. There was a strange comfort in getting lost in this white noise. It was possible to see and imagine anything and everything in its psychedelic minimalism. The electronic noise was a sort of ephemeral optic chimera, and we looked in it for patterns, and saw ghosts. This dysfunctional screen became a kind of window onto a haunted landscape.

What we did not know then was that in every patch of analog television, white noise contains a fraction of cosmic microwave background radiation left over from the Big Bang. We did not know that what we were viewing had emanated at the beginning of time. Every explosion leaks a glowing residue, an afterglow, or a sign that manifests itself especially in the moment when the signal goes out.

S
H
A
R
I
N
G
O
U
R
S
O
U
R
C
E
S

LUMINOUS CARE

The universe explodes all the time. Primeval explosions still relay their shock waves, setting off echoing sub-explosions, each with their own bit of radioactive charge. Sunbursts induce some coral species to react to the toxicity of the sun's ultraviolet waves. In return, they emit their own bits of photo-protective bio-florescence—beautiful luminous patterns that end up illuminating, caring for, and protecting the organism from stressful solar radiation.

Some day, some astro-biologists would think, that this signature of bio-florescence could guide us to understand alien forms of life in exo-planets exposed to the harsh solar radiation of their own gigantic suns. Corals, anchored in the Earth's ocean floor lighting up in conversation with our distant Sun, make it possible for us to investigate the nature of life in other worlds, with their suns.

Life, the universe, the world, and the time of each day disintegrate and get re-constituted through innumerable acts, incrementally re-building through luminous care. Broken minutes are mended in the afterglow of time's toxic debris. Life is a luminous autodidact.

A THICKET

On a rainy June afternoon in 2007, Nishikawa Kimitsu—a 67-year-old itinerant casual worker, a 'day labourer' who lived in cheap bedsits in Yokohama's Kotobuki neighbourhood, earning a living mainly as a longshoreman in the Yokohama docks—looked up at the clouded sky and laughed a big laugh as he spoke to the anthropologist, Tom Gill. This is what he said:

The cosmic egg in the diagram is an idea I took from Deleuze and Guattari. We get born from the cosmic egg but remain immature; we suffer and go training for ten, twenty or thirty years, and then we have a second birth! Although there are some people who achieve enlightenment as soon as they're born [...]. In my own case, I haven't got there yet. [...] We are part of the universe, but at the same time we are creating the universe.

As a proletarian sage, a philosopher of the dockyards, Nishikawa offers us an immense source of auto-didacticism, and of a confident transversal consciousness born and anchored in the streets of Yokohama.

Nishikawa's legacy becomes a 'source' for us. A 'source' is a point of reference; a cluster of concentrated acts, materials, and traces rich in metaphor and investigative clues. Here, the 'source' gives us the energy of self-enquiry and examination, as well as of learning through an intense scavenging of cultural and intellectual material around us, and a process of awakening, without masters. Sources enable the making of a non-rivalrous, egalitarian stance between various arcs, visions,

and utterances, and allow for them to play with, and infect each other.

Sources attract other sources, and build itineraries of travel, of movement, of shifts in emphasis, of minor variations and major modulations. In today's vari-axial world, this makes for an open-ended field of interpretation and a collision of dispositions. We have found that engines of creation and excavation can be produced through a layering of sources, and a thickening of their itineraries, during the long deliberative process of making of a triennial.

We offer distant and proximate viewers, listeners, and readers of the 7th Yokohama Triennale in 2020 an array of sources. These are drawn from different periods, cultural milieus, and geographies, and are written by individuals and collectivities that have cared for life. These combine a patchwork of sparks and incandescence that can illuminate the journey that artists and co-travellers are embarking upon. The sources guide, inform, inspire, and riddle our conversations with artists, curators, writers, and everyone else interested in this specific journey. They act as catalysts that provoke us to think, to ignite, to learn, and unlearn.

FLICKERING LIGHT

Over a hundred years ago, a woman named Hariprabha Mallik left a village in eastern Bengal (now Bangladesh) to accompany a foreigner, the man she had fallen in love with, an itinerant merchant named Takeda. She sailed with him to Japan and found herself in a new world, which surprised and delighted her. She knew next to no Japanese and at first could only communicate in silence. Her encounters with the family and friends of the man she had travelled half the world to be with, left a mark on her. To us, they seem lit by a light of a woman teaching herself to become a part of a new world.

A friend, the artist and philosopher Svetlana Boym, wrote about a kind of light in her essay "Scenography of Friendship":

[...] In circumstances of extremity, the illuminations do not come from philosophical concepts but from the 'uncertain, flickering and often weak light' that men and women kindle and shed over the lifespan given to them. This luminous space where 'men and women come out of their origins and reflect each other's sparks' is the space of humaneness and friendship that sheds light on the world of appearances we inhabit. In other words, friendship is not about having everything illuminated or obscured, but about conspiring and playing with shadows. Its goal is not enlightenment but luminosity, not a quest for the blinding truth but only for occasional lucidity and honesty.

Hariprabha wrote:

One by one many people came to meet us. Young or old, they took off their hats, sat on folded knees and bowed to each other in greetings.

They introduced themselves, greeted each other, asked about our health, gave thanks and expressed their joy at meeting us. At each exchange of question and answer, it was expected to bow three or four times to each other. Since I knew no Japanese, I bowed silently.

If you do not know how to say something to a stranger, you can still glow, as one does sweating after a day's labour, or even just share your shadow with them, creating an outline of light in the narrow space where your shadow just shies away from meeting theirs.

A form of knowledge grows out of the jostling of untranslatable experiences.

AN UN-ENCYCLOPAEDIA

In the Middle Ages there is a traffic of ideas, images, stories, and concepts between South, Western and Central Asia and China, Korea, Japan. It is carried by itinerant autodidacts—monks, heterodox thinkers, merchants, sailors, pilgrims, fugitives, and slaves.

A description –

of rare events, an account of their signs, and how to repulse them; of elephants, their death in the state of rut, their conditions and their diseases;

of music, the melodies, modes, and 108 rhythms, and their merits and demerits;

of the mystical journey, meditation, ecstasies, miracles and fourteen houses given by the Sufis.

Nujūm al-'ulūm (Stars of the Sciences), a 16th century astronomy manual from the kingdom of Bijapur in South India, proposes star-gazing as a form of medicine for the care of friends. The text takes its bearings from a mélange of concepts and practices that originate in Indic, Arabic, Persianate, Turkic, and Semitic bodies of working knowledge.

of sowing seed and gardening, of the eastern wind and medicines for pests caused by it; of the medical sciences, diseases, ailments, and a description of simple and compound medicines and their causes; of Indian and Khurasani exercises of wrestling, its tricks, and their modes and manners.

Terms to illuminate the night sky of Southern India emanate from the vocabularies of Hind, Khurasan, Uighur culture, Turkestan, Arabia, Ancient Greece, and elsewhere. They branch out and cross-fertilize, creating concepts as they move and proliferate. Spells and formulae are glossed in Sanskrit, Turkish, Telangi, and Farangi. They are not always translated, but always glossed into an expanding glossolalia of concepts.

of fireworks and the various sorts and the ways of making them; of making perfumes, the methods of it and the varieties and kinds of it.

From star-gazing almanacs to writing systems, we can see a world illuminate its distant corners through the intrinsic and pervasive energies of heterogeneous absorption. Acts that bridge vast distances have enormous and lasting significances. The “Table of Contents” of this remarkable text

is an atlas of a universe that knows no internal or external boundaries of the knowable and the imagined.

of the interpretation of dreams and a description of true and false dreams.

In the expansive universe of *Nujūm al-'ulūm*, there is nothing so big or proximate that it is also not simultaneously small or distant in relation to something else. There is an acceptance of a delicate web of actions. Every creative act, every inquiry can be a source of transformation; every transformation describes a moment that can inform a deliberation.

*of poetic metre, rhythms, and whatever is connected to poetry;
of fables and romances;
of tools and instruments of the crafts of traders and artisans.*

There are no predetermined hierarchies that dictate which mode of practice, which form of thinking, which cultural or historical provenance is of lesser or greater significance. Everyone who shares what she knows, or is curious about what he does not know, can be a friend, and can care for friends.

ADVICE OF FISHERMEN

Shimomura Osamu was a sixteen-year-old living in the outskirts of Nagasaki when the atomic bomb dropped on the city in August 1945. He could never forget the blinding flash of the explosion, and recalls losing his vision temporarily. He found a way to think about the relationship between light and life for the rest of his life, and went on to research bioluminescence, the light that glows in living things. He started studying organic chemistry, researching the luminescence of a kind of shrimp known in Japan as *umi-hotaru* or 'sea-firefly'.

It is advisable to seek the advice and help of biologists, oceanographers, fishermen [...].

Shimomura's most important discoveries came later, and were made with the help of ten thousand jellyfish, each of which he studied carefully. It is not surprising he advocated friendship with fishermen.

His research on Green Fluorescent Protein (GFP), a genetic marker of bioluminescence that he isolated in *Aequorea victoria*, or the Crystal Jellyfish, found a practical application in the development of a method of indexing levels of toxicity and pollution in water bodies through the 'expression' provided by 'reporter genes'. The creatures who were 'transfected' with the 'reporter genes'

became expressive, as in they could be stimulated to ‘glow’ in response to the presence of toxic materials. This technique, harmless in itself, became a bio-sensor, a living reporter and vital tool in the maintenance of the health of aquatic ecosystems.

THE SPLIT

Corals glow to counter the poison of ultraviolet radiation, and crystalline jellyfish are harvested for ‘reporter genes’ to help detect toxicity: There is a connection between the luminous and the toxic.

Nothing that does not live need be concerned with a toxin. The conditions that enable living cells to grow are accompanied by the circumstances that cause their decay. The environment, internal drive, or external stimuli that causes decay to outpace or arrest growth gets called toxicity. It can be poison, it can be pollution, it can be a cure, it can be waste, and it can be runaway growth.

Toxins also become the foundation of the systematization of exclusion and hierarchy. We can learn not to repeat Indic civilization’s profound non-thinking on the relation of toxins and life that has carried on—and carries on still—for thousands of years. Toxicity has been made a burden that must be borne by a large number of people, while a few can keep themselves pure. The difficult task of keeping the biosphere clean of stench and of the poison that arises from faecal or

dead matter was thus partitioned. The handling of death, of infectious disease, of human and animal waste, and of the residues of production was not for people with time, power, and wealth.

The sharing of shadows was extinguished.

The care of life and the care of self are not possible without care with toxicity. We have to think about our sickness, our offal, and our residues of the cycles of consumption and production without cruel partition, masked as destiny. Each hill-ock of refuse on the outskirts of a city represents a demand made by the present on the future, with no promise of recompense, until the archaeologists come calling. The splitting of the luminosity of care from the shadows of the toxic is detrimental to the future of life on this planet.

TOXIC GLOW

A mysterious effect of the meltdown of a nuclear reactor is a sensation of glowing light that can be experienced by human beings but cannot be seen in front of one’s eyes. This is attributable to a phenomenon known as Čerenkov Radiation, in which particles that can travel faster than light are emitted by a nuclear meltdown or a ‘criticality incident’. These particles interact with the liquid in the vitreous humor of the human eye to create a ‘blue glow’ that can be ‘experienced’ internally by the optic nerve and transmitted as a sensation of light to the brain, without being ‘seen’ as an externally observable

optical phenomenon because these particles move faster than light. It is as if the eye were sensing a light, out there, in front of it, that was nevertheless not 'in' the environment of the human witnesses. The same thing can happen to astronauts exposed to solar radiation, which is emission from nuclear explosions that are constantly happening in the sun in outer space.

This glow, beautiful though it is, is also a marker of toxic radioactivity that is experienced as a vision. This ghostly, spectral glow is said to have been experienced by people who worked in the Fukushima Nuclear Plant in the aftermath of the nuclear accident. In our understanding, the toxicity of our time has to be encountered with a cultivation of this spectral glow. Artists try to sense this luminosity, its beauty and its danger, so that we can see the meltdown that is happening around us all the time and teach ourselves how to survive—and to thrive. We have to begin to think of life with toxicity, and with the self-knowledge that banishment is a folly.

ANTASHIRA, AN UNTRANSLATABLE

A Bengali word *antashira* can be used to speak of an intrinsic flow and pervasiveness that creates a sensory layer which flows within our daily lives. *Antashira* is like the energy currents of the nervous system, like *qi*. It shapes life in all its extensibility. Today, the world needs to draw sustenance,

inspiration, and strength from within varied *antashira*, our intrinsic-pervasive forces, that flow between all of us as we re-fashion relationships between the microcosm of singular lives, the connected life of the planet, and the macrocosm of the universe.

References:

- The Big Bang's Playing on TV*
https://www.nasa.gov/vision/universe/starsgalaxies/cobe_background.html
- Jack T. O'Malley-James and Lisa Kaltenecker, "Biofluorescent Worlds – II. Biological fluorescence induced by stellar UV Flares, a new temporal biosignature," *Monthly Notices of the Royal Astronomical Society*, Volume 488, Issue 4 (October 2019), pp. 4530–4545.
- Tom Gill, *Yokohama Street Life: The Precarious Career of a Japanese Day Laborer* [Asia World Series of Publications] (London: Lexington Books, 2015).
- Svetlana Boym, "Scenography of Friendship," *Cabinet*, Issue 36 "Friendship" (Winter 2009–2010).
 Online article: <http://www.cabinetmagazine.org/issues/36/boym.php>
- Hariprabha Takeda, *Bongomobilar Japan Jatra* (A Bengali Woman's Voyage to Japan), first published in Dhaka, 1915. Reprinted by Sahitya Prakash Publishers, Dhaka, 1999. English translation from Bengali by Debjani Sengupta, commissioned for Yokohama Triennale 2020.
- Emma Flatt, "The Authorship and Significance of the Nujūm al-ūlūm: A Sixteenth-Century Astrological Encyclopedia from Bijapur," *Journal of the American Oriental Society*, Vol. 131, No. 2 (April–June 2011), pp. 223–244.
- Osamu Shimomura, "Advice to Students Who are Interested in Studying the Chemistry of Bioluminescence," *Bioluminescence: Chemical Principles and Methods* (Singapore: World Scientific Publishing, 2006), pp. 375–378.
- Raqs Media Collective, "The Equal Division of Toxicity," *Livemint* (29 August, 2018).
 Online article: <https://www.livemint.com/Leisure/Jux-EvOeT79uyhy5q75DRbI/Raqs-Media-Collective-dreams-of-an-equal-division-of-toxicity.html>
- E.D. Clayton, *Anomalies of Nuclear Criticality*, Revision 6 (Washington: Pacific Northwest National Laboratory, 2010).

YOKOHAMA STREET LIFE: THE PRECARIOUS CAREER OF A JAPANESE DAY LABORER

Tom Gill

S
O
U
R
C
E
S

It was 6:15. I stood back to let Nishikawa concentrate on trying to get a job. Up went the shutters—there were not as many jobs as the day before, maybe thirty or so. He surged forward with the rest. He was in the second row. I thought he ought to get one, but he wasn't pushing hard enough and others were pushing in from behind and getting their application cards in ahead of him. In a minute all the jobs were gone. But he hung on in while others were turning away in disgust, and managed to snap up a late job offer which cropped up in the hand of the clerk standing just in front of him.

He showed me the paper. "Workers, 1. Nishikawa, Kimitsu, 53, construction worker [dokō]." The job was in Mitsukyō, about 45 minutes away by foot and train. It paid 12,500 yen, plus 500 yen for lunch.

"Carrying stone," he explained, gesturing lifting up paving slabs and loading them onto a wheel barrow.

"Is it a good job?"

"Hard labor! Punishment!"

He laughed loudly and said it again.

"Punishment!"

With that, he was off. I thought: He will die at sixty, in the year 2000, the last great un-seen existentialist hero of the 20th century.

*These sources are excerpts from the books and articles that have been selected, compiled, and adapted by Raqs Media Collective.

*We would like to extend our special thanks to Dr. Tom Gill, Dr. Emma Flatt, and Dr. Togawa Masahiko for their generous assistance in compiling and editing the sources.

THE FIRST CONVERSATION

February 3, 2007

My name is Kimitsu Nishikawa. I was born in Kumamoto city in 1940, the 15th year of the Showa era. Others born in that year include John Lennon, Al Pacino, Peter Frampton, Raquel Welch, Jack Nicklaus and the great sumo champion, Taihō.

My parents gave me a very pompous name. They called me “Norimitsu” (紀光), meaning something like, “light of the century.” [...] When I was young, a fortune teller told me it was an unlucky name, because the character kawa (川) in Nishikawa had three strokes and the character nori (紀) in Norimitsu had nine strokes, and three plus nine equals twelve, which signifies a bad life, easily getting neurotic, likely to have difficulty in getting married, etc., etc.

The nishi (西) in Nishikawa is a problem too. It means “west,” and in Buddhist cosmology all bad things come from the west. The realm of the dead is always in the west. In English “gone west” means somebody died, right? The Dalai Lama’s looked into this, you know, and I too am interested in this kind of thing. It’s a strange dialectic. Does the cosmos itself undoubtedly exist? That’s a pretty crazy question. G. K. Chesterton looked into it too, in his own way, with that characteristic humor of his. I reckon that’s why Chesterton has been so popular in the Orient. His discussion on the death penalty is interesting. He writes somewhere, “If you are opposed to the death penalty, don’t hang around screaming about it outside the prison—get into the prison, embrace the man who is due to be hanged, shed all your tears and say, “You should not have to die!” In other words he was an empiricist. In the sense that he paid attention to individual human beings rather than the generality.

/

THE SECOND CONVERSATION

February 17, 2007

/

I think we’re seeing a regression phenomenon among humans today. People run away from the truth. The worst of all is the authorities, the state. Thanks to the state, all sorts of absurd, irrational things have cropped up. That was the biggest theme of the twentieth century. We just couldn’t live in a relaxed, calm sort of way anymore. Even now we don’t know when North Korea might drop an atomic

bomb on Japan. It’s an uneasy, Franz Kafka kind of feeling. Kafka was lucky he died before Hitler took power.

/

The people who’ve had the biggest influence on me are the likes of Guru Nakazawa and Colin Wilson. Then there’s Herman Hesse, John Steinbeck, Somerset Maugham, and Dostoevsky’s writings from prison in Siberia. Quite a mixed bag, isn’t it? There’s no consistency—because I have no education.

/

There are Japanese people I admire. My father. Guru Nakazawa. Particularly excellent foremen down on the docks. Heroes whose names I don’t know. They are real heroes. [...]

Guru Nakazawa took a lot of heat over the Aum Shinrikyō problem, but I think any scholar should be allowed to make one or two mistakes. Paul Kammerer got so heavily criticized by William Bateson that he committed suicide. George Orwell, Arthur Koestler—they’ve been heavily criticized too. Guru Nakazawa is an enthusiastic scholar. Look how many books he’s published. And he’s an empiricist. He’s got a lot of detailed knowledge about myth. I reckon his key works are *The Mozart of Tibet*, *Lenin for Beginners*, *Barcelona*, *The Sacred Number 3*, and *Green Capitalism*. Those books constitute the core of his work, I’d say. And the key elements in his thought would be symmetry, oppression, and knowledge—latent, unconscious, flexible knowledge.

When Nakazawa talks about symmetry, he means that if you observe from a great distance, the differences between people, or between people and animals or plants, do not seem particularly significant. Humans are not a particularly outstanding thing. That’s the kind of amusing viewpoint you get with Nakazawa. He spent three years in Tibet, so he does have a certain persuasive power. I envy him. [...]

THE THIRD CONVERSATION

February 25, 2007

I well remember the day the war ended. That day, there was the bluest sky I’ve ever seen. It really moved me, as a kid. It was incredibly quiet. You could have heard a pin drop. And the sky was blue. Pure blue. [...]

/

I hate authority. Authoritarian teachers, priests, and so on. Christ or Buddha would never have behaved the way they do. Real gods are not authoritarian.

/

THE FOURTH CONVERSATION

March 3, 2007

/

You know they found those fossilized skeletons in northern Italy. They seemed to be the skeletons of a young man and woman who'd been killed while locked in an embrace. I saw it in the Sunday Mainichi. An Italian archaeologist dug them up. They'd been having sex under age, so they were stoned to death. Because they threatened the social order. They were from different tribes so their love was forbidden, something like that. I think that says it all. You can't violate the laws of God, or the orders of your parents. In the end, it's all wrong when the authority of the father is too strong.

/

Anyway, Yokohama was a pretty interesting town, and there were lots of Americans there. So I figured I'd quit the SDF (Self Defence Force) and go to Yokohama. I felt I'd had enough of the SDF anyhow—let's do something different, I thought. I wanted to be like Samuel Johnson—pile up all sorts of experience and become a human encyclopedia. Because that's the more relaxing way to go—being a generalist rather than a specialist. Someone like Johnson, or maybe H. L. Menken.

Actually when I first came down to Yokohama, I worked for a spell at the Nissan Motor plant at Namamugi. I lived in a cheap apartment not much different from a flophouse, and one day the guy next door said he could get me some laboring work. So I went along with him. I started using the day labor market at Harappa in Kawasaki, later Kotobuki in Yokohama and for a few years, San'ya in Tokyo.

/

THE FIFTH CONVERSATION

March 10, 2007

/

I noticed a mistake in the record of our last conversation. You wrote, "It was all I could do to stay alive from one day to the next. Every day a dance of fools. No time-outs." But I didn't say "dance of fools" (*abō dansu*), I said "affordance" (*afōdansu*). It's a biological thing really. A kind of natural science that goes beyond genetics, beyond Darwin. J. J. Gibson, the American psychologist, came up with it. What he says is that people don't actually see things with their eyes or hear things with their ears—rather they are shown things, or allowed to hear things—afforded those experiences. The earth beneath our feet affords us the act of walking; a chair affords us the act of sitting. When a child gets born in the natural world, it has to be protected from lions. There are no walls in the house to afford protection. And when I was a kid, there was no affordance for me to think about the higher things; in the post-war chaos, we just had to struggle for survival every day.

It's related to the concept of autopoiesis, which is being studied in Brazil and Chile by the likes of Humberto Maturana and Francisco Varela. Shinichi Nakazawa takes those concepts seriously too. Affordance and autopoiesis are the biggest discoveries in natural science since Watson and Crick discovered DNA. Professor David Bohm at London University was involved too.

The matter of Armageddon is related too. Once in a thousand years you have some colossal natural disaster, and after that the human race has to start again from zero. The likes of Aum Shinrikyō and David Koresh made good use of this concept. [...]

/

THE SIXTH CONVERSATION

March 24, 2007

/

I love Latin music, especially the bossa nova, and I much enjoyed taking a cigarette break and listening to that music with the Brazilian ship-hands. (Mimes bossa nova dancing). I felt as if I were connected to Brazil, and I really felt like diving into the sea and swimming to Brazil. The ship hands all had these cassette players

that they'd carry on their shoulders while they listened to the music. The other ships were good too, but the Brazilian ones were the best.

On the day Princess Anne married Captain Mark Phillips, I happened to be working on a British freighter that had just arrived at Yokohama's Yamashita port from Cape Town with a cargo of coffee bags. I went up on the deck and offered the captain my congratulations. He invited me to join him for a glass of wine during the lunch break. Those were the days.

THE SEVENTH CONVERSATION

April 15, 2007

/

"No, if I couldn't get back to Yokohama I wouldn't be able to carry on living."

THE EIGHTH CONVERSATION

April 18, 2007

/

I like stories about the sea. Like Graham Greene's *Brighton Rock* or Joseph Conrad's *Typhoon*. In the end, people are saved by the sea. Stories of the desert, like Steinbeck's *Grapes of Wrath*, are hard to endure. Oklahoma's turning into a desert. In a way desert people are the most modern. Because they're furthest from the sea. The sea—that's what everybody yearns for. I love Turner's seascapes in oils. That dark sea, caught in an instant of a storm. We humans are water-based animals. So the sea has a calming effect on us. [...]

/

Autopoiesis? Something with no input and no output, like a bootstrap. A self-reproducing system. Reproduces itself without any connection to the exterior. Humans are made of proteins. Proteins make cells, cells make proteins, in an endless repetition that continues until the day we die. In the case of George Bernard Shaw, that would be a hundred years . . . in the case of Harold Wilson, a mere seventy. Autopoiesis, like a bootstrap or tensor field, continues endlessly in a Hegelian dialectic, until the cells commit suicide. It always ex-

pands upwards, having no reason to move sideways. It's pure action. Shin'ichi Nakazawa is another who pays attention to it. He pursues it all the way until he achieves enlightenment. There is no extraneous noise, no extensive quantity. He carries on until at last he achieves enlightenment. Nakazawa calls it a "symplectic manifold."

/

THE NINTH CONVERSATION

April 25, 2007

/

Nearly everyone in Kotobuki is anti-establishment. Not quite as much as the people in Kamagasaki though. People from Kansai have a certain special dynamism. I first came here in Shōwa 39; that would be 1964. It was a place made for poor folk like me. First and foremost, there was work to be had. Dock work, construction, truck driving. I'd be able to make a living. My survival pack was here.

The town was lively, like boiling vapor, like a typhoon, like a hurricane. I ate Korean-style roasted meat, I drank shōchū. I went drinking with foreigners in Chinatown. American marines, sailors from France, Germany, Britain, Indonesia, the Philippines. I had my regular bar. I learned English, but I was mostly drunk at the time, so I didn't learn anything proper. Only "panglish"—the kind of pidgin English that used to be spoken by pan-pan girls, prostitutes who hung out with foreign soldiers and sailors. No grammar. Long ago I used to see American soldiers with Japanese girls that seemed to be hanging off their powerful arms. It seemed that way because the man was so big and the woman was so small. Well, we Japanese aren't carnivores, so it can't be helped.

/

THE TENTH CONVERSATION

April 28, 2007

/

The Outsider was a bestseller in Japan. The "Angry Young Men" were famous here as well. [Colin] Wilson was living in a tent on Hampstead Heath. He had a girlfriend and he was playing around like crazy. He wrote it all down in a sex diary and just about managed to

escape when he was on the point of having the shit beaten out of him by her father. Well—he was an existentialist so that was just the sort of lifestyle you’d expect him to have. [...]

/

Wilson is always searching for what he calls “the peak experience,” but I’m a bit concerned about what happens after that. After the high, there may be a comedown waiting. There’s a similar problem in Buddhism. After you’ve achieved enlightenment, what do you do next? Still . . . I guess you couldn’t lead a really depraved life after achieving the peak experience.

In the book Wilson discusses a number of culture heroes. Vincent Van Gogh, for instance. In the space of a single year, he painted *Starry Night*, an incredibly beautiful masterpiece that overflows with the pleasure of life, and found life so unbearable that he killed himself. The former of these two actions was a graphic peak experience; the latter was in a sense a similar graphic production. Van Gogh was an existentialist thinker, don’t you think? [...]

/

THE ELEVENTH CONVERSATION

May 12, 2007

/

When I go to sleep, everything is totally black for a while, but after that I see dreams. Pretty dreams, dirty dreams. While we’re alive we are constrained by our bodies, but when we die we have no such constraints, so who knows what dreams we may see. A. P. Elkin, who did fieldwork with Australian aborigines, said that among the Barthagen and Ildawonga they have a myth where a man spills the blood of his pregnant sister, and a dragon comes surging up, meaning that if you defile nature, divine punishment awaits. The Ainu have similar myths. In Japan you can find that kind of myth on mount Koya or in Nagano. And Japanese do carry protective amulets of course.

/

When white light is refracted, *aum* is white, *bajira* is yellow, *sa* is red, and *to* is green. *Toba* is blue. The last is blue. Light with speed is blue. [...]

THE TWELFTH CONVERSATION

May 26, 2007

/

Getting into the habit of reading books was one positive outcome of the oil shock for me. If that hadn’t happened, I’d probably have got into a dull routine of working, earning, drinking and playing, and I’d have ended up in prison just like that. Just out of negligence. But as Hoffer says, “to think deeply about things, you need to be idle.” Libraries are free, so they’re ideal places for when you’re broke.

/

Japan today is in a kind of spiritual recession because people are so negligent of spiritual matters. It’s worse here than in America or Europe. I want to say “wake up!” to everyone, but if I did that a policeman would come and arrest me. Japanese society is sick at present, and even if I offered a prescription, it wouldn’t be accepted. [...]

/

The differentials are widening, and we’re getting closer to the American model. But I have no *ressentiment*. In my own case it was my fate to become a day laborer—my karma. But Eichmann and Hitler are in hell now! They’re right there in Dante’s Inferno. Hideki Tōjō’s right there with them too. They’re all in hell! (*Laughs*). Receiving eternal punishment. It’s all planned, like mathematics. People are material things, so they’re always decaying, always getting closer to the end. But when you die, things can go into reverse. People who give food to stray cats and dogs when they’re alive, get their reward after they’ve died.

/

THE THIRTEENTH CONVERSATION

June 2, 2007

/

I first got interested in Buddhism by reading a German and an Englishman—Hermann Beckh and Christmas Humphries. They turned me into a Tibetan Buddhism maniac. Beckh’s book came flying to

me. One day when I was past my fiftieth birthday, I was standing in front of the Kotobuki Labor Center and they were throwing out some un-needed books from the reading room they have there. In amongst the discarded books was Beckh's *Buddhism*. It was a paperback Japanese translation in two volumes. It was one of three books I found in the pile of discards from the reading room that I wanted to read. Some Shakespeare research . . . a book on Sino-American relations . . . and Hermann Beckh.

Somehow the conversation got on to George Orwell.

His works have an idealistic, utopian streak. But his feet are always planted firmly on the ground. His writings are firmly grounded in experience. And he looks at the world from a worker's perspective. He's got it right. The human race is not making some kind of Darwinian progression—it's actually regressing. I respect him for his experience. Shot in the neck in the Spanish civil war. *1984* is his masterpiece. Just as good as Arthur C. Clarke's *2001*. The key word is "telescreen." A life with no privacy. The dictator can see everything you do. Centralized authority. *Central power, central heating*. There are a lot of surveillance cameras in our society today. I don't mind having them around the Diet building, but it's wrong to put them up in shopping districts like Ginza or Shibuya. I mean—if crime were to be completely eliminated, people wouldn't be able to make detective movies or crime novels any more. Crime and gangs are part of culture, and they have their own nobility. Trying to crush them totally—that's fascism. A merciful spirit, compassion—that's the most necessary thing in a ruler.

/

THE FOURTEENTH CONVERSATION

June 10, 2007

/

The cosmic egg in the diagram is an idea I took from Deleuze and Guattari. We get born from the cosmic egg but remain immature; we suffer and undergo training for ten, twenty or thirty years, and then we have a second birth! Although there are some people who achieve enlightenment as soon as they're born. [...] In my own case, I haven't got there yet. [...] And when you achieve enlightenment, you go back to the woman. We are part of the universe, but at the same time we are creating the universe [...].

/

THE FIFTEENTH CONVERSATION

August 13, 2007

/

[...] The only thing that's going to make this world peaceful is an invasion by extra-terrestrials. A common enemy, that's what we need. Just look at what happened in the old Yugoslavia. As long as dangerous enemies like Hitler and Stalin were around, all the different ethnic minorities managed to work together, but the moment those enemies were gone, it descended into civil war. The same principle governs the entire world.

/

[...] We are slow, and we live in a *painful world*. It's a problem of speed. The operating principle. A problem of the mind. The mind is like a mirror, and it creates various images. One feels attachment to another. When you feel attachment to something, light becomes black.

Excerpt from Tom Gill, *Yokohama Street Life: The Precarious Career of a Japanese Day Laborer* [Asia World Series of Publications] (London: Lexington Books, 2015).
Copyright © 2015, Used by permission of Rowman & Littlefield Publishing Group. All rights reserved.

BONGOMOHILAR JAPAN JATRA (A BENGALI WOMAN'S VOYAGE TO JAPAN)

Hariprabha Takeda

At around 8, we saw a cluster of islands far away. A few ships stood near them. We could see mountains. Here the sea was green because land was nearby. At 11, our ship came near the island. By the sea-shore we could see small trees and paths. Today was very hot. I think we would suffer till we reached Singapore.

/

[...] The ship became tumultuous throughout the afternoon. The waves, with a roar, came dashing against the deck and made everything wet. Every bit of luggage that had been up on the bunk fell down on the floor and rolled from one end to the other. Later two 'boys' came and arranged and fixed them on the floor so that they would not move. Nobody could stand up straight without holding onto something. If one sat on a bench, one would fall face forwards. The beds had wooden frames all around so there was no fear of falling. Even then, because our beds were sideways and were too big, when we lay down we moved up or down as the ship swayed. One had to clutch hard at the bed to stay still. It was impossible to sleep. Our heads went up once and then down again. The rocking of the ship went on and on. No body could eat anything. The ship had 1000 Chinese passengers all of whom fasted. [...]

/

[...] One by one many people came to meet us. Young or old, they took off their hats, sat on folded knees and bowed to each other in greetings. They introduced themselves, greeted each other, asked about our health, gave thanks and expressed their joy at meeting us. At each exchange of question and answer, it was expected to bow three or four times to each other. Since I knew no Japanese, I bowed silently. [...]

/

[...] The shop was decorated with beautiful merchandise. Japanese and foreign clothes, essential and luxury items, and all kinds of food both Japanese and foreign were stocked. We had our lunch there. In one building, various kinds of flowers and trees and shrubs were kept. They were protected from the cold wind outside, so looked green and fresh, with flowers blooming. Sometimes concerts played to please the visitors. [...]

/

[...] The shrine was a building surrounded by high wooden walls. One had to cross three doors to enter the sanctum. From the outside only the building made of brass could be seen. Ordinary people were not allowed to enter. I didn't get to see how the deity looked. In that large shrine complex a formless God existed: one could feel His presence even stronger without coming face to face with Him. I noticed there were many devotees flocking the shrine. On one side of the garden some war spoils were displayed: two large canons won in the Russian War, one in the war with the Chinese and other smaller artillery along with a large anchor from a war ship. In Ise, there was another shrine surrounded by a garden just like this one. In one pond in the garden red fishes played along with many other kinds. In the clear clean water, the fish gathered around the visitors in search of food. On the shore of the pond, biscuits and other food were on sale to feed the fishes and visitors were entertained by seeing them. We took a train back in the evening after our visit to the shrine.

Mr. Takeda was in pain for a few days suffering from a large boil.

/

1st January: New Year's Day. The day before New Year, the house is cleaned after taking out all the floor mats. Everybody dresses in new

clothes and participates in many amusements. In the cities, the first day of January is marked for the New Year festivities that continue for seven days. In shrines, special festivals take place. Many kinds of entertainments and soldier's march-pasts take place. In the villages of Japan, such festivities also happen. Everyone, dressed in new clothes, visit the shrines. The young children roam around, play, fly kites. The people decorate their houses with leaves and flags. On the 2nd, they bathe in the morning and begin work. Whatever may be their work, they begin a little to make an auspicious start for the rest of the year. [...]

/

Tokyo is the capital of Japan. In Tokyo, except for a few special buildings, all the houses were made of wood. Although the capital, the city did not appear to be overtly splendid. On the streets, there were rickshaws and trams and occasionally horse drawn carriages. The city roads were wide but after the rains, they all became muddy. The wooden shoes made the mud churn thicker. The trams were very affordable: in five paise one could go to any place in the city. If one had to change a tram, then the same ticket was allowed. The car had one compartment without differing classes. There were two doors, one in the front and one at the back. When one boarded the conductor came to give a ticket that one returned to him while getting off. The tram stopped at designated places marked by a red column. Before stopping, the conductor enquired if there were any passengers for the stop and if there were none, the tram went on. From time to time, he advised the passengers to board and get off with care. By the roadside, in small cubicles, policemen were stationed to direct people. In Japan, the police carried swords on their persons. The policemen helped in maintaining peace and did not oppress or trouble any one; instead they behaved with calm politeness. In places there were small booths with telephones, and with five paise one could talk for five minutes.

/

[...] We went to visit a school for girls. A teacher took us around. She had been to England, spoke English and was well educated. We went around the school for 2-3 hours. In this place, there was no dearth of that kind of education that was required to become a good human being, living a fulfilled life and to educate children as well as other citizens. The school taught college level subjects like

Chemistry, Botany, Geoscience, Physical Education as well as cooking, cleaning, laundry, looking after small gardens, sewing, music, crafts, drawing, Moral Science, and English language. The younger students were not taught through books. Instead through art and craft, clay modelling, paper cutting they were taught moral lessons as well as other subjects. With clay they learnt geography by making different shapes like *Fujisan* (mountain) and *Sumida* (river). Through rhyming poems they learnt the names of major places in big cities. One would be astonished to see the clay artifacts and the other art pieces made by the students.

In one classroom, we saw 3 or 4 year olds making pictures with brush and paper. It was a marvel to see their tiny hands produce such art work. In one place, some children were working in the garden. Elsewhere, girls were engaged in a discussion about Chemistry. They were studying the properties while blowing or removing gases from pipes. The girls were taught etiquette, to respect each other, to talk modestly, to respect elders. In Japan, if one observed the ways in which people spoke courteously to each other, one could understand the deep sense of respect that people had for each other. For example, in the morning, children would bow to parents, everyone would bow to each other and so on even at bed time. Sometimes the words spoken were different. For example, while meeting neighbours, one would greet them with folded hands and if someone came as a guest then the Japanese sat on folded knees to greet them with respect and welcome them by asserting their own insignificance to host such an honoured person. Greetings and saying thanks was an integral part of the daily discourse. Receiving the smallest of kind words or deeds they bowed to give profuse thanks. The custom of talking to someone was to keep oneself small in comparison to the other and to pay respect. While bidding goodbye, they greeted the departing guest and welcomed him back again and again. It was rare to find any illiterate men or women in Japan. Through government efforts, from the age of 8 everyone had to go to school and before that mothers mainly taught the children their letters.

/

For personal improvement, the Japanese do not consider any kind of work beneath their dignity. I read in a newspaper once that an Indian who had come to study in Japan was walking home in the rain when one of his colleagues drove a rickshaw and offered his help. When the Indian recognized him and wanted to say something, the Japanese student told him, 'I am the coachman, there is

no need for any words.' When the Indian did not ride with him, the student went away in search of another passenger. It was not rare to come across incidents like this in Japan. Students who studied in schools and colleges worked at pulling rickshaws that they rented from somewhere, or as porters helping to reach vegetables and fish from the market on their days off. (Here, the shopkeeper sent the wares home as per order.) Everyone worked at what they deemed convenient.

/

In many places, women help their husbands in farming the fields. Women work everywhere: in the markets, shops, station, post-office. In places of entertainments, where there is a crowd, women supervised. They sell tickets for show tents and there are no obstacles for women to go and work along side men and to be free to go about every where without impediments or shame.

/

[...] No one stays bare chested or bare footed here. Their clothing and apparels are highly civilized. But in public baths, no one is ashamed to be naked while taking a bath. They even take the help of servants to scrub their bodies for 1 or 2 paisa. They pay special attention to hygiene and cleanliness to prevent diseases.

/

In their birth and death, the Japanese follow various ritual and prayers but nothing when they get married. It is because they think a marriage is just a union of two bodies. It is because of that they have a few outward festivities that they are supposed to enjoy but no ritual is deemed necessary that would imply the union of souls. But sometimes the wife committed suicide after a husband's death by cleaving open her stomach or getting rid of her hair and living like a nun to preserve the memories of the dead man and to wish for an afterlife of re-union. [...]

/

Japan has two religions: Buddhism and Shinto religion. Nowadays some people have also accepted Christianity. The Buddhism prevalent here is not pure Buddhism but everyone is influenced by Shinto

religion. They worship dead heroes and all the dead people as gods. The dead ones help humans by being with them in danger and difficulty and during war. The Japanese worship the Emperor as God. They believe that during difficult times such as a war the good benedictions of the Emperor and of the dead ancestors help them to succeed against odds.

For the dead heroes, there are grand festivals of worship. They are called *Shōkonsha*. In places there are also shrines dedicated to various gods and goddesses. Both Buddhists and Shinto followers pray there. The religion of Japan can be summed up in the worship of the dead, respect to the Emperor, love for the land, commitment to work. [...]

/

It was wondrous to see the way the people of this country behaved with me. My mother-in-law and other relatives were always mindful about doing everything that would make me comfortable. She would complete many chores for me. If sometimes I went to fetch water from the well or tried to wash my clothes, she would stop me, take them away from my hands and against all my protestations, say, 'It's too cold, you will fall sick.' She was 60 years old but she was so hard-working that 2-3 people like me could not match her. [...]

/

[...] Not only did they never display any hatred for a foreigner, they did everything in their means to make me happy and to entertain me. Not only in our home, but wherever I travelled elsewhere either after an invitation or for our own necessity, people came to see me and were eager to know various news of my country. They spent many hours discussing plans that satisfied their desire to welcome me. Even after great preparations, they would apologize at not doing enough and say "We have tried as much as we could but you may face some inconvenience." It was a great joy to see their sincere sympathy for a foreigner. [...]

/

[...] A notice had been sent before the prayers and many people had come only to see me. There were so many people that after the prayers, when donations were asked from the invitees nearly 15-16 yen was collected although the amount collected from each person

was small (that is 23–24 rupee, 1 yen=1.50 rupee). This money was spent on the shrine and its works. There was such an eager crowd to catch a glimpse of me that I felt uncomfortable and my brothers-in-law pushed people aside and took me inside and locked the doors. When there was a great demand to see me, I was allowed to come out for a few minutes. I was often invited to such Buddhist memorial services because there would be a crowd for sure and in the village or small cities, where people had not seen too many foreigners it was often impossible for me to venture out sometimes as I would be surrounded by huge crowds.

Excerpt from Hariprabha Takeda, *Bongomohilar Japan Jatra* (A Bengali Woman's Voyage to Japan), first published in Dhaka, 1915. Reprinted by Sahitya Prakash Publishers, Dhaka, 1999. English translation from Bengali by Debjani Sengupta, commissioned for Yokohama Triennale 2020.

SCENOGRAPHY OF FRIENDSHIP

Svetlana Boym

We live in the world of *friending*, not friendships. *Friend* has become a euphemism for something more or less than friendship; a “friend” is a conspicuous casual acquaintance who overcrowds our homepage, or an inconspicuous lover who likes to escape home.

The word *friendship* shares etymologies with *freedom* in English, *freude* (joy) in German, and with *philia* (affectionate love) in Romance languages and Greek. In Russian, the word for “friend,” *drug*, is related to “the other,” but not a foreign other, for which there is another word, *inoi*. The aspect of otherness is important because there are many things friendship is not. Friendship, in my understanding, is neither a conventional intimacy, nor a brotherhood or sisterhood, nor a networking opportunity. Rather, it is an elective affinity without finality, a relationship without plot or place in our society, an experience for its own sake. It is not always democratic or egalitarian, but rather selective and not entirely inclusive.

Hannah Arendt wrote that friendship of a serious kind is what makes life worth living. Yet she also emphasized that friendship should not be confused with romantic love for a “single one,” which for her can become “a totalitarianism for two” because it makes the whole world around the lovers vanish. Nor is friendship the confessional intimacy advocated by Rousseau, an echo chamber of one’s overflowing narcissism: “We are wont to see friendship solely as a phenomenon of intimacy, in which the friends open their hearts to each other unmolested by the world and its demands.”¹ Friendship for her is, in fact, precisely about being molested by the world and responding in kind—by expanding, so to speak, the dimensions of existence and by co-creating on the worldly stage. This stage has a particular scenography. Neither brightly lit nor completely enlightened, it has a scenography of *chiaroscuro*, of the interplay of light and shadow.

¹ Hannah Arendt, “On Humanity in Dark Times: Thoughts on Lessing,” in *Men in Dark Times* (New York: Harcourt Brace & Company, 1968), p. 24.

Writing about men and women in “dark times,” Arendt observed that in circumstances of extremity, the illuminations do not come from philosophical concepts but from the “uncertain, flickering and often weak light” that men and women kindle and shed over the lifespan given to them. This luminous space where “men and women come out of their origins and reflect each other’s sparks” is the space of humaneness and friendship that sheds light on the world of appearances we inhabit. In other words, friendship is not about having everything illuminated or obscured, but about conspiring and playing with shadows. Its goal is not enlightenment but luminosity, not a quest for the blinding truth but only for occasional lucidity and honesty.

Philosophies of friendship go back to ancient Greece and Rome, where friendship was part and parcel of both *vita activa* and *vita contemplativa*, of politics and of philosophy (itself etymologically related to *philia*). These philosophies have alternated between the political and the apolitical, between the worldly and the utopian, but all of them, including contemporary analyses by Jacques Derrida, Jean-Luc Nancy, and Giorgio Agamben, speak mostly of male friendship. Friendship between women is somehow deemed to lack philosophical *gravitas*...

Hannah Arendt’s own unlikely relationship with Mary McCarthy provides a way to examine these issues in their specifics. The two women, who theorized and practiced friendship in a passionately non-euphemistic manner, had the type of relationship that can be described only through a series of expressions whose oxymoronic character allows us both to get to its passionate core and avoid the touchy-feely confessional mode for which the two women had little patience—luminous opacity, diasporic intimacy, asymmetrical reciprocity, impolite tactfulness, homoerotic heterogeneity.

/

Who is talking when two friends like McCarthy and Arendt talk about the world? Reading the letters, we are impressed by the multiplicity of voices—tender attentiveness, impatient desire for the other’s presence, mischief and playfulness, sharp intellectual observations, philosophical discussions. In other words, the voices of intimate friends, writers, political observers, philosophers, and adventurers. Only this worldly interspace of friendship allows for such exuberance of freedom that it does not conform to any divisions of labor, disciplines, or social roles.

With friends, one can take part in multiple dialogues and share solitudes. Arendt wrote that solitude is different from loneliness because in solitude we are in dialogue with ourselves and with the world, while loneliness makes us isolated and tongue-tied. When experiencing solitude, we are playing on our internal stage with what the Greeks called “daimons” (not to be confused with demons; daimons are not to be exorcized since they are the voices of our invisible selves.) When you speak with a true friend, she sees the daimons speaking over our shoulders, or perhaps our daimons confront each other in friendly recognition. With a single good friend, we are in good and diverse company. In such a deep friendship, we multiply, create, and discover our actual and potential selves, not fall back stubbornly into the claustrophobia of our supposedly “true self.” Friendships are extensions of ourselves into the realm of liminal adventure.

Excerpt from Svetlana Boym, “Scenography of Friendship,” *Cabinet*, Issue 36 “Friendship” (Winter 2009–2010).
 Online article: <http://www.cabinetmagazine.org/issues/36/boym.php>

THE AUTHORSHIP AND SIGNIFICANCE OF THE NUJŪM AL-‘ULŪM: A SIXTEENTH CENTURY ASTROLOGICAL ENCYCLOPEDIA FROM BIJAPUR

Emma Flatt

On the 17th of August 1570, a scribe in the kingdom of Bijapur completed an ambitious, highly complex, and sumptuously illustrated work on astrology and astral magic. Housed in the Chester Beatty Library in Dublin, the manuscript is not identified by a title in the text, but takes its name from a note inscribed on the first folio, which describes it as the *Nujūm al-‘ulūm* (“Stars of the Sciences”). To date, the *Nujūm al-‘ulūm* has attracted scholarly attention for the richness and spectacular nature of its illustrations—some four hundred—which depict a dazzling variety of angels, anthropomorphized planets, zodiac signs and degrees, talismans, magical spells, astrological tables and horoscopes, tantric goddesses, horses, elephants, and weapons. [...]

/

It is clear from the introduction of the *Nujūm* that Ali Adil Shah, (its probable author) intended his work to serve a didactic purpose among the nobles surrounding him at court. He even attributes the inspiration of his encyclopedic work to the encouragement of his intimate friends:

It should be clear and evident to the enlightened hearts enriched with bounty of the masters of guidance and instruction that some of the faithful companions and affectionately mannered friends beseeched this humble person that he should put in writing a few words on each chapter of sciences like astronomy, mysticism, and so on, talismans, magic and tricks, and similar things. And [also] put in writing, chapters related to planting trees and medicine and things resembling that, so that this may be an intimate friend of the hearts of those who are aware of the hidden mysteries and [a friend] of the confidantes of the secrets of the soul and a director and guide to the seekers [of knowledge]. And the entreaty and the polite requests of that party reached the limit of perfection. Then this humble and modest fellow carried out their command and obeyed that class of exalted glory, for the medicines to care for their lives.

/

A *fibrist* (table of contents) follows (the introduction), listing the proposed chapter headings of fifty-two chapters: the fifty-third chapter heading is left blank. Although most of these chapters are no longer extant, and in fact may never have been completed, the wide range of skills and knowledges that they cover provides insight into both the cosmopolitan nature of Bijapur courtly culture and the complex mass of skills that a successful courtier would be expected to acquire. These range from knowledge of elephants, poetry, and arms to music, rhetoric, and medicine, from the kinds of women and men and the different nations to the types of love and the qualities of angels, from gardening, alchemy, cooking, and hunting to wrestling, perfume, and firework-making, from descriptions of Sufis, *yogis*, and ritual hymns to the conduct of spies, accounts of rare and marvelous events, and the qualities of different kinds of meat. After his exhaustive list Ali Adil Shah reminds his readers of the original aim of his book:

It is hoped these scraps of discourse may be beautiful in the vision of the intelligent ones and good and laudable in the eyes of the buyers [. . .]. However, after this it should not remain concealed that the

original aim of writing these lines and the overall intention of these lines is the aforesaid one. It is an account of created beings from the elements, the heavenly bodies, plants, minerals, animals, an enumeration of the angels on top of the sky, the rosaries of their names, the revelation of the benefits that are the necessary essence of the stars of every sky, and so on. Undoubtedly the way from the world of poverty of education to the plain of the riches of existence is made manifest precisely by commencing in the right direction with endeavor, advancing gradually from the surrounding universe to reach the summit of the point of the center.

With these words and his earlier description of his book as “*medicine to care for the lives*” of his friends, Ali Adil Shah demonstrates a sustained belief in the transformative power of knowledge. [...]

THE FIHRIST (TABLE OF CONTENTS) OF THE NUJŪM AL-‘ULŪM

- Chapter 1 :* An account of the seven heavens and their angels, the angels of the throne of God, the signs of the zodiac, and so on.
- Chapter 2 :* A description of the seven planets, their place of rising, their degrees and drawing out the adjustment of each year, according to the calendars of India and Khurasan.
- Chapter 3 :* An account of the characteristics of the earth and 120 astrological charts and overpowering and overcoming them, and the forms of 84 yoginis.
- Chapter 4 :* A description of rare events, an account of their signs, and how to repulse them.
- Chapter 5 :* An account of horses, their condition, and their diseases.

- Chapter 6 :* A description of elephants, their death in the state of rut, their conditions and their diseases.
- Chapter 7 :* A description of music, the melodies, modes, and 108 rhythms, and their merits and demerits, and the sixteenth letter, and the seventh notes and their offspring, and the names of thirty of them.
- Chapter 8 :* A description of the mystical journey, meditation, ecstasies, miracles and fourteen houses given by the Sufis. Ecstasies, their ranks, and conduct.
- Chapter 9 :* A description of the thirty-six arms of war, their qualities, characteristics, and their functions.
- Chapter 10 :* An account of twelve sects of yogis and their distinguishing signs and austerities and their conduct.
- Chapter 11 :* A description and account of the conditions of auguries and good omens
- Chapter 12 :* A description and account of sowing seed and gardening, of the eastern wind and medicines for pests caused by it.
- Chapter 13 :* A description of the experiments of the ancient sages and talismans and calculations and the events of their position.
- Chapter 14 :* A description of the medical sciences, diseases, ailments, and a description of simple and compound medicines and their causes and distinguishing signs according to the Indian and Persian system of ailments.
- Chapter 15 :* A description of Indian and Khurasani exercises of wrestling, its tricks, and their modes and manners.
- Chapter 16 :* A description of the character of the four types of men and the four types of women and their characteristics and their distinguishing marks and modes of sitting.

- Chapter 17 :* A description of fireworks and the various sorts and the ways of making them.
- Chapter 18 :* A description of ritual hymns and supplications and the names of Allah and the answering of prayers and the manner of these, the times of these, and the origin of these.
- Chapter 19 :* A description of Persian and Indian systems of spells and a description of their benefits, their nature, and prognosticating by the stars and emitting smoke signals and giving water libations.
- Chapter 20 :* A description of the conduct of the sultans to viziers and governors, heads of the guards on duty, and to spies and politeness to them and plots and treachery and justice and war and the way of the sultanate.
- Chapter 21 :* A description of the kinds of meat of animals and their benefits and properties.
- Chapter 22 :* A description of the wonders, a portion of which God Almighty, the Truth, provided and bestowed on each city.
- Chapter 23 :* A description of recognizing and making rejuvenating therapy and an account of it and its conditions, the benefits, and names of it.
- Chapter 24 :* A description of making perfumes, the methods of it and the varieties and kinds of it.
- Chapter 25 :* A description of the origin of the *gutkha* and alchemy and making someone act against his nature, and the science of letters, conquering planetary forces and enslaving jinns and geomancy and the modes of the origin and account of them.
- Chapter 26 :* A description of [incantations] to kill someone and to drive someone away and to deprive someone of the power of action or speech and to enchant someone with an illusion, and to make someone blind and to make someone deaf and magic and great magic and subterfuge, and an account of the actions of that.

- Chapter 27 :* A description of being possessed by an evil spirit and avoiding *khabat* and rendering homage and protection.
- Chapter 28 :* A description of repulsing poison and the sorts of poisons, the causes and distinguishing marks of poison.
- Chapter 29 :* A description of the origins of wiliness.
- Chapter 30 :* A description of the ways of hunting animals and their names and the ways of preparing them.
- Chapter 31 :* A description and account of the acts of simples which are received from every place and assembled.
- Chapter 32 :* A description of the interpretation of dreams and a description of true and false dreams.
- Chapter 33 :* A description of the varieties of peoples and the seventy divisions of them and their sects and creeds and beliefs.
- Chapter 34 :* A description of love, and the degrees of it and the kinds of it.
- Chapter 35 :* A description of the conduct towards each person and societies and friendship with each level.
- Chapter 36 :* A description of the Indian and Khurasani way of summoning high and low ranks.
- Chapter 37 :* A description of poetic metre, rhythms, and whatever is connected to poetry.
- Chapter 38 :* A description of recognizing jewels and kinds of gems, the benefits of gems, the values of gems and the seals of jewels.
- Chapter 39 :* A description of the rules of languages and a description of some rituals that should be used for the whole year and with necessary things and celebrations and actions and functions of that.

- Chapter 40* : A description of Qur'anic interpretation and the sayings of the Prophet and Gabriel and knowledge of men and whatever is connected to this.
- Chapter 41* : A description of the rules of arithmetic, multiplication and division and whatever is connected to arithmetic.
- Chapter 42* : A description of the science of speech, such as grammar, logic, scholastic theology, rhetoric and so on.
- Chapter 43* : A description of astronomy.
- Chapter 44* : A description of the astrolabe.
- Chapter 45* : A description of strength, the causes of strength, the benefits of strength, the loss of strength of men and medicines for it.
- Chapter 46* : A description of the science of physiognomy and the art of making amulets and charms.
- Chapter 47* : A description of the history of prophets from the exalted Prophet Adam and the Prophets of Islam up to the Seal of the Prophets, Muhammad.
- Chapter 48* : A description of fables and romances
- Chapter 49* : A description of the letters and words of Arabic, Persian, Turkish, Hindi, Sanskrit, Frankish, Kannada, Telugu, Tughra, and so on.
- Chapter 50* : A description of viands, sherbets, halwas, confections, and so on.
- Chapter 51* : A description of tools and instruments of the crafts of traders and artisans.
- Chapter 52* : A description of knowledge of the science of writing and its appurtenances, from sharpening the pen and making ink and so on.
- Chapter 53* : Blank

Excerpt from Emma Flatt, "The Authorship and Significance of the Nujūm al-'ulūm: A Sixteenth-Century Astrological Encyclopedia from Bijapur," *Journal of the American Oriental Society*, Vol. 131, No. 2 (April-June 2011), pp. 223–244.

The Fihrist (Table of Contents) by Emma Flatt was adapted by Raqs Media Collective for Yokohama Triennale 2020.

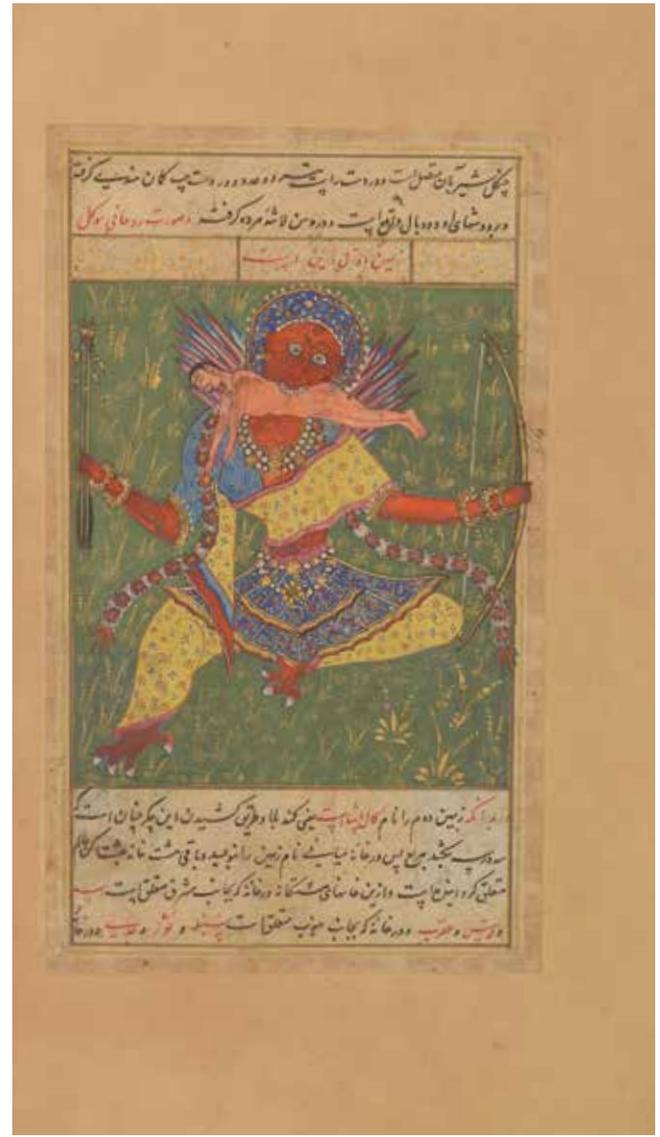
Description of the original manuscript
 Date: 1570
 Dimensions: H261 mm x W169 mm x D55 mm
 Material: paper, pigment, ink
 Language: Persian
 Script type: Nasta'liq script

Illustrations excerpted from *Nujūm al-'ulūm* (Stars of the Sciences), Chester Beatty Collection
 Courtesy of Chester Beatty, Dublin
 ©The Trustees of the Chester Beatty Library, Dublin





In 02, folio 183r



In 02, folio 240v



In 02, folio 202v



In 02, folio 1r

LUMINOUS PURSUIT: JELLYFISH, GFP, AND THE UNFORESEEN PATH TO THE NOBEL PRIZE

Osamu Shimomura,
Sachi Shimomura,
John H Brinegar

Contents	
<i>Dedication</i>	v
<i>Preface</i>	vii
Prologue	1
Chapter 1	My Early Life: Manchuria, Sasebo, and the Beginning of the War
	5
	1.1 From Fukuchiyama to Sasebo
	5
	1.2 Shimomura Family Traditions
	8
	1.3 In Manchuria
	12
	1.4 To Sasebo Again
	15
	1.5 In Osaka
	20
Chapter 2	The War Strikes Home: Ohmura Naval Aircraft Factory and the Atomic Bomb
	23
	2.1 Student Mobilization Order at Isahaya Middle School
	24

Probably nobody thought about our schooling under such unsettled conditions, in which we couldn't predict our fate even for one day ahead. Therefore, I went to the factory every day even before it began to function. If, as frequently happened, I found nothing useful to do, I often lay down in a sweet-potato field nearby to watch the large formations of B-29s flying east, high above Mount Taradake. It was beautiful to see the B-29s shining silver against a background of blue autumn sky. About ten minutes after the bombers had passed by, we used to see black smoke in the Ohmura industrial area located on the opposite shore of the Sea of Ariake, and we could only imagine the scenes of carnage over there.

I saw a single B-29 going from north to south toward Nagasaki, about ten miles away, and wondered because its course was unusual. The B-29 dropped two or three parachutes and I heard sporadic gunfire. I watched the parachutes carefully, but could not see any people hanging from them. Within minutes, another B-29 followed the first one on the same course, then a siren sounded the "all clear."

We returned to our factory building, expecting to resume work. As soon as I sat down on my work stool, a powerful flash of light hit us through the small windows. We were blinded and unable to see anything for about thirty seconds. Then, maybe forty seconds after the flash, we heard a loud sound and felt a sudden change of air pressure. We were sure that a huge explosion had occurred somewhere nearby, but we didn't yet know where.

The sky rapidly filled with dark clouds, and when I left the factory to return home, a drizzling rain had started; it was black rain, a mixture of ash, water, and nuclear fallout. When I arrived home an hour later, my white shirt had turned completely gray. My grandmother took one look at me and quickly readied a bath so that I could clean myself. That bath may have saved me from radiation poisoning caused by the fallout in the black rain.

	2.3 After the War: Searching for a Future	29
	2.4 After the War: Disappointments	32
Chapter 3	Struggling to Learn: Nagasaki, Nagoya, and Luciferin (1948 – 57)	35
	3.1 Nagasaki Pharmacy College and Nagasaki University	35
	3.2 The Hirata Lab and <i>Cypridina</i> Luciferin	41

On my first day at the Hirata lab, Professor Hirata produced a large vacuum desiccator from somewhere and told me, "This contains dried *Cypridina* (sea firefly)." They were crustaceans each about the size of a sesame seed. Then he explained how *Cypridina* emits light through the interaction of an organic compound called luciferin and an enzyme luciferase, that the luciferin is extremely unstable and decomposes in the presence of oxygen, and that Professor Newton Harvey of Princeton University had been trying to purify the luciferin for the past twenty years but had not successfully obtained a pure luciferin suitable for structural study. Harvey visited Japan in 1916 during his honeymoon and concluded that *Cypridina* was a good research material for the study of bioluminescence. Since then, he had continued his study using material obtained from Japan.

I continued to extract and purify luciferin about once a month, because I could not obtain any crystals, no matter how hard I tried. However, the luciferin was finally crystallized by accident on a cold day in February 1956.

The night before, I was trying to crystallize the luciferin as usual, but I had exhausted all my ideas by about 10:00, although there was a small amount of purified luciferin left. I decided to use it in amino acid analysis. I added an equal amount of concentrated hydrochloric acid to the luciferin sample. The yellow color of the sample instantly changed to a dark red. Since an oven was not ready, I decided to heat the sample the next morning. I left the dark red solution on a shelf and went home. When I came back in the morning, the solution was colorless. I thought that the sample was hydrolyzed, but upon close inspection I found a tiny amount of black precipitate at the bottom of the test tube. Under the microscope, this precipitate could be seen as red needle-shaped crystals.

My success in crystallizing the luciferin was accidental: however, I had accomplished what the Princeton researchers couldn't, and it gave me hope for the future, which had seemed dark since the end of the war. I was so happy that I couldn't sleep for a couple of days. However, the most important reward I received was probably the self-confidence I gained, that any complex problem could eventually be solved by effort.

Chapter 4 To America and Back: Marriage, Princeton, and
Discovery of Aequorin and GFP

I recall that the Hirata lab was a wonderful laboratory maintaining a splendid atmosphere. Nobody taught me anything formally there, but I learned many things by observing other people and was then able to develop various techniques myself. Only once did Professor Hirata tell me, "Mr. Shimomura. Mass spectrum can tell you an exact molecular weight, not the approximate one," but I no longer remember the circumstances under which he instructed me about that.

On August 27, 1960, I left Yokohama on the ocean liner *Hikawa-maru* for Seattle with over 200 Fulbright fellow scholars and students. It was my thirty-second birthday. I had just gotten married. Because it was also the last Pacific cruise of *Hikawa-maru*, the

pier was completely filled with people. (*Hikawa-maru* had made her first trip to Seattle thirty years earlier, and she had weathered the war as a hospital ship, while her sister-ships had been destroyed.) My new wife, her mother, and some of my friends were among the crowd. There were thousands of festive colored tapes between people on the boat and the people on the pier, connecting them. I will never forget the vivid scene as the ship began to move and numerous tapes started to break and then fall down toward the water.

When I first visited Dr. Johnson's room, he produced a small vial filled with white powder, explaining, "This is the freeze-dried light organs of the luminous jellyfish *Aequorea*, and it should emit light when mixed with water." We went into a dark room to test it, but we could not observe any light. However, he enthusiastically described to me how abundant *Aequorea* were in the sea at Friday Harbor, in Washington state, and described how brilliantly luminous they were. Then he asked me if I was interested in studying its bioluminescence. I didn't know anything about the jellyfish, but was eager to study a new luminous organism, so I answered, "I will be glad to do it." Thus, we agreed to travel to Friday Harbor the following June.

The *Aequorea* were extremely abundant. We would see a stream of floating jellyfish sweeping by alongside the lab dock in the early mornings and evenings, riding upon currents caused by the tides. We carefully scooped up the larger ones into buckets, one by one, using a shallow dip-net to avoid damaging them. A specimen of *Aequorea* is formed like a hemispherical umbrella, nearly transparent, with faint radiating lines along the outer half. An average specimen measures 7–8 centimeters in diameter and weighs about 50 grams.

Aequorea, when stimulated, emits light along the edge of the umbrella, displaying a green ring in darkness. Because its luminous organs are located only along the edge, we cut off the margin of the umbrella, making a strip of 2–3 millimeters in width, and we called this a ring. We used the rings in our experiments. By squeezing about thirty rings about gauze, we obtained a turbid liquid which emitted weak light for a long time.

Often, I meditated on a drifting rowboat under the clear summer sky, so that nobody would disturb me. There was little traffic at sea

around Friday Harbor at the time, and since a rowboat has the right of way over any vessel with a motor, ferries always kept a wide berth. However, if I fell asleep and the tidal currents carried the boat away, I needed to row for a long time to return to the dock. One afternoon on the boat, a thought suddenly came to me. It was quite a simple idea: *Even if luciferin and luciferase are not involved in the jellyfish bioluminescence, some protein is probably involved in the bioluminescence reaction. If so, the activity of that protein would very likely to be altered or affected by a change of pH.*

I threw away the luminescing solution into a sink. The inside of the sink lit up instantly with bright blue light! Because there was seawater flowing into the sink, I suspected that seawater had triggered the reaction. Since the composition of seawater is well known, I quickly determined that calcium ions had caused the sudden luminescence. It was sheer luck that some seawater was in the sink at the right time.

4.5 The Busy Year of 1962: Finding the First Traces of GFP 74

During the column chromatography of aequorin, we found a trace amount of protein that showed green fluorescence and eluted sooner than aequorin, and we also purified it. The protein is now called green fluorescent protein, or GFP, and its fame and applications have far exceeded those of aequorin.

4.6 Fireworms in Bermuda 77

On August 10, 1962, we flew to Bermuda to study the fireworm *Odontosyllis*, a segmented sea-dwelling worm that employs luminescence in its mating and reproduction. The female worm's green light attracts male worms to her. This creature may have been the source of the light display seen by Christopher Columbus's expedition in 1492, and interpreted by the sailors as an indication of land, as they voyaged through the Bahamas.

Odontosyllis is a 1–2 centimeter long worm that comes up to the surface of the sea for only a few minutes, one hour after sunset, and only for a few days after each full moon. First a female worm emitting a green light shows up on the surface and makes small circles; then a few seconds later, a number of male worms appear and rush toward the female worm. Their activities look like green fireworks, except that the movement is in the opposite direction, and it happens all over the surface of the sea at the same time.

Chapter 5	A Risky Endeavor, Raw Jellyfish, and Mysteries of Bioluminescence	81
	5.1 Back in Nagoya: 1963 – 65	81
	5.2 Glow Worms in New Zealand	83

In February 1965, I traveled to New Zealand to study two bioluminescent organisms, the cave worm *Arachnocampa* and the freshwater limpet *Latia*, with research funds from JSPS (Japan Society for the Promotion of Science). I went together with Dr. Yata Haneda, the director of the Yokosuka City Museum. We arrived in Wellington, New Zealand, via Hong Kong and Sydney, and then rented a car and drove toward Auckland. On the way, we briefly investigated a giant luminous earthworm at Palmerstone North, and saw the glow worm *Arachnocampa* at the famous cave there, although we were not permitted to collect any because the glow worm cave was an important tourist attraction.

5.3	Back to Princeton: My Family Grows	87
5.4	Luminescence Mechanism of Aequorin: Friday Harbor	95

Why did I decide to invest my time in studying aequorin? The explanation involves understanding the general principles of bioluminescence. While people have been intrigued by living creatures that give off light—bioluminescence—since ancient times, much remains to be understood about the functions, chemical processes, and evolutionary paths involved. Sometimes, the chemical processes give hints as to why and how the ability to emit light developed, and may also suggest useful applications for scientific research or medical study.

The overall process of bioluminescence involves the release of energy, as a bright burst of light, in a chemical reaction such as the oxidation of a molecule. The light-releasing molecule is termed a “luciferin,” named after the Latin for “light-bearing” as in the name of the fallen angel Lucifer. The term “lucifer” had become a common noun for a friction match prior to the coining of the chemical term late in the nineteenth century. To early scientists, the bioluminescence may have resembled the lighting of a match or candle. These luciferins can differ among different organisms, but some unrelated species utilize the same luciferin. To understand the chemical process of bioluminescence requires knowing the structure of the molecule that is broken down or oxidized to give forth light, how it is acquired (such as by eating smaller sea creatures that produce the luciferin) and where it is stored, the substance (enzyme) that causes that light-emitting reaction to occur or continue, and the factors that trigger the process. The trigger can be an environmental change

or some ion released by the bioluminescent creature to control the light given forth. Many ocean species display luminescence; the reason is often not known. In addition, the color of their light may be affected by a fluorescent protein. All these aspects of bioluminescence can yield interesting insights into nature, and possibly useful applications, if they do not remain utterly mysterious.

5.5 How Do You Prepare Jellyfish?

97

In 1974, I ultimately concluded that aequorin bioluminescence and *Cypridina* bioluminescence employed the same type of chemical reaction, and drew the structure of the light-emitting group of aequorin based on the structure of *Cypridina* luciferin. In 1975, I named the light-emitting group of aequorin “coelenterazine” and the acylated AF350 “coelenteramide.” I would like to emphasize here that the structure of coelenterazine was conceived because the chemistry of the *Cypridina* luminescence had been known already.

5.6 My Research on Subjects Other Than Aequorin: 1965 – 1978

103

Starting work in 1966, I elucidated the structure of the luciferin of the New Zealand fresh water limpet *Latia*, and investigated the properties of *Latia* luciferase.

I visited Kristinebergs Zoological Station in Sweden together with Dr. Johnson in August 1966 to study the bioluminescence of the krill *Meganyctiphanes*. Krill are tiny shrimp, 2–3 cm long, with ten small light organs that emit very intense blue light. They live deep in the sea in the daytime, but come up near the surface at night. We stayed at the laboratory at the Station for one month, but we obtained only 150 specimens, and thus could not do a detailed study. Instead, we enjoyed the beautiful seashore and sightseeing of historic Viking remains.

We extracted a bioluminescent substance from the material [*Chaetopterus*] we obtained in 1965 in Los Angeles. But the extract was slimy and viscous, and difficult to purify, probably because it contained a high concentration of nucleic acids. Upon finally completing purification and leaving the purified material standing for a while, however, we found that it gradually crystallized by itself. We studied its properties and learned that it was a bioluminescent protein like aequorin, that is, neither a luciferin nor a luciferase. We still lack full information concerning the nature of its light-emitting chromophore.

I went to Uozu, Japan with Dr. Inoue, of Meiji University, in 1970, to study the bioluminescence of *Watasenia*; I returned to Uozu in 1974. Dr. Inoue was a good friend of mine and also of my dear friend Dr. Goto, so I was happy to have this chance to collaborate with him. *Watasenia* is a small deep-sea squid, about 5 centimeters long. The squid comes to the shallows by the shore in April and May to lay its eggs. Its scientific genus name *Watasenia* was derived from the name of Shosaburo Watase who first described this squid in detail.

5.7 Photoprotein

108

Chapter 6	From Mushrooms in Woods Hole to Red Jellyfish in Bergen	111
	6.1 Dr. Johnson's Retirement: Our Move to MBL (1977 – 81)	112

In 1962, we discovered the green fluorescent protein GFP, and reported the properties of GFP in 1974. In 1979, we were finally able to study the chromophore of GFP.

In 1989, the structure of dinoflagellate luciferin was determined by Dr. Nakamura, who had also determined the structure of krill luciferin a year before.

In 1980, Dr. Marie-Therese Nicolas of France extracted and purified a bioluminescent substance from scale worms at my lab and obtained a protein that emitted light in the presence of superoxide anions. Scale worms are about 2 centimeters long, with the whole body covered by scales. They are clever worms, well adapted for survival. When attacked by other animals, a scale worm can detach two or three scales from its own body and escape to other places, leaving behind the luminous scales as a target for the predator. Scale worms can regenerate their lost scales.

6.2 At the Marine Biological Laboratory in Woods Hole

115

6.3 Tsutomu and Sachi Leave Home

118

We started to study a luminous millipede called *Luminodesmus* (also known as *Motyxia*) in 1980. The millipede is about 2 centimeters long, and inhabits the Sierra Nevada Mountains in California, at about an altitude on 1500 meters, and shows up on the ground under the giant Sequoia trees just after the snow has melted away, usually in the period between mid-April and early May. Since moonlight impedes locating the luminous millipedes, we chose a period of the new moon for our collection trip.

We studied the luminous brittle star *Ophiopsila* in collaboration with Dr. Paul Brehm, a professor at the State University of New York at Stony Brook at that time. *Ophiopsila* is a brownish brittle star, with five snaking thin arms of 5 centimeters long, and abundantly seen on the shores of Catalina Island near Los Angeles.

6.4 My Friend Goto	128	
Chapter 7	The 1990s: Losses, Gains, And the Rise of GFP	131
7.1 Dr. Johnson's Passing	131	
7.2 The Passing of Relatives in Japan	133	

When I was fifty-seven years old, I privately planned that I would stop my study of bioluminescence fifteen years later in the year 2000, because I wanted to write and publish a book on bioluminescence for future generations of researchers while I had the energy to do it. Thus, I chose the study of luminous mushrooms as my last major project.

One reason I chose to study mushrooms was because we had found so many species growing near our house. I had become curious about them. We discovered that the oak logs left from clearing land for our house would readily grow both wild and cultivated kinds of fungi, so we had cultivated our won shiitake mushrooms. We saw mushrooms everywhere as we tended our property or walked in the nearby wooded areas; some, I learned, were known to be luminous.

GFP became well known to the general public by the appearance of fluorescent animals, such as a Medaka fish, mouse, frog, and rabbit. The most famous of them was probably the rabbit named Alba that was created at a Paris laboratory by order of a Chicago artist who wanted to display the animals as an object of art. However, it brought on public criticism, and the laboratory refused to hand the animal over to the artist. Fluorescent Medaka fish and zebra fish are produced in Taiwan and being sold widely. There are various problems in producing such fluorescent animals, including obvious ethical issues, and it seems doubtful that this application will contribute much to the welfare of mankind of the progress of science.

7.3 The Value of Pure Science	139
7.4 Norway and the Jellyfish <i>Periphylla</i>	140

The bioluminescent jellyfish *Periphylla* is widely distributed in the world. Its size is usually several centimeters in diameter, not so different from *Aequorea*. In certain Norwegian fjords, however, they

grow to over eight inches in diameter, weighing nearly two pounds. Because the entrances of fjords are narrow and shallow, their environment probably differs significantly from the open ocean. I began to study this jellyfish in 1996 using specimens given to me by Dr. Par Flood of Norway, and I quickly found that its luminescence was caused by coelenterazine and a luciferase. This luciferase, however, was an interesting enzyme with an unusually high activity level.

Chapter 8	Going Full Circle: Nature's Gift, Scientific Honors, and Revisiting Japan	145
8.1	After My Retirement	145

The Pearse Prize Lecture Session was held at the Twelfth International Congress of Histochemistry and Cytochemistry (IHC) meeting at the University of California in San Diego. The title of my lecture was "The discovery of aequorin and green fluorescent protein." Next, I was invited to the International Bioluminescence and Chemiluminescence Symposium at Yokohama, Japan in early August and gave a special lecture titled "Aequorin & GFP: An historical account."

8.2	Nature's Gift: Abundance and Disappearance of <i>Aequorea</i>	148
-----	---	-----

I would like to add a bittersweet mention here regarding *Aequorea*. We traveled to Friday Harbor nineteen times to collect the jellyfish from 1961 until 1988, obtaining a total of about 850,000 specimens of *Aequorea*.

Mysteriously, however, the jellyfish population decreased drastically since then, so that they were rarely seen after 1990, and we experienced difficulty in collecting even a few specimens. This depletion of the jellyfish population was not a result of scientific study. We had rarely collected jellyfish smaller than about 7–8 centimeters in diameter for our research, since these were too small to process efficiently. Also, we and other scientists who studied jellyfish regularly witnessed so many washing by on the currents that we could only collect a small fraction of the larger ones. The sudden drastic decrease may have resulted from the environmental contamination of the sea bed by crude oil spilled by the Exxon tanker *Valdez* near Alaskan shores in 1989, or from the warming of the earth, or it could have resulted from other causes yet unknown.

Chapter 9	The End of the Path: The Nobel Prize Announcement and Nobel Week	157
9.1	Preparing for Stockholm; the Order of Culture Award	158

“[...] You are now honorary professor of physiology and biophysics.” Thus, it meant that I was suddenly an honorary professor since several years ago! My retirement [from Boston University], which had happened without anyone seeming to take much notice at the time, was now the occasion for this honorary position. Perhaps, though, it was an appropriate continuation for my path. After all, I had acquired my first PhD in Japan without embarking deliberately on the degree program, but rather by being offered it incidentally as a result of my research and the Fulbright Fellowship. So my entire career was, in that way, illogical.

	9.2 To Stockholm	164
	9.3 The Nobel Week Begins	166
	9.4 The Nobel Prize Ceremony and the Nobel Banquet	170
	9.5 The End of Nobel Week	173
Chapter 10	After Stockholm: Visiting Los Alamos, Remembering Nagasaki	177
	10.1 My Welcome in Japan	178

While at Nagoya I was able to visit the cemetery of Professor Hirata with his widow and two daughters. When I put my head low in front of his tombstone, I felt as if I heard him speaking in his usual gentle voice with a smile, saying to me, “You did well.”

	10.2 Lindau, Germany	180
	10.3 Research in Russia	182
	10.4 An Invitation to Los Alamos, Where the Atomic Bomb was Built	185
	10.5 Fragments of History?	188

On the unforgettable day—August 9, 1945—I saw the first B-29 that dropped a parachute with an instrument, probably to collect the explosion data. When the second B-29 had reached a position above Nagasaki, I had gone back into the building, and sat down on my stool. At that moment I was assailed by extremely strong flash of light. If I had continued to look at the sky, it probably would have damaged my eyes.

Here, at Los Alamos, I saw the same parachute with the instrument on display that I had seen seventy years ago against a clear blue sky. There was an explanation of the explosion mechanism of the atomic bomb given, as if there was no secret involved. It seemed as if it could be made almost anywhere if the materials were available; I was a little frightened at the idea.

In Nagasaki in 1945, it had been days before people learned what the bomb had been. Details were not publically known, and even the extent of the damage was hard for people to assess because of disruptions to transportation and communications. Afterward, the injuries to people and the dangers of radiation were poorly understood because

there had been no atomic bombs before. No one knew the full consequences. More than half a century later, Japan was still collecting data on the long-term effects: Periodically, when we visited Japan, Akemi was supported to see doctors who were continuing to trace the health conditions and history of people within a certain radius of the impact site.

How much do we know, and how much do we really understand? I wondered, as we visited this place where science had accomplished a terrible wonder. John Markoff wrote a story for the *New York Times* (May 12, 2013) about our visit. In his story, he noted Dr. Pearson’s comment that the person who started explaining the instrumentation attached to the parachute was dumbfounded to hear that I had actually seen the drop of the instruments. Perhaps they are just old history preserved in a museum, for many people, even scientists, who live in a post-atomic world.

	10.6 Akemi’s Memories of the Atomic Bomb	193
	10.7 Science and War: Back to Nagasaki	198

The next year, I returned again to Japan. One of the events I was invited to was the Pugwash Conference. In January of 2015 I had received a letter from the organizer of the 61st Pugwash Conference on Science and World Affairs inviting me to participate in it. It was interesting to me because it would be held at Nagasaki in November of that year, upon the 70th anniversary of the atomic bomb. It was titled “Nagasaki’s Voice: Remember Your Humanity,” and called for the abandonment of nuclear weapons. The Pugwash Conferences’ efforts had been recognized by the 1995 Nobel Peace Prize, and many Nobel laureates have supported their call for a world without the horrors of nuclear destruction.

Science, solitary or otherwise, continually connects back to the world in unforeseen paths. After this event I felt my life as a chemist had converged to an appropriate end: I started my life of being a chemist because of the atomic bomb at Nagasaki 70 years ago and now in this Pugwash Conference I realized I had had long enough of a life as a chemist.

Chapter 11	Epilogue	203
	11.1 Was the Discovery of GFP Good Luck?	204
	11.2 My Research Life and Communications with Other Scientists	204
	11.3 The People I Respect	206
	11.4 A World of Thanks	207

	Selected Bibliography	209
	Index	211

Excerpt from Osamu Shimomura, Sachi Shimomura, John H Brinegar, *Luminous Pursuit: Jellyfish, GFP, and the Unforeseen Path to the Nobel Prize* (Singapore: World Scientific Publishing, 2017).

Text adapted and layout directed by Raqs Media Collective

CONTRIBUTORS TO THE SOURCES

Nishikawa Kimitsu (1940–2015) was an eccentric Proletarian who lived (and died) in Yokohama, occupying the work-world of the docks and building sites as a day-laborer, and the thought-world of long, intoxicated Socratic conversations in pubs and lending libraries. His conversations with the anthropologist Tom Gill resulted in the book *Mainichi Abōdansu: Kotobuki-chō no Hiyaotō Tetsugakusha Nishikawa Kimitsu no Sekai* (Everyday Affordance: The World of Kimitsu Nishikawa, the Day Labouring Philosopher of Kotobuki-cho) (Kyōtoto Press, 2013), which was later published in English as *Yokohama Street Life: The Precarious Career of a Japanese Day Laborer* [Asia World Series of Publications] (Lexington Books, 2015).

Thomas Paramor ('Tom') Gill is a social anthropologist and professor at the Faculty of International Studies of Meiji Gakuin University (Yokohama Campus). His research has focused mainly on marginal communities in Japanese society. He is the author of *Men of Uncertainty: the Social Organization of Day Laborers in Contemporary Japan* (State University of New York Press, 2001) and *Mainichi Abōdansu: Kotobuki-chō no Hiyaotō Tetsugakusha Nishikawa Kimitsu no Sekai* (Everyday Affordance: The World of Kimitsu Nishikawa, the Day Labouring Philosopher of Kotobuki-cho) (Kyōtoto Press, 2013). Since 2011, Tom Gill has been researching the social impact of the Fukushima Nuclear Disaster.

Hariprabha Basu-Mallik Takeda (1890–1972) was a Bengali woman who travelled from Dhaka in East Bengal (now Bangladesh) in 1912 with her Japanese husband Takeda Uemon (Japanese name: Kazuemon). Her memoir of life in Japan was written in Bengali, first published in Dhaka as *Bongomobilar Japan Jatra* (A Bengali Woman's Voyage to Japan) in 1915, and reprinted by Sahitya Prakash Publishers, Dhaka in 1999. The English translation of this text by Debjani Sengupta has been especially commissioned by Raqs Media Collective for the Yokohama Triennale 2020.

Debjani Sengupta is the author of *The Partition of Bengal: Fragile Borders and New Identities* (Cambridge University Press, 2016). She has edited a volume of stories, *Mapmaking: Partition Stories From Two Bengals* (2004 rpt. 2011) and has co-edited another volume, *Looking Back: The 1947 Partition of India 70 Years On* (Orient Blackswan, 2017). She translates from the Bengali into English. Her translations have been anthologized in the *Oxford Anthology of Bengali Literature* (OUP, vol. 2) and in *The Essential Tagore* (Harvard University Press). Debjani Sengupta is Associate Professor of English at Indraprastha College for Women, University of Delhi.

Svetlana Boym (1959–2015) was the Curt Hugo Reisinger Professor of Slavic Languages and Literatures and Comparative Literature at Harvard University, and a media artist, playwright and novelist. She was an associate of the Graduate School of Design at Harvard University. Much of her work focused on developing the new theoretical concept of the off-modern. *Another Freedom: The Alternative History of an Idea* (University of Chicago Press, 2010) and *The Future of Nostalgia* (Basic Books, 2001), are among the books written by her. Svetlana Boym is remembered for her passionate intellectual and emotional commitment to the idea and ideals of friendship, between people of different genders, ages, cultures, convictions, generations and temperaments.

Ali Adil Shah (1558–1579) was the fifth Sultan of Bijapur Sultanate, a principality in peninsular India. He was an autodidact and an aesthete. Emma Flatt, an art historian, strongly believes that he was the author (or at least principal authorial hand) of the *Nujūm al-ʿulūm*.

Emma Flatt is Associate Professor in the Department of History at the University of North Carolina at Chapel Hill. Her research has focused on mentalities and practices in the courtly societies of the Indo-Islamicate

Deccani Sultanates of South India. She has written *The Courts of the Deccan Sultanates: Living Well in the Persian Cosmopolis* (Cambridge University Press, 2019) and is the editor (together with Daud Ali) of *Garden and Landscape Practices in Precolonial India: Histories from the Deccan* (Routledge, 2011).

Shimomura Osamu (1928–2018) was a Japanese organic chemist and marine biologist, and Professor Emeritus at Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts and Boston University School of Medicine. He was awarded the Nobel Prize in Chemistry in 2008 for the discovery and development of green fluorescent protein (GFP) with two American scientists: Martin Chalfie of Columbia University and Roger Tsien of the University of California–San Diego. He is the author of *Bioluminescence: Chemical Principles and Methods* (World Scientific Publishing, 2006) and co-author (with Sachi Shimomura and John H. Bringer) of *Luminous Pursuit: Jellyfish, GFP and the Uncertain Path to the Nobel Prize* (World Scientific Publishing, 2017).

Shimomura Sachi is Associate Professor of English at Virginia Commonwealth University. She is the author of *Odd Bodies and Visible Ends in Medieval Literature* (Palgrave Macmillan, New York, 2006) and co-author of *Luminous Pursuit: Jellyfish, GFP and the Uncertain Path to the Nobel Prize* (World Scientific Publishing, 2017).

John H Brinegar is Teaching Assistant Professor of English at Virginia Commonwealth University, Richmond, Virginia. His scholarly and research interests lie in the History of the English Language, and Medieval & Renaissance English Literature.

The names are in order of appearance in this book. The positions and affiliations of the contributors are current as of November 2019.

EPISODES

YOKOHAMA TRIENNALE 2020 TO START WITH THE EPISŌDOS

Raqs Media Collective

Sometimes we forget the simple fact that there are about 1000 days between two Triennales. We want to consider some part of these days as a passage where many (from all over the world) regard, scrutinize, and wonder upon the various impulses shaping this specific edition. By expanding our conversation, we could soften hard partitions between discourse and practice, research and art making, the minor and the major, concealment and revelation. This conversation needs to course through the way artworks and utterances are anticipated, absorbed, and relayed.

We offer a sequence of intermittent, short-durée occurrences that we call Episōdos (from the Japanese for ‘episodes’), so as to provide an opportunity for such conversations. The word Episōdo is chosen to consider what happens when a scene seizes the attention of a time. For example, what happens when we witness a sudden change of temperature? What happens if we try to look upon an eclipse through an over-lit sky? Or, what happens when an improbable synchronicity appears between unrelated instruments?

The Episōdos will weave in exuberances of collective artistic production, quiet reflections and speculation on materials, associations yet to form in a not-so-distant future, traversals of sonic worlds, investigations into hard surfaces of infrastructure and waste, curiosities about breathtaking acts in sporting arenas, and count the “time of in-between,” a time to the next 1000 days.

Invited to Episōdos are artists, curators, cineastes, dancers, musicians, performers and futurists among others. They will experiment in gatherings that play out unrehearsed historical propositions, risk uncertain stories, elaborate on itineraries of ideas, and listen to ecological and historical soundings from other moments.

While the exhibition of Yokohama Triennale 2020 is site- and time-specific, Episōdos will engage Yokohama in conversations with different communities of disparate temporal sites through their own means.

The Episōdos will commence in Yokohama in November 2019 with Episōdo 00 “Sharing Our Sources.” The occurrences then move to Hong Kong, to New Delhi, and to Johannesburg to initiate conversations on Discursive Justice and then unfold intensively in Yokohama during the exhibition phase of the Triennale starting early July 2020.

AFTERGLOW YOKOHAMA TRIENNALE 2020 SOURCEBOOK

Conceived by:
Raqs Media Collective

Text selected, compiled and adapted by:
Raqs Media Collective

Designed by:
Ariane Spanier

Editing assisted by:
Hoashi Aki, Suzuki Keiko

Design assisted by:
Mineishi Keiko

Printed by: Azuma Printing Co., Ltd.

Published by:
Organizing Committee for Yokohama Triennale
c/o Organizing Committee for Yokohama Triennale Office
Yokohama Museum of Art
3-4-1, Minatomirai, Nishi-ku, Yokohama 220-0012 JAPAN

Published in November 2019

All rights reserved.

All texts by Raqs Media Collective are free to share under the terms of CC BY-NC-ND 4.0 (Attribution-NonCommercial-NoDerivatives 4.0 International).

