

## My Last Sound By Yoko Sen End Well Symposium, December 7, 2017

### Start of Transcript

Hello! My name is Yoko. How are you? So I am an ambient electronic musician. I was born and raised in Japan... originally trained with piano but now that I compose for use and engineer this kind of music. People say my sound is soothing so I got to create music for museums, art galleries, airlines, but several years ago I got sick and I had to spend hours and hours in hospitals.

As a musician sensitive to sound, I was disturbed by the noise. Lying in a hospital bed, I used to wonder. You know some people say hearing **[00:01:00]** is the sense to go when we die. So what is the last sound I get to hear at the end of my life? Is it like this {{Sound of Hospital Monitor Beeping}}. Unnecessary noise is the cruelest of sounds of care.

Florence Nightingale said more than a hundred years ago “Ever since medicine has progressed so much, tech has progressed so much but not the quality of our sound environment.” Here’s a quick example. When you hear a cardiac monitor, it’s a note of C; high-pitched virtual alarm, it’s a F sharp; they beat together and together it’s a diminished 5th. In music theory, we call this **[00:02:00]** called a triton. [Crowd Laughing] In this particular combination of notes, in Medieval time, was called [*Inaudible 00:02:11 ?devil root*] in music because people thought it was so unsettling, it was actually bond by charges to play this combination of tone and this could be what we are hearing in hospitals today. Why does it have to be this way? Right? [Chuckles]

[Audience Applauding]

Thank you. Now in the context of today’s conversations, if we think about the fact that 80% of Americans wish to die at home, yet in reality 60% end up dying in acute care hospital. Noise affects everyone **[00:03:00]**. Studies show that for patients, it hinders recovery, hinders sleep, and increases perception of pain, anxiety and fear. For clinicians, alarm fatigue is a safety hazard which contributes to stress and burnout and a sense of long helplessness.

Even this has a way of affecting life, after I got work, I thought that this part of my life is like a lucky bonus with which I can kind of get to do anything, so I started with social enterprise sense sound which is efficient to transform the sound environment in hospitals using human-human-centred design. We have partnered with John Hopkins [*Inaudible 00:03:58 ?Sevelino*] patient health **[00:04:00]** to study how sound impacts people’s emotions, experience and environment.

How many of you here have ever been to a hospital? [Chuckles] What do you remember hearing? What was the most disturbing sound that you remember? Screaming? Yes. Was it alarms, beeps, code blue? Chatting, people talking? Pages, cuts rolling? What about the reason of cardiac monitor it keeps going [Makes beeping sound] it’s like a ticking time bomb reminding me every second that my time here is finite.

What about silence? Silence **[00:05:00]**... that sound of devastating silence after an unexpected news has been delivered. Inside this infected walls was the echo of machines beeping and beeping and beeping. Hospitals are filled with deeply human moments. Indeed much of the noise that people reported was caused by human behaviour: by alarms not being attended on time, people talking loud, doors getting slammed. Typical response to this type of noise is to put a bunch of posters that say “Shh...” [Makes a Shushing Sound] which is never effective and it’s like disrespectful. So we spent more time with people especially **[00:06:00]**

with nurses in the unit and we realise that noise causes stress but stress also causes noisy behaviours. It's common sense, when we are stressed, I have to talk, I'm loud, I get sloppy, I kick things I don't care, I get noisy! How may I help alleviate the stress of people in the unit to facilitate a healing environment? So we converted an empty space within the hospital into a immersive relaxation experience called a "Tranquility Room" and we told the clinicians in the hospital that "You take care of other people all day. Let this space take care of you, even just for a moment when you need it." They liked it very much **[00:07:00]**. [Speaker Chuckles, Audience Laughing]

And some of them came to me and said "This tranquility that I sense, it's affecting my way of providing care to my patients." Some of us came to us with ideas "Hey, can we take something like this experience to my patients, family members, at our cancer center or special care nursery?" We learned that to promote a carriage of quietness, we have to care for people who care for others. [Audience Clapping]

Now going back to the topic of alarms, the average number of alarms that we hear per patient per day I guess... 350, among which the percentage of alarms that are false positive or clinically significant, 85-99% **[00:08:00]**. We are studying the ecological environment of alarms and their pictures and how they interact with each other, in people's behaviours; collaborating with different hospitals, patients, clinicians, researches of psychoacoustics and neuroscience all across the world to reimagine the hospital soundscape. We are starting to collaborate with a couple of device companies to actually redesign some of the beats. Things are happening, ideas of fun, but execution and implementation is a marathon. It's not easy, as many of you might know, and I'm getting burnt out sometimes. When I face those challenges, I tend to human-human-centred design which taught me to learn from extreme scenarios **[00:09:00]**.

In healthcare, one of the extreme scenarios is the end of life. So I returned to my first question which is "What is the last sound you wish to hear at the end of your life?" We collaborated with communities of openIDEO and Stanford Medicine X to record the stories of hundreds of people sharing the last sound they like to hear. One of them was Morgan, a palliative care nurse in New York who said "Oftentimes I am a part of difficult and intimate process of liberating someone from a ventilator with the expectation that this person's life thereafter will be very short. Since I came across with this sort of question, our **[00:10:00]** team has stated to play with the music moments before the person's death and this has impacted everyone in our unit tremendously."

The beauty of our sensory experience is what makes us human. I think of my friend that I met at Medicine X, John, he initially told me that he's actually scared of this whole last-sound concept because he's been close to death. He's a survivor of a difficult condition that got both of his lungs transplanted on January 1st, several years ago. He said, "Every New Year's Eve, when the donor's family is watching the fireworks in **[00:11:00]** the sky, the family is going to be grieving and I think about this every day." At the worst of their time, they gave me the best gift of my life and I work hard to honour what's being given to me." John said he likes to hear the sound of water at the end of his life because it's genetically calming and we all slept by water.

May I invite you to close your eyes for a moment and together reflect not at this heavy depressing question but rather as a playful invitation that if this could be anything that you like. What is the last sound you wish to hear at the end of your life? **[00:12:00]**

[Audio Presentation]

Male Speaker: The last sound I wanna hear at the end of life, is the first sound I heard at the beginning of life.

Male Speaker 2: The last sound I wish to hear in my life would be a gentle breeze through the trees.

Male Speaker 3: or being up on a mountainside and hearing the wind go past.

Female Speaker 1: The ocean...

Female Speaker 2: The ocean waves hitting the beach.

Male Speaker 4: The crash of waves

Female Speaker 3: The water.

Unidentified Speaker: Why do you think water?

Unidentified Male Speaker: It's **[00:13:00]** life.

Unidentified Male Speaker 2: It's movement.

Unidentified Female Speaker: It's transformative.

Unidentified Male Speaker 3: Genetically calming. I think we slept by water.

Unidentified Female Speaker 2: It's like a happy place.

[Sound of Waves Crashing]

Woman: You know, every illness is a love story. The love is surrounding illness because it takes something away from someone who's hurting.

Woman 2: The last sound I want to hear is a voice of a loved one around me. To know that they were there for me in those last moments.

Man: It's a voice of my loved ones...

Older Woman: Loved ones having connected in the moment. You know, even if it's not with me. [Chuckles]

Man 2: The sound of my friends and families talking about all the good experiences we had **[00:14:00]** in life.

Child: My father's voice.

Sad Woman: The last voice I want to hear is my mother's voice.

Older Woman 2: It's my children. It's so easy to say that.

Young Woman: My mother's voice.

Woman 3: Lullaby... and my mother's song... going off to sleep and just relax and like sleep.

Man 3: As I fall asleep, I'm done.

Man 4: The last sound I'd like to hear at the end of my life is some sort of validation that my life was meaningful.

Man 5: You were important. What you did mattered to lots of people. You left a statistically significant mark on the human condition.

Man 6: The last sound that I wish to hear at the end of life is a toilet flushing **[00:15:00]**

Yoko Sen: The last sound I wish to hear is my husband's thought.

Woman 4: The last sound that I wish to hear before I die is laughter.

Man 7: I would love to hear laughing because I think that joy is what I wanna carry with me out into what comes next.

Woman 5: When you hear applause, it's like people are clapping, its like you've done something. There's a sense of why I succeeded, I did well! Because it's going to close...it's ending and it's such a great way to go.

Woman 6: Like getting bursts into life and then leaving the life is very like or it's a hard task, it takes some energy to get rebirth and then to like shutdown **[00:16:00]** and get you know, die.. and to leave the space in being inside of belly of somebody carry you and get back to that space. There's something about that.

Man: I kind of wanna hear like a big engine starting. It's almost like a crescendo and music for me to hear that. It's like awakening. Our mission is so powerful.

Woman: Really loud and kinda pushing my body to kinda feel it. I want something that allows my body to feel that beat and let that beat be sort of my departure.

Man: It's a baby laughing because the universe has a sense of humour **[00:17:00]**.

Another Man: The last sound that I would like to hear is something that I've never heard of before, that I'd never imagined before...

[Audience Clapping]

End of Transcript