vocal vibrations

EXPERIENCE 18

vocal vibrations

Vocal Vibrations is the 18th experiment of Le Laboratoire Paris, and the first experiment developed in tandem with Le Laboratoire's new site in Cambridge Massachusetts, next to MIT and Harvard University. Composer and inventor Tod Machover and architect and designer Neri Oxman, both professors at the MIT Media Lab, invite the public into a fascinating and intimate vocal experience through their collaboration with Buddhist monk Tenzin Priyadarshi, founder and director of the Dalai Lama Center for Ethics and Transformative Values at MIT, and a team of scientists and collaborators including MIT Media Lab research assistants Elena Jessop, Charles Holbrow and Rebecca Kleinberger, MIT professors W. Craig Carter and Al Grodzinsky, vocalists Sara Heaton and the Blue Heron Choir (directed by Scott Metcalfe), Situ Fabrication, Stratysys, and Bowers & Wilkins.

The immersive musical composition of Tod Machover, and the design of his magical oRb with collaboration of the Paris-based designers Julien Benayoun and William Boujon, as well as the stunning design of Gemini by architect and designer Neri Oxman in collaboration with Professor Carter, all aim to explore the role of the voice in human health.

"*We understand that the state of our health can influence our voice. But does our voice influence our health?*" This question, posed by Tod Machover and David Edwards, founder of Le Laboratoire and Harvard professor, in a

CONTACT PRESSE
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

conversation three years ago (and inspired by recent advances in scientific research that reveal profound effects of sound on cellular and tissue behavior) led to a long, inspiring and imaginative conversation, and, ultimately, to the 18th experiment of Le Laboratoire Paris.

Vocal Vibrations: A journey

Vocal Vibrations is a sensorial journey by which visitors to Le Laboratoire Paris will enter into a unique exploration of their voice in the form of corporal vibrations. When we sing, our bodies resonate in subtle and sometimes surprising ways, and yet few of us feel this, understand this, or know how to use this vibration in any tangible, productive way. Understanding, and eventually "taking into our hands" this vibration, leads to a completely new appraisal of the meaning and potential of the voice, and is where Tod Machover invites us to start an exploration of the interrelationships between voice and body.

The bold-design team of Julien Benayoun and William Boujon worked with Tod Machover and his Opera of the Future team, Neri Oxman and David Edwards to create, first, a meditative chamber, a kind of chapel, into which visitors enter. Here, they will hear a meditative, multilayered composition by Tod Machover that weaves together multiple voices and other sources in a transfixing sonic journey. Visitors can stand, sit on a carpet or pillows, and listen carefully – concentrating on a single meditative tone surrounded by evolving textures, before they are invited by a guide to enter into a preparatory tunnel.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

The oRb Tunnel alternates between transparency and translucency that changes as the visitor moves, until he or she enters a central space, in which Neri Oxman's and Craig Carter's Gemini is placed. Gemini is a specially designed, stunning "cocoon," the first half of which (Gemini Alpha) has been prepared for the Paris Laboratoire exhibition. The second half, Gemini Beta, by which visitors will be able to close themselves entirely inside the "cocoon" of this sensorial chair, will be completed when the entire work is launched at the Laboratoire Cambridge in late October 2014.

The oRb Tunnel is both visual and sonorous, made to enhance a sense of isolation, and yet freedom, and encourage the visitor to enter into a unique vocal experience, with his or her own voice, clasping the oRb.

This oRb – placed next to Gemini – a magical sphere that is central to Vocal Vibrations, and was imagined by Tod Machover and David Edwards in a conversation in late 2013. Since then, Tod Machover and his students at the MIT Media Lab and the bold-design team in Paris have developed the oRb. The oRb is an object that the visitor will take in his or her hands prior to climbing into Gemini.

For six minutes, the visitor explores his or her voice, holding the "central tone" heard in the Chapel while experimenting and interacting with Tod Machover's carefully customized composition.
Encased in Bowers & Wilkins headphones and bathed in binaural sound, this subtly powerful musical experience is extended and enhanced by the vibrations of the oRb. Every vocal exploration causes the sound and the vibration to change, allowing the participant to enter into a special meditative relationship with his or her vocal vibrations.

Stage one – Time for meditation

Vocal Vibrations invites the visitor to participate in an exploration of voice and vibration via three sensorial experiences.

The first experience is provided by the musical composition of Tod Machover, which integrates the voices of soprano Sara Heaton and the Blue Heron Choir (directed by Scott Metcalfe) as well as other sources.

As in much of Machover's music, multiple layers intertwine around a central acoustic thread – in this case, a single tone – that allows the listener to follow, to concentrate, and to fully experience the sonic material.

Blending unusual harmonies, a wide variety of textures and timbres, and fluid overlapping rhythms, Tod Machover's music – with special sound design by MIT's Charles Holbrow – initiates visitors into careful listening and internal vocalizing, and prepares them for the participatory experience to come.

"The human voice is our most personal instrument, available to everyone – through our everyday speech as well as through all forms of musicality– but often a source of sensitivity and embarrassment rather than of liberation and exploration. Vocal Vibrations is an attempt to unleash the vast potential of personal vocalizing, for aesthetic pleasure as well as for cognitive and physical stimulation and relaxation. Lastly, Vocal Vibrations presents a three-tiered voice-oriented experience, from a collective listening experience in the "Chapel", to an individual, immersive singing experience in the "Cocoon", to a research and information-oriented reflection in the Médiathèque."

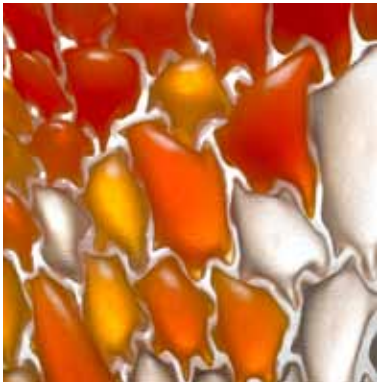
Tod Machover

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Stage two – Time for introspection and experiment

When invited by the guide, visitors enter a labyrinth, the "oRb Tunnel," leading to a second, intimate room, where they discover Gemini, a sensorial cocoon in two parts. The first part, Gemini Alpha, has been completed in its first experimental form for the exhibition at Le Laboratoire Paris. The second half, by which the "cocoon" closes on a visitor, Gemini Beta, will be completed and exhibited at Le Laboratoire Cambridge in late October 2014. Gemini was conceived by architect and designer, Neri Oxman, along with Professor W. Craig Carter, Department of Materials Science and Engineering of MIT, and produced via Le Laboratoire with Situ Fabrication. The extraordinary surface of Gemini, designed by Oxman in collaboration with Professor Carter, realized by Stratasys, via their unique 3D printing process, and is conceived to provide vibrational acoustic properties in response to voice and other sound propagations. Gemini is designed to provide the visitor an isolated space to experience the oRb and its unique expression of vocal vibrations.

"The Gemini chaise is fundamentally about a relationship – rich, complex and filled with contradictions. For the first time my team and I have explored the combination between



© Yoram Reshef

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

subtractive and additive manufacturing in the design of a full-scale architectural work. The parts that together form a chimeric whole that is more than the sum of its parts. (...) Gemini is made of more than 40 materials with unique pre-set mechanical combinations relating to pressure points around the body and forming a sensorial landscape. The 3-D printed skin is designed to absorb sound and provide for a quiet calming environment. The wooden shell supporting the skin includes several holes that can potentially act as resonating chambers located in strategic zones."

Neri Oxman

Stage two – Time for introspection and experiment

After entering Gemini (some may remain seated just next to it), the visitor places on high-quality Bowers & Wilkins headphones and are fitted with a microphone. He or she takes hold of the oRb. Singing creates an immersive acoustical experience that recalls the experience of the Chapel and Machover's composition, now in distilled, dramatic, and directional form (with subtle analysis and interactions designed by MIT's Elena Jessop, Rebecca Kleinberger and Charles Holbrow). Meanwhile, the oRb begins to vibrate...

The visitor is invited to "hold onto" the single central tone, while responding to the music he/she hears. Each vocal intonation causes vocal morphing of the sound and subtle vibrations along the surface of the oRb. One is literally surround by voice, both

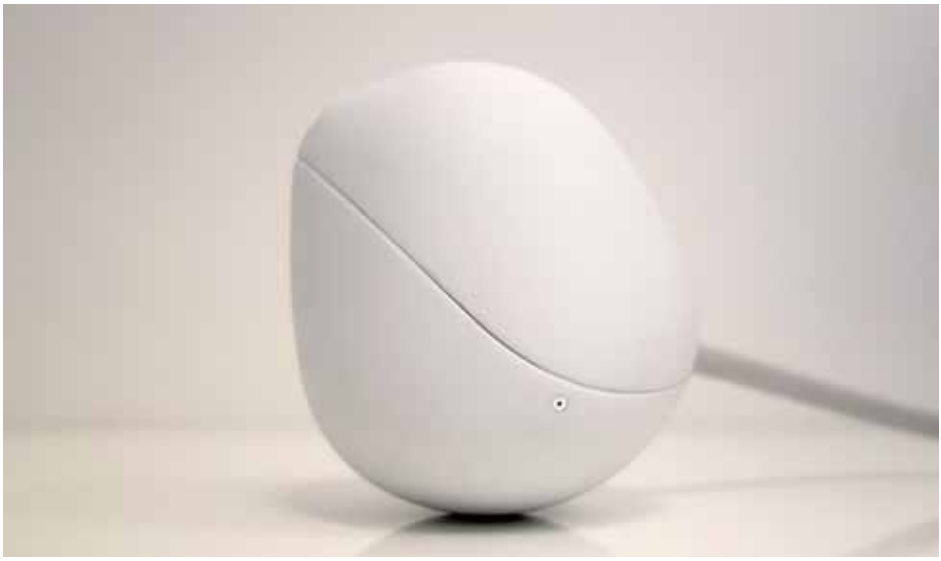


Photo de the oRb © Studio bold-design/Le Laboratoire

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

acoustically and through the vocal vibrations sensed in one's hands. The oRb becomes an incarnation and materialization of the voice, and suggests that one might place it somewhere else, against an arm, the neck, anywhere that vocal vibrations go.

What does this imply? Clearly vocal vibrations are meditative and explorative. But sounds are known to impact cellular behavior, the movements of biochemical molecules within tissues, the matter and phenomena of which human health is made.

The oRb is an astonishing object designed by Tod Machover and his MIT Media Lab team, with the collaboration of bold-design. It allows one to "throw" one's voice onto an object, and to study that object, in a way to "become" that object, whose design, from the nature of the ceramic material to the ceramic thickness, and the acoustical "brain" inside, are all designed to underscore these meditative associations.

The bold-design studio draws inspiration from the symbolism of the stones in a Zen garden.

Stage three – Time for understanding

Vocal Vibrations is above all an active experience. But there are many interpretations of what this experience means. After the Vocal Vibrations experience, visitors can enter the médiathèque to learn about the scientific, meditative, artistic and design implications of the project with contributions from the composer, Tod Machover, the architect and designer, Neri Oxman and her collaborator Professor Craig Carter from MIT, and the Buddhist monk, The Venerable Tenzin Priyadarshi.

It is in the light of the yogic interpretation of Vocal Vibrations that the médiathèque screens the making of a new documentary by Stéphane Haskell, film director: "Breathe – YOGA: a Breath of Freedom", which will explore yoga, as a way to rediscover unity of body and mind through gesture, voice and repetition.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Conversation with David Edwards, founder of Le Laboratoire

What makes the voice and its effects on health so interesting?

David Edwards: Vibrations generated by one's voice are essential to our experience of the body. Our voice identifies us, and in a real sense is a vector of harmony between body and mind. To know one's voice is to know oneself, so to say. We all know that voice can be affected by health or can reveal one's emotions. But we know much less about the benefits and consequences of our voice on our health and well-being. That's what we hoped to explore with Vocal Vibrations.

Why have you decided to place the emphasis of the Vocal Vibrations exhibition on the experience of the visitor?

D.E: This was the choice of Tod and Neri, but I am thrilled. It is Le Laboratoire's raison d'être to conduct experiments with the public through the agency of art and design. I am convinced we have entered an era where the process of innovation is being democratized. With Vocal Vibrations, Tod Machover and Neri Oxman have come up with the beginning of what I see to be an innovation in healthy living. In my mind there's no way this could not enjoin the public as it does.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Conversation between David Edwards, founder of Le Laboratoire, and Tod Machover, composer and inventor, MIT Media Lab

David Edwards: **Your work as a composer is globally recognized as having pioneered fascinating frontiers of music and technology. Here, with Vocal Vibrations you seem to be exploring something new, perhaps even biological. How do you position your Vocal Vibration's work in the context of the compositional work that has preceded it?**
Tod Machover: I have always been interested in using technology to enrich the sound and texture of musical compositions, as well as to enhance the experience of creating, performing and listening to music, for the highest-level professionals but also for those who love (or might love) music but have no technical training. The human voice is our most personal instrument, available to everyone – through our everyday speech as well as through all forms of musicality – but often a source of sensitivity and embarrassment rather than of liberation and exploration. Vocal Vibrations is an attempt to unleash the vast potential of personal vocalizing, for aesthetic pleasure as well as for cognitive and physical stimulation and relaxation. Lastly, Vocal Vibrations presents a three-tiered voice-oriented experience, from a collective listening experience in the "Chapel", to an individual, immersive singing experience in the "Cocoon", to a research and information-oriented reflection in the Médiathèque.

D.E: **Can you describe some of the highlights of this rich collaboration involving Tenzin Priyadarshi, Neri Oxman, Alan Grodzinsky, your research group, and our team here at Le Laboratoire?**
T.M: Vocal Vibrations began with an idea of mine – developed through discussions with you, David – to create an extremely quiet, intimate sonic experience that could influence one's cognitive and physical wellbeing, perhaps on a cellular level. The activity soon began to revolve around the voice, and I built a team at the MIT Media Lab – graduate students Charles Holbrow, Elena Jessop and Rebecca Kleinberger – to explore new

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

methods for measuring the sound and vibration of the voice and for turning that analysis into meaningful "feedback" for participants. We studied the techniques of traditional Buddhist chanting meditation and possibilities for extrapolation and enhancement with Tenzin Priyadarshi, founder and director of MIT's Dalai Lama Center for Ethics and Transformative Values. With Al Grodzinsky – an MIT expert in tissue and cartilage, as well as a serious violist – we explored how vocally-produced vibrations could be directed to different parts of the body, and could be expected to influence circulation and equilibrium in critical areas such as joints. With MIT Media Lab architect and designer Neri Oxman, we discussed a special environment that could reinforce the contemplative and sensorial experience we were designing. And the team at Le Laboratoire worked closely with us to imagine the overall trajectory of audience experience, to create the spatial design of the exhibit, and to collaborate on the final design for the oRb, which places vocal vibrations – literally – in one's hands.

D.E: **What do you hope a visitor will discover through Vocal Vibrations?**
T.M: I hope that a visitor will enjoy a new perspective on the potential of the human voice to impart pleasure through listening, to enhance concentration through participation, and to promote ongoing wellbeing through practice. The trajectory of Chapel-Cocoon-Médiathèque has been carefully crafted to promote this realization, and to encourage repeat visits.

D.E: **Can you speculate on the future of Vocal Vibrations?**
T.M: In the spirit of the MIT Media Lab and Le Laboratoire, I view the first version of Vocal Vibrations as the beginning of a longer-term experiment. Based on the core musical materials of the project and on the measurement and analysis techniques developed, we plan to expand the potential of measuring location, intensity and movement of vibration produced through vocalizing, and to increase the potential for "amplifying" that vibration throughout the body, externally and internally.
As new measurement techniques are added to the environment, we expect to better understand the longer-term influences of directed vocalization on cognitive function, circulation, and molecular behavior. In addition, we expect that the initial "Cocoon" vocalizing experience will be the first in a growing series of "vocal vibration exercises" which will serve to broaden the range of emotional, cognitive and physical transformations that this practice can address.

Conversation between David Edwards, founder of Le Laboratoire, and Neri Oxman, architect and designer, MIT Media Lab

The Cocoon: Gemini, a twin chaise in two parts, Gemini Alpha will be exhibited in Le Laboratoire Paris and Gemini Beta in Le Laboratoire Cambridge, in collaboration with Professor W. Craig Carter (Materials Science and Engineering Department, MIT), Situ Fabrication and Stratasys.

"*Gemini – a twin chaise – spans multiple scales of the human existence extending from the warmth of the womb to the stretches of the zodiac in deep space. It recapitulates a human cosmos: our body – like the constellation – drifting in space. Its creation explores interactions between sonic and solar environments, natural and synthetic materials, hard and soft sensations, as well as traditionally crafted (subtractive) and 3D-printed (additive) fabrication. The design is rooted in the mythical relationship between twins: one is mortal - born of man, the other divine. Made of two parts, like the sun and the moon, like Adam and Eve, the chaise forms an enclosure surrounding the human with a stimulation-free environment. This is achieved through the combination of a solid wood 5D-milled shell housing an intricate cellular skin made of sound absorbing material. This calming and still experience of being inside the chaise invokes the prenatal experience of the fetus surrounded by amniotic serenity, an antidote to the stimuli rich world we live in.*"

Neri Oxman

David Edwards: **How do you think of the Gemini chaise in the light of your previous work, perhaps notably the beast? In what way has the intimate relationship with one's voice and one's body influenced your design of the chaise?**

Neri Oxman: Our past work represented a being, a thing, and a single object. The Gemini chaise is fundamentally about a relationship – rich, complex and filled with contradictions. For the first time my team and I have explored the combination between subtractive

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

and additive manufacturing in the design of a full-scale architectural work. The parts that together form a chimeric whole that is more than the sum of its parts. While Beast was 3-D printed out of 5 materials, Gemini is made of more than 40 materials with unique pre-set mechanical combinations relating to pressure points around the body and forming a sensorial landscape. The 3-D printed skin is designed to absorb sound and provide for a quiet calming environment. The wooden shell supporting the skin includes several holes that can potentially act as resonating chambers located in strategic zones.

D.E.: During these last months of collaboration you frequently spoke of your fashion/ design work. Do you see the cocoon as a kind of clothing? or is it nearer to a couch or an actual cocoon?

N.E.O: Fashion, product and architectural design share a common origin and are fundamentally isomorphic; despite the differences in length scales I consider them the same. Our latest design for the Paris Fashion show explored similar morphological themes but was essentially worn by the body. Gemini, unlike Anthozoa (the Paris Fashion show dress), is a house for the body, a cave for the mind.

D.E.: Might there be future cocoons or even a new kind of "habitat" that is something between clothing, furniture design and architecture? Can you tell us more about the intriguing new material that lines the inside of Gemini?

N.E.O: My team and I explore the possibilities and limits of variable properties across time and space (recall our "Silk Pavilion"). Can we design materials that may drastically change their mechanical properties? Can a material be as hard as a protective shell (or chaise) and soften into a fabric-like substance on demand? The key to doing this is achieving a much higher level of understanding and control of material properties and their spatial arrangement. The materials lining Gemini from the inside are called "digital materials" and are produced as photopolymers with 44 pre-set mechanical combinations. In collaboration with Professor Craig Carter from MIT, a 3-dimensional matrix was designed which determines the position of a given material according to its elastic moduli, its color and its level of translucency.

Conversation between David Edwards, founder of Le Laboratoire, and Neri Oxman, architect and designer, MIT Media Lab

D.E.: In what way does the 3D printed surface of Gemini absorb and respond to sound and voice in particular?

N.E.O: The design includes a number of length scales ranging from structure to material composition that affect its sound absorbing properties. (1) On the meter scale, the chaise forms a semi-closed anechoic chamber with curved surfaces that tend to reflect sound inward. The surface structure scatters the sound and absorbs it and, in the absence of large planar surfaces, reduces the amount of sound that would otherwise bounce back to the source. This effect is amplified with Gemini's two halves uniting into a single womb-like chamber. (2) On the centimetre scale – a scale that corresponds to the wavelength of sound – the 3D printed inner "skin" is designed as 3-dimentional doubly curved cells that scatter and absorb sound effectively given their geometry (i.e. the sound tends to bounce from one "cell" unit to another till it gets absorbed) and high surface area to volume ratios. In other words, the features of the chair are on the order of the wavelength of sound and they therefor interact strongly with sound and get absorbed effectively. (3) On the nano-scale, the properties of the Digital Materials also contribute to the absorption of sound. These materials are elastic in nature, varying in durometer (and sound absorption value) as a function of curvature. Surface areas that are more curved than others are also assigned more elastic properties, thereby increasing absorption around local chambers.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Conversation between David Edwards, founder of Le Laboratoire, and The Venerable Tenzin Priyardarshi, founder and director of The Dalai Lama Center for Ethics and Transformative Values, MIT

David Edwards: I would love you to just extemporize from a public point of view, and maybe before I even say this – since we haven't talked for a long time – mention that the project is anchored, from a scientific point of view, in the molecular, cellular, tissue-level research that's happening today. This research shows quite clearly how vibrations, whether caused by sound or by other mechanical forces, can have quite an impact on cellular behavior and molecular transport and therefore health, so right now in medicine this kind of phenomenon is being studied in the context of pre-clinical and clinical cancer treatment. There are also potential applications in the treatment of diabetes, bone healing and so on and so forth. Interestingly, most of the research where sound is concerned deals with inaudible sound – which partly reflects the fact that frequency matters. But I think it's also possibly related to the fact that a treatment that is audible could be having secondary or primary effects on health outcomes. The fact that the role of sound in health, wherever an audible frequency is concerned, needs to be mediated by agreeable sound is really intriguing to me. Just to make one final point, the fact that the project has, naturally or not, led to this externalization of the voice into an object that's now vibrating in special ways has all kinds of implications – but that's satisfying so that's kind of where we're at. In a very intuitive or not so very intuitive place I think what people are really interested in is to hear from you. Given your background not only as a Buddhist monk but also a trained physicist, as I understand your training – I think a couple of sentences – to just talk a bit about where you're coming from and articulate why this project particularly interests you on both of those levels would be very interesting to the public.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Tenzin Priyadarshi: Yes I think I see some overlap but you put it so beautifully and articulately. I think one interest often has been with regard to using certain contemplative rituals around sound when people are ill or people are not feeling well and it goes well beyond the concept of sitting in silence. The vibrations are generated by reciting certain kinds of combinations of syllables and the tradition talks about either reciting it quietly or reciting it at a decibel level where only one person can hear, or reciting in a manner where the voice is projected and others hear it and receive the benefit of it. This triggered a major curiosity on my end, knowing that, as you mentioned, so far much of the notion around sound and frequency has been in that which is audible, but when we see certain kinds of integrative therapies such as in the case of cancer treatment, we see a new frontier for the inaudible. People are constantly requesting this kind of chanting or recitation practices around them because it soothes them, like music. The chant or parts of chanting are somehow distinctively different from any other kind of music that I play because of the kinds of feelings that it generates. It goes beyond the sense of soothing or enjoying what is being heard. Secondly with regard to rituals as we did here with one of the groups from Tula in the Russian separation, is a typical style of chanting. This technique of throat singing where people are using multiple chords to produce a sound and then do recitation, clearly creates a very different level of vibration than naturally occurs in one's body. This affects the meditation practice so that once you begin with those qualitative sounds, you can ignore the vibration and shuffle the mind. Then you're able to sort of ease into this moment of stillness and you're able to then ease out of these moments of stillness. Ironically the term that they use in India is STENDA, which translates as oscillation. The moment when Tod and I were discussing the name and all these things about word vibrations came up and I thought about oscillation and I thought about STENDA and I said this is the perfect corollate. The mystical element of it is called the emotion of oscillation and vibration. In India they are able to write poetry about it but they're not to rationally define it. This was an opportunity to really clearly study the relationship between these two elements.

Thanks

CREATORS

Tod MACHOVER, composer & inventor, MIT Media Lab
Neri OXMAN, architect & designer, MIT Media Lab

CURATOR

David EDWARDS, founder of Le Laboratoire,
Harvard University professor

WITH THE COLLABORATION OF

Professor W. Craig CARTER, MIT
Professor Al GRODZINSKY, MIT
Charles HOLBROW, MIT Media Lab, Opera of the Future Group
Elena JESSOP, MIT Media Lab, Opera of the Future Group
Rebecca KLEINBERGER, MIT Media Lab, Opera of the Future Group
The Venerable Tenzin PRIYADARSHI, founder and director of The Dalai Lama
Center for Ethics and Transformative Values, MIT

MUSICAL PERFORMANCES

Sara HEATON, soprano
BLUE HERON CHOIR (Scott METCALFE, director)

SCENOGRAPHY

Julien BENAYOUN & William BOUJON, bold-design

REALIZATION

Naomi KAEMPFER, creative director Art Fashion Design, STRATASYS, 3D Printing
Danny HAIKIN, global brand director, BOWERS & WILKINS, Audio system
Stéphane HASKELL, film director, & Flair Production

OPERA OF THE FUTURE GROUP, MIT Media Lab
Pascal OREFICE, Art & Textures
Manuella PASSARD, production director (oRb), Le Laboratoire
Gregory ROSENBLAT, Porcelaine Pierre Arquié
SITU FABRICATION, Cocoon/Gemini

TECHNICAL DIRECTION

Rémy SPENGLER, technical director, Le Laboratoire
Sébastien LAMOURET, technical manager, Le Laboratoire

DIRECTION & ADMINISTRATION

Xavière MASSON, executive director, Le Laboratoire
Christophe PIEDERRIERE, administrator, Le Laboratoire
Simone OVSEY, producer of special projects, MIT Media Lab

COMMUNICATION & PRESSE

Karine SCHERRER, communication director, Le Laboratoire
Mélodie NEVERS, communication assistant, Le Laboratoire
Florence LE MAUX, graphic designer
Valentine BARDIN, VFCRP
Giannina COHEN-AUBIER, VFCRP
Laura TORKAZ, VFCRP

Biography: Tod Machover, composer & inventor, MIT Media Lab

©DR

Tod Machover has been called "America's most wired composer" by The Los Angeles Times, and is recognized as one of the most innovative composers of his generation. He is also celebrated for inventing new technologies for music. Machover studied with Elliott Carter and Roger Sessions at The Juilliard School and was the first Director of Musical Research at Pierre Boulez's IRCAM. He is the Muriel R. Cooper Professor of Music and Media at the MIT Media Lab (Cambridge USA) and is Director of its Opera of the Future Group. Since 2006, Machover has also been Visiting Professor of Composition at the Royal Academy of Music in London.

Tod Machover's compositions have been commissioned and performed by many of the world's most prestigious ensembles and soloists, including Opera America, the Toronto Symphony Orchestra, the Ensemble InterContemporain, Ensemble Modern, BBC Scottish Symphony, San Francisco Symphony, Los Angeles Philharmonic, Boston Pops, Houston Grand Opera, Bunkamura (Tokyo), Lincoln Center for the Performing Arts, Carnegie Hall, Deutsches Symphonie Orchester Berlin, Ars Electronica, Casa da Musica (Porto), American Composers Orchestra, Tokyo String Quartet, Kronos Quartet, Ying Quartet, Yo-Yo Ma, Joshua Bell, Kim Kashkahian, Matt Haimovitz, and many more. His work has been awarded numerous prizes and honors, among others from the American Academy of Arts and Letters, the Fromm and Koussevitzky Foundations, the National Endowment for the Arts, the German Culture Ministry, and the French CultureMinistry, which named him a Chevalier de l'Order des Arts et des Lettres. In 2010 he received the Arts Prize from the World Technology Network (CNN/TimeInc.), was Finalist for the 2012 Pulitzer Prize in

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Music, and received the inaugural Arts Advocacy Award from the Kennedy Center for the Performing Arts in September 2013.

Tod Machover is also recognized for designing new technologies for music performance and creation, such as Hyperinstruments, "smart" performance systems that extend expression for virtuosi, from Yo-Yo Ma to Prince, as well as for the general public. The popular videogames GuitarHero and Rock Band grew out of Machover's Lab. His Hyperscore software –which allows anyone to compose original music using lines and colors– has enabled children around the world to have their music performed by major orchestras, chamber music ensembles, and rock bands.

Machover is especially known for his visionary operas, including *VALIS* (based on Philip K. Dick's sci-fi classic and commissioned by the Centre Georges Pompidou to celebrate its 10th anniversary); *Brain Opera* (which invites the audience to collaborate live and online); *Skellig* (based on David Almond's award-winning novel and premiered at the Sage Gateshead in 2008); and the "robotic" Death and the Powers which premiered in Monaco (at the Opéra de Monte-Carlo under the patronage of Prince Albert II), Boston and Chicago during the 2010/2011 season, and produced by The Dallas Opera in February 2014, when it was also streamed live –with interactive enhancements– to selected venues worldwide.

Tod Machover is currently working on a series of "collaborative symphonies" based on a model launched with the Toronto Symphony Orchestra in March 2013 (*A Toronto Symphony*), and further developed for the Edinburgh International Festival (*Festival City*) and the Perth (Australia) International Festival (*Between the Desert and the Deep Blue Sea*). Upcoming sites include cities in the U.S., Switzerland, Brazil and India.

Biography: Neri Oxman, architect & designer, MIT Media Lab

©DR

Designer Neri Oxman is the Sony Corporation Career Development Professor and Associate Professor of Media Arts and Sciences at the MIT Media Lab, where she founded and directs the Mediated Matter design research group. Her group explores how digital design and fabrication technologies mediate between matter and environment to radically transform the design and construction of objects, buildings, and systems. Her goal is to enhance the relationship between the built and the natural environments by employing design principles inspired by nature and implementing them in the invention of novel digital design technologies. Areas of application include product and architectural design, as well as digital fabrication and construction.

Neri Oxman was named to ICON's list of the top 20 most influential architects to shape our future (2009), and was selected as one of the 100 most creative people by FASTCOMPANY (2009). In 2008, she was named "Revolutionary Mind" by SEED Magazine. Her work has been exhibited at MoMA (NYC) and is part of the museum's permanent collection. In 2012 the Centre Georges Pompidou Museum (Paris, France) acquired her works for its permanent collection. Other exhibitions include the Smithsonian Institute (Washington, DC), Museum of Science (Boston, MA), FRAC Collection (Orleans, France), and the 2010 Beijing Biennale. She is included in prestigious private collections and has received numerous awards including a 40 Under 40 Building Design + Construction Award (2012), a Graham Foundation Carter Manny Award (2008), the International Earth Award for Future-Crucial Design (2009), and a METROPOLIS Next Generation Award (2009).

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Neri Oxman received her PhD in design computation as a Presidential Fellow at MIT, where she developed the theory and practice of Material-based Design Computation. In this approach, the shaping of material structure is conceived of as a novel form of computation. Prior to MIT, she earned her diploma from the Architectural Association (RIBA 2) after attending the Faculty of Architecture and Town Planning at the Technion Israel Institute of Technology, and the Department of Medical Sciences at the Hebrew University in Jerusalem.

Biography: The Venerable Tenzin Priyadarshi, founder and director of The Dalai Lama Center for Ethics and Transformative Values, MIT


©DR

By most accounts, The Venerable Tenzin Priyadarshi is an innovative thinker, a philosopher educator, a philanthropist, a polymath and a monk. He is the Founding Director of The Dalai Lama Center for Ethics and Transformative Values at the MIT, a center dedicated to inquiry, dialogue, and education on the ethical and humane dimensions of life. As a collaborative and nonpartisan think tank, its programs emphasize responsibility and examine meaningfulness and moral purpose between individuals, organizations, and societies. The Center at MIT has 6 Nobel Peace Laureates as its founding members and its programs run in 8 countries and expanding.

Venerable Tenzin's unusual background encompasses entering a Buddhist monastery at the age of 10 years to receiving graduate education at Harvard withe degrees ranging from Philosophy to Physics to International Relations.

Following the catastrophic disaster caused by Tsunami in 2005, Venerable Tenzin founded the Prajnopaya Foundation to develop innovative and sustainable ways to alleviate suffering in developing countries. He convened and advised to team of designers and architects from MIT, Harvard University Graduate School of Design, and Cambridge University to develop the Tsunami Safe(r) Houses, low cost high resistant homes, for families in Sri Lanka. The foundation has been active in health care and education endeavors

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

in India, including systematic methods to curtail tuberculosis (TB) and bring health care to rural areas. Among many things, he is currently passionate about Global Literacy Collaborative, an innovative method of learning which brings "hope for more than 100 million children who will not have the opportunity to attend school" as highlighted in Fareed Zakaria's GPS on CNN. The Collaborative brings the best in fields of media and education from MIT Media Lab, Tufts University, The Center at MIT and Georgia State University.

He has been interviewed by the National Public Radio and articles on him and his work have appeared in the New York Times, the Boston Globe, and La Republica. He also speaks at the American Academy of Arts and Sciences, various institutes of learning and Fortune 500 companies on topics ranging from leadership to enlightened organizations. Venerable Tenzin serves on the Board of several academic, humanitarian, and religious organizations. He is a recipient of several recognitions and awards, most recent of which is a 2013 Distinguished Alumni Award from Harvard for his visionary contributions to humanity.

Biographies:
Julien Benayoun & William Boujon, studio bold-design, scenography

©DR

William Boujon and Julien Benayoun form a duo of designers whose complementarity is based on collaborative creation. When they initiated Bold-design in 2008, they set the tone: a high standard of values for art and industry and artisanal know-how.
The balance of the studio rests on complementary inspirations: whereas Julien asserts his conceptual vision for design, William defends his fascination for manufacturing techniques. Their competencies in industrial design allow them to develop projects in which ornamentation becomes functional; shapes and objects take on a sometimes narrative dimension. This is because it is important for Bold-design to tell the story of each of its creations, sometimes going so far as to construct certain projects as though it was a literary episode.

In 2009, with Mathieu Lehanneur and David Edwards, Julien participated on the conception of CellBag for Le Laboratoire.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

In 2010, Bold-design produced the Blown Shapes collection of glass pieces and designed the luminaire F.Light with the arms manufacturer, Verney-Caron, exhibited at the Saint-Etienne Biennale de Design and at MERCI, in Paris.
In the autumn of 2011, William and Julien restored an unusual work space on the roofs of the cultural building Le Cent, in the heart of Paris, and installed their offices there. They designed the scenographic studio "le Forum Tendance" in 2012 for Nelly Rodi, followed by the "Hall Première Classe" for the Salon Who's Next in 2013. That same year they received a Creation scholarship from VIA (Valorisation de l'Innovation dans l'Ameublement) for their lighting system, called Plume. For London Design Week, the studio designed Memorabilia Factory, a souvenir creation kit In Situ using a natural technique of calcification of sand by bacteria.
In 2014 Bold-design will take charge of the artistic direction of a new brand of high-range Hi-Fi as well as the "bar éphémère" of the Centre Saint-Exupéry in Reims.
Their projects have been exhibited in Paris, Saint-Etienne, London, Milan, New York and Taiwan, during international events.
William and Julien have led several workshops at the ESAD in Strasbourg, the Ecole Bleue in Paris, the lycée de Sèvres and the Strate Collège, and they have taught industrial design at the Ecole Bleue and the Université de Metz.

Biographies: Sara Heaton, Blue Heron Choir (Scott Metcalfe)

Sara Heaton, soprano

American soprano Sara Heaton is gaining recognition as a sensitive performer of both opera standards and new works. This season, Sara sings Beethoven's 9th with the Santa Fe Symphony, *Amore in Il ritorno d'Ulisse* with Boston Baroque, and Papagena in *The Magic Flute* with the Boston Youth Symphony Orchestra. She sang Miranda in the US premiere of Tod Machover's *Death and the Powers* and has sung leading roles with American Opera Projects, Opera in the Heights, Opera Boston, and Boston Modern Orchestra Project. She holds an MM from Boston University and a BA from the University of Pennsylvania.

Blue Heron Choir/Scott Metcalfe

The Boston-based vocal ensemble Blue Heron, directed by Scott Metcalfe, combines a commitment to vivid live performance with the study of original source materials and historical performance practice ranging over a wide and fascinating repertoire, including 15th-century English and Franco-Flemish polyphony, Spanish music between 1500 and 1600, and neglected early 16th-century English music. Blue Heron's first CD, featuring music by Guillaume Du Fay, was released in 2007, and in 2010 the ensemble inaugurated a 5-CD series of *Music from the Peterhouse Partbooks*. In 2012-13 Blue Heron became ensemble in residence at the Center for Early Music Studies at Boston University and performed for the visit of His Holiness the Dalai Lama at MIT. Music and Artistic Director Scott Metcalfe is considered one of North America's leading specialists in music from the fifteenth through seventeenth centuries and beyond.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Biography: David Edwards, founder of Le Laboratoire, Harvard University professor

© Benoît Linero

David Edwards is a scientist, writer and inventor, and lives between Paris, France, and Cambridge, Massachusetts, where he oversees his original institution of cultural creation, Le Laboratoire.

Le Lab is David Edwards' open experiment with artists, designers, scientists, and the general public, whereby many of his most powerful innovations, from edible packaging, to olfactory communication, have been conceived, developed, and translated into cultural, commercial, and humanitarian practice worldwide.

His educational work as faculty at Harvard University, where he is Professor of the Practice of Idea Translation, has spawned the educational program, The ArtScience Prize, now in 19 sites around the world, and closely related to his work at Le Laboratoire.

He is the author of over 100 patents, a writer of fiction and nonfiction, and has started multiple for-profit and nonprofit organizations in the USA, Europe and Africa.

He is among the youngest members elected to the American and French Academies of Engineering, and has received many national and international honors including Chevalier des Arts et des Lettres from the French Ministry of Culture.

www.davidideas.com

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Le Laboratoire, concept and vocation

Le Laboratoire is a unique center of art and design experimentation at frontiers of science founded and overseen by David Edwards in 2007 in Paris, and from July 2014, in Cambridge (USA). A hybrid institution of cultural creation, Le Laboratoire invites the public to discover original and synthetic dreams of tomorrow through novel experimental exhibitions, from which works of art and design have entered permanent museum collections (MoMA, Louisiana Museum, Musée des Arts Décoratifs, etc.), been distributed for humanitarian purposes (CellBag, Africa), or started to sell commercially in stores around the world (WikiPearls, Whaf, AeroLife, WA|HH, oPhone etc.).

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

MIT Media Lab

Actively promoting a unique, antidisciplinary culture, the MIT Media Lab goes beyond known boundaries and disciplines, asking the questions whose answers could radically improve the way people live, learn, express themselves, work, and play. It creates disruptive technologies and pioneers exciting new areas for the arts, for example, bringing the world wearable technology; affective computing; and the world's first robotic opera.

Today, Lab researchers engage in projects that range from digital approaches for treating neurological disorders, to a stackable electric car, to new design and fabrication technologies that draw on nature to radically transform tomorrow's materials and objects.

Press contact
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56

Practical information

LE LABORATOIRE PARIS
4 rue du Bouloi – 75001 Paris
www.lelaboratoire.org

@Le_Laboratoire_ #vocalvibrations

Le Laboratoire - ArtscienceLabs

Underground
Louvre-Rivoli, line 1
Palais-Royal/Musée du Louvre, lines 1 & 7

Bus
48, 74, 85, 21, 81, 67

Vélib'
12, rue du Colonel Driant
29, rue J.J. Rousseau
192, rue Saint-Honoré

Parking
Parking Vinci
Rue Croix des Petits-Champs

VOCAL VIBRATIONS
Free entrance
From 28 March to 29 September 2014

Days and opening hours:
Friday – Monday / 12:00 - 7:00 p.m.

Special opening hours / Designer's Days
May 20 / 2:00 p.m. - 11:00 p.m.
May 21-23 / 12:00 - 8:00 p.m.

Closed
June 20 - 30 2014
August 1 -1 8 2014

PRESS CONTACT
VFCRP: 01 47 57 67 77
Laura Tokarz: 01 47 57 91 02
Valentine Bardin: 01 47 57 85 56