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Ryoji Ikeda's Superposition

Francine Dagenais

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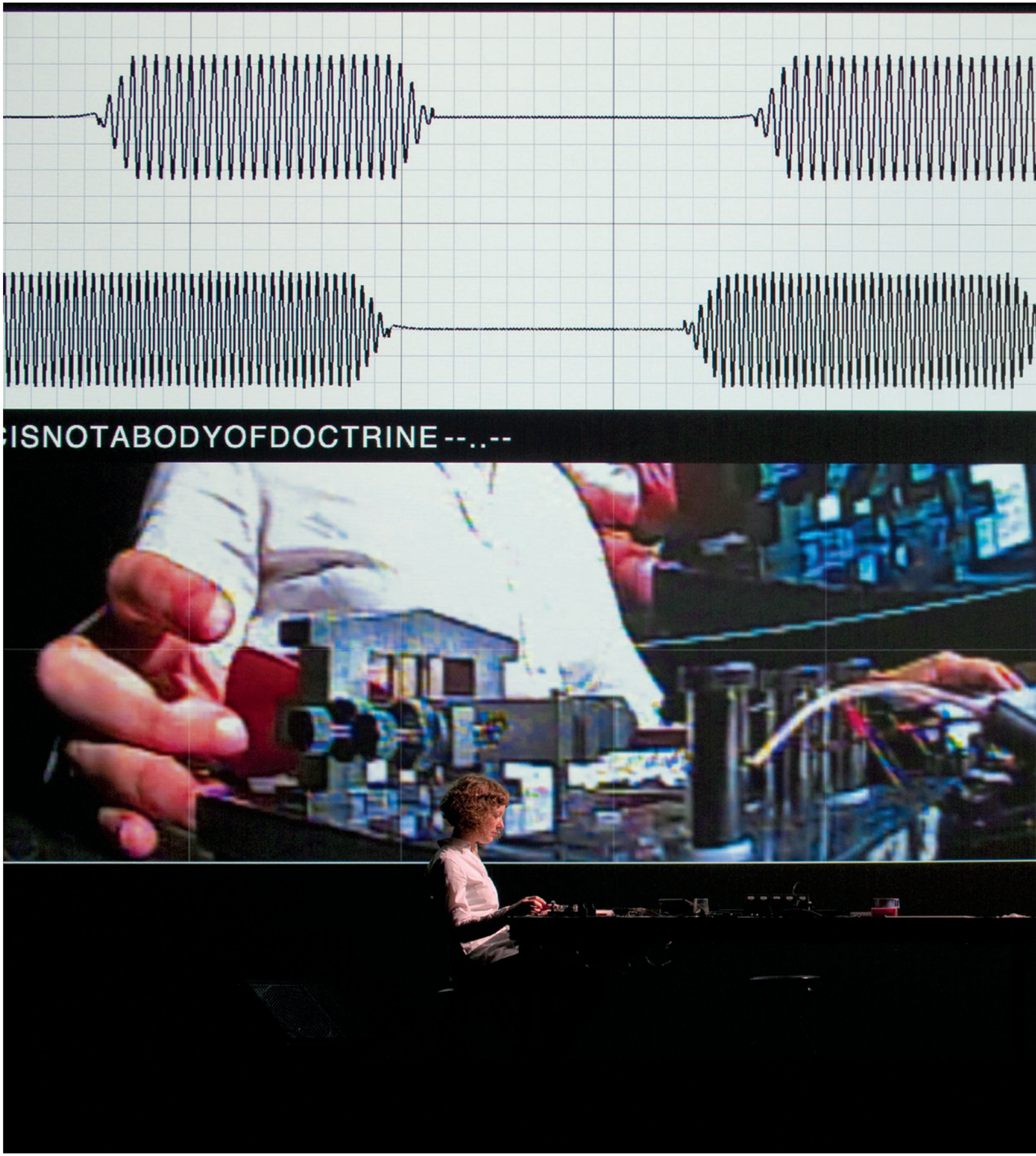
Ryoji Ikeda's superposition

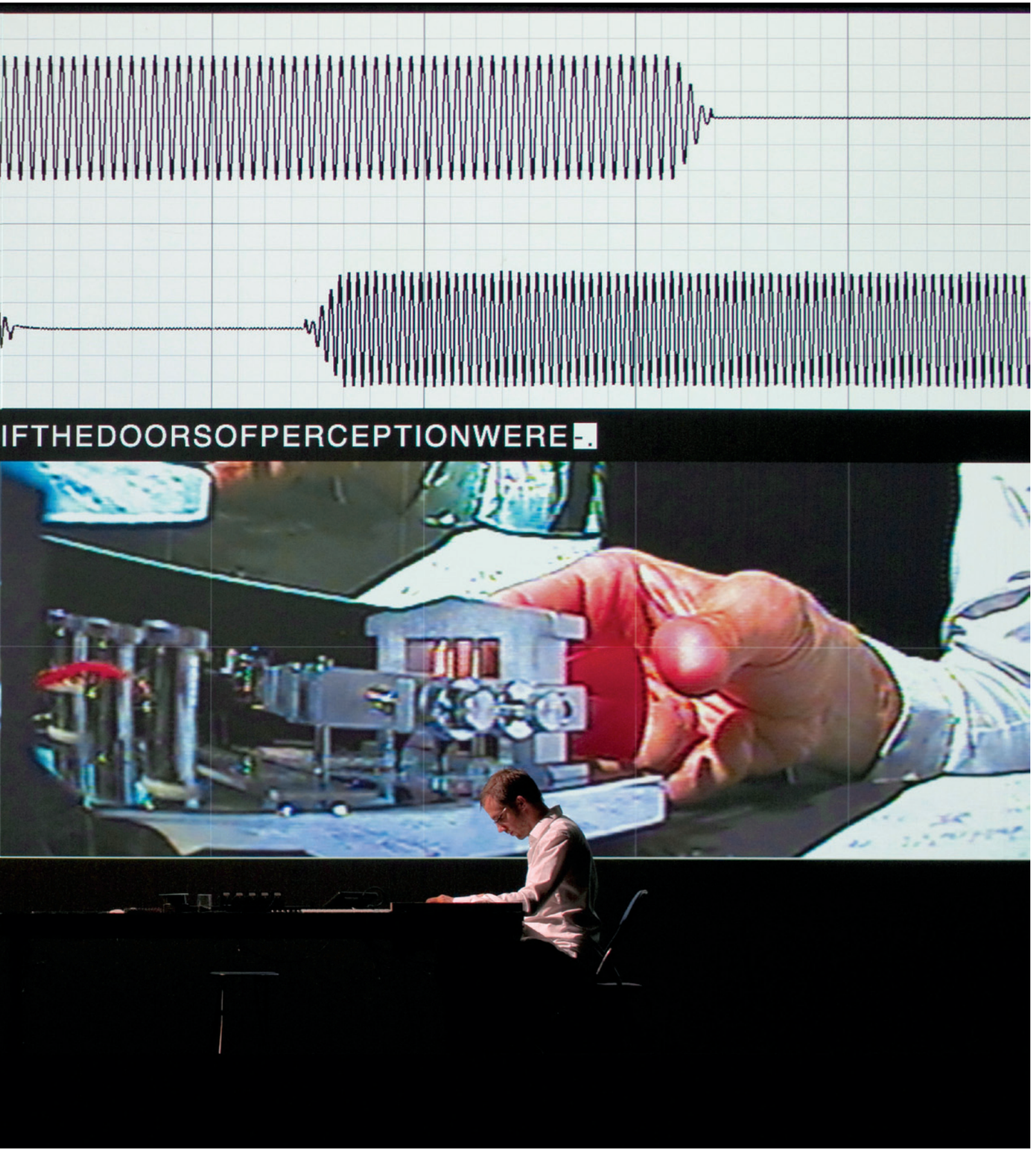
With his title, *Superposition*, Ryoji Ikeda immediately sets the tone. *Superposition* alludes to the notion of quantum superposition, which suggests that a quantum object can exist in multiple states simultaneously. Scientific knowledge is therefore fundamental to this work of art and sound. Ikeda has given himself licence to produce a work around, or associated with, quantum physics, rather than a work explaining quantum physics. He has steadfastly reiterated this position on several occasions. The scope of *Superposition* is extremely broad as it touches on, among other things, string theory, which encompasses both macro and micro universes (the Standard Model). As its nickname, the theory of everything, intimates, it is meant to bridge the gap between very different spheres of scientific endeavour and make sense of them within a unified analytical grid. If ever there was a work embodying the concept of the sublime, it is Ikeda's *Superposition*, as it touches on infinitesimally small subatomic particles, on the one hand, and the incommensurably large cosmos and its galaxies, on the other. *Superposition* also refers to the world of humans and how they make sense of nature and the world through systems, cultural symbols, images, music, visual and textual languages. For Ikeda, *Superposition* is a symphony[1] in the most classical definition of the term, but this is a work that extends beyond the auditory, calling upon the human sensorium in a variety of ways. As the sound component of *Superposition* is strongly and synchronically linked to the visual installation, it indisputably belongs to the world of visual arts as well. The installation portion of the work is comprised of an array of 21 screens, starting with large screen projections above and a series of progressively smaller HD screens arranged in a grid pattern near the floor of the stage. The flow of images sometimes runs at too fast a speed for a proper perceptual recognition or reading. If the visual component is presented in such a way so as to contrast, harmonize, punctuate or underscore the sound component, it seems clear that the reverse is also the case. The visual effect of the increasingly smaller grid pattern with multiple changing images in ceaseless motion is reminiscent of some of Nam June Paik's early video installations. In particular, works comprised of large walls of video monitors with streaming images from popular culture come to mind. *Electronic Superhighway* (1995), *Mirage Stage* (1986) and *Video Groove* (1973) are smaller-scale examples of this. At times, the streaming of data is so rapid that one can only catch snippets of it, making this experience not only auditory and visual, but corporeal as well. This is true of cer-

tain frenzied sections during which the rapid-fire stimuli call for a proprioceptive, intuitive reception on the part of the spectators rather than a perceptual and cognitive one. Sound waves are felt through the body proprioceptively. There are moments of high contrast—frenetic passages give way to slower ones and to total silence at times. Some of the sounds sometimes skirt frequency ranges below the normal threshold of human hearing, in the infrasound spectrum. The stage itself is given over to two performers, who play a score based on specific set rules and random input methods. For instance, they tap out in Morse code several quotes by William Blake and Albert Einstein, while visualized sound signals and streaming ribbons of text appear onscreen. The performers display and represent artifacts of obsolete technologies live, such as the punch card, one of the first data-entry methods used to produce computer-assisted compositions. They cast balls onto the projected grids in order to obtain specific map positions through a sensor-to-algorithm process quite reminiscent of John Cage's aleatory I Ching method.[2] It seems fitting that Ikeda would play with spatiotemporal coordinates under the circumstances. Nothing is as effective as contrast. Ikeda works his way through fields of white noise, pulsating staccato rhythms, techno and powerful crescendos, sometimes grinding the entire apparatus to a halt, allowing for periods of calm or complete silence, during which screens go dark. The cumulative effect of the multiple sensory input and its subsequent deprivation shake spectators to the core and convulse the space they occupy, giving the impression, however momentarily, that space and time have been altered. Not withstanding the post-structuralist discourse on the need to dispose of meta-narratives, in particular Jean-François Lyotard's discussion of the sublime and the differend, this work is seductive. Its images are for the most part borrowed from the great scientific meta-narratives, and they evoke the mathematical sublime, the incommensurable, often characterized by a simultaneous feeling of discomfort and pleasure. We are exposed to everything at once: texts, sound waves perceived by the body and the auditory system, satellite images, constellations, the deaths of stars; some things from our natural universe, some from our cultural one. The search for a unified theory of human knowledge is by no means a new one. We see attempts at this as far back as the pre-Socratic philosophers. The difference with contemporary endeavours is that scientific theorists are now attempting to do this on an unprecedented scale, using the sciences, physics in particular, as a means of achieving it. In the wake of books such as Lee Smolin's *Three Roads to Quantum Gravity* (2001), Stephen Hawking's *The Theory of Everything: The Origin and Fate of the Universe* (an unauthorized compilation of texts published in 2002) and Brian R. Greene's *The Elegant Universe: Superstrings, Hidden Dimensions and the Quest for the Ultimate Theory* (2010), Edward O. Wilson pursues this unifying vision with *The Meaning of Human Existence* (2014). Wilson argues that by using the concept of "consilience"[3] as a system, perhaps even as a methodology, it is possible to arrive at an understanding of existence, humanity, the self, the universe and, moreover, at a theory of the mind. We could even come to comprehend why we ended up here in the first place. This is, of course, a tall order for any philosophy or theory, and both sides of the issue have serious flaws. Some would even ask why should we care given the environmental, geopolitical and socio-economic state of the planet. As an art historian and a member of a discipline belonging to the humanities, where the ideologies behind scientific meta-narratives are routinely deconstructed and very much distrusted, I should find myself firmly in the camp of those who contest consilience and yet, I must confess that its lure and charm have not left me completely indifferent. Is it not in the field of technological art that we find the greatest potential for disciplinary and theoretical convergence? If the sciences have borrowed liberally from the visual arts and, more generally, from the field of the humanities[4] throughout history, the reverse is also true. Was it not, after all, from the drunken seagull in James Joyce's *Finnegans Wake* that Murray Gell-Mann borrowed the term "quark"?[5] While it is no small task for popular science writers to use simpler and less precise language to make sense of major theories in physics, such as the foundational Standard Model[6], it seems like sheer madness for an artist or composer to attempt it. Yet, this is precisely what Ikeda does, and we experience a succession of impressions of what it feels like to operate in a post-Euclidean world. For several centuries, from the Renaissance to Romanticism, the Western art world pledged allegiance to perspectivist systems, whereby three-dimensional space was rationalized and conveyed through two-dimensional representations. It was only after Romanticism that artists attacked the system on all fronts. This revolution may have occurred in the visual arts but the world has not completely abandoned its attachment to perspectivism. This is easily understood from recent video games, such as *Grand Theft Auto* (V) or *Assassin's Creed* (Unity), where reality is clearly viewed as being equivalent to a 3D environment. It is therefore challenging for most of us to go beyond these three-dimensional constructs, which are accepted, acquired and naturalized as equivalent to human perception, and to make the leap to multi-dimensionality, which, for many physicists is simply a post-Heisenbergian reality. What is the universe made of? How do fundamental particles work together to create it? This is Albert Einstein's work and legacy. The major 20th and 21st century endeavours in physics, of CERN for instance, build on this legacy. Finding a way to convey this information, not literally, perhaps not even metaphorically, but multi-sensorially, is what Ryoji Ikeda achieves here. Quantum physics allows us to imagine a world beyond the Euclidean model, in which many versions of the universe can simultaneously coexist. Imagine, for example, subatomic particles spinning, not one way and then the other, but one way and the other at the same time. Quantum reality necessitates a leap in the conceptualization of the universe, where it is possible to conceive of parallel systems existing at the same time but in different states or, as Erwin Schrödinger put it, where the cat in the box is both alive and dead. By definition, quantum superposition leads to a radically different understanding of the universe, where classical mathematics and physics no longer hold sway. Since Gell-Mann, three quarks have been added to the Standard Model, and the experiments at CERN will surely have an impact on its next incarnation. Simultaneous, multiple dimensions are key components of the theory of everything. This also extends from quantum mechanics to quantum computing, in which one of the fundamental laws is that of synchronous multidimensionality. The qubit, or quantum bit, therefore, relies on a stream of simultaneous data, no longer zero and then one, but zero as well as one. This is quantum *Superposition*. Attempting to describe my experience of Ryoji Ikeda's *Superposition* has been quite challenging, even for a seasoned writer like myself. The fact that the work straddles two major disciplines, music and the visual arts, while thematically borrowing from quantum mechanics and string theory, might have had something to do with my struggle. Admittedly, I am a science buff with a library full of dog-eared *Nature* and *Scientific American* back issues and, among my most prized possessions, leaflets and miscellaneous documentation on, and from, the LHC (Large Hadron Collider) at CERN itself: documents explaining the goals and tasks established for the various detectors, ALICE, ATLAS, CMS and EMMA, and the LHCb experiment, along with issues of the *CERN COURIER* (*International Journal of High Energy Physics*). In some way mirroring Ryoji Ikeda's[7] *Superposition* project, the present article has been an attempt to establish links between these areas of knowledge and competency as they relate to *Superposition* and, in so doing, offer a glimpse of one of the most influential scientific theories of our time.

Francine Dagenais



Ryoji Ikeda, *Superposition*, 2014.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Francine Dagenais has worked as an essayist, theorist and art historian in the field of visual and media arts for over twenty years. Her essays have appeared in many specialized magazines, such as *Art Tomorrow* and *Intermédialités*, and recently in *Drone*, a publication put out by Mois de la photo à Montréal (2013). As a curator, she has organized several events and exhibitions for artist centres, universities and organizations such as ISEA. She lives in Montreal.

1 A symphonic work can be many things, but as a general definition, it is a large-scale, instrumental, multi-movement musical work. In this case, the type of music is much more akin to "musique concrète." "Musique concrète" is a form of music developed in the late 1940s at the Studio d'essai de la RTF, in France. Much like found objects or ready-mades in the visual arts, it makes use of various noises as sound materials in order to create compositions. Early electronic music and "musique concrète" are very closely linked. Pierre Henry, Pierre Schaeffer and Edgar Varèse are considered pioneers in this field.

2 In Richard Kostelanetz's *Conversing with Cage* (New York: Routledge, 2003), there are a few vague references to John Cage's method. In a passage on pages 93 and 94, Cage describes how he used the I Ching to compose the *Freeman Etudes*. He also recounts how he forgot his own system after neglecting to finish the *Etudes* for nearly a decade. Further in the book, Cage details a similar, although more complex, method that he used to write prose.

3 Wilson, Edward O. *The Meaning of Human Existence*. New York: Liveright Publishing/W. W. Norton & Co., 2014. 207.

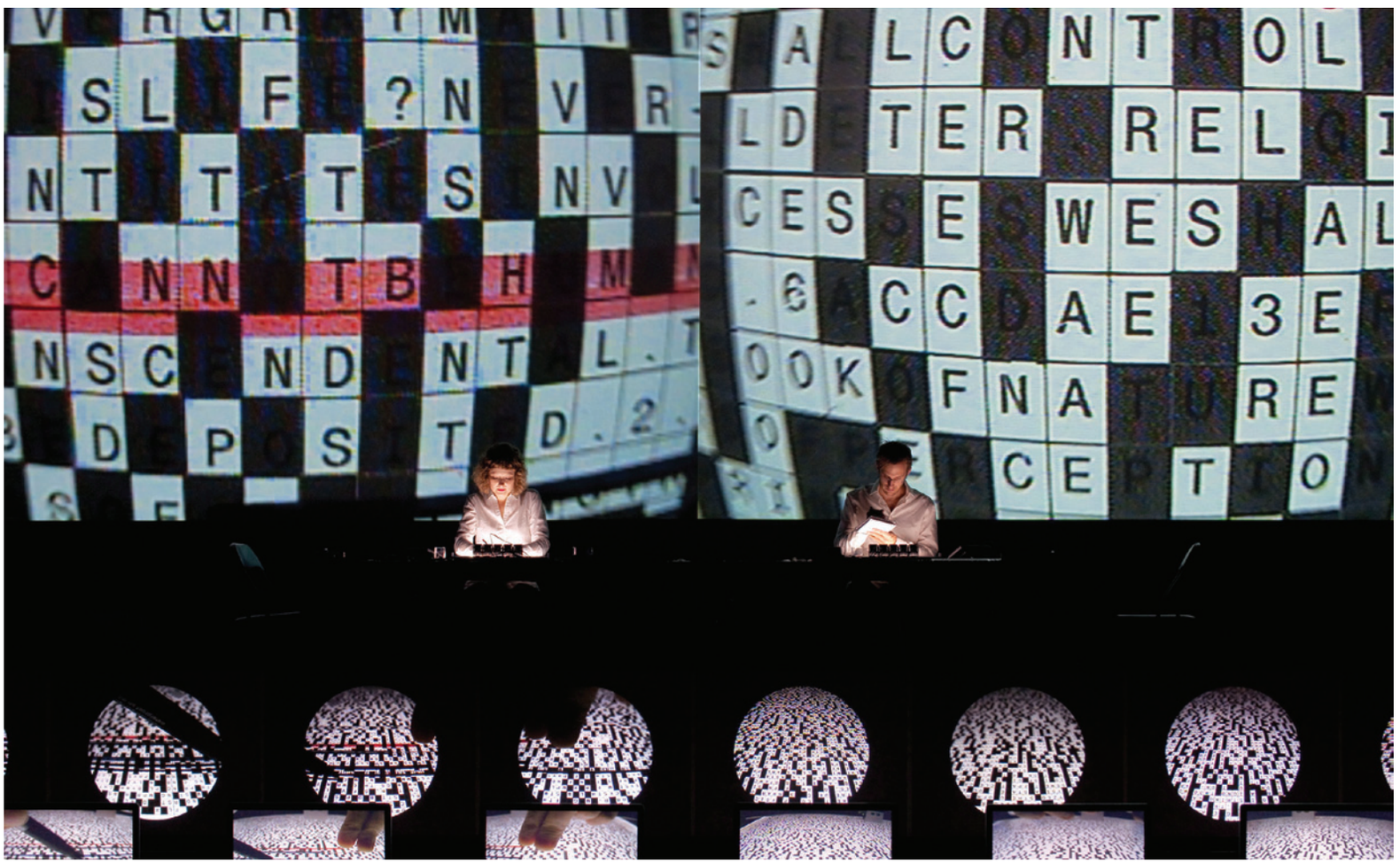
4 Visual artists, in particular, have had a long tradition of using scientific knowledge in their works and, in turn, contributing to the sciences. A few examples of this: in mathematics, the geometry of perspective; in biology, anatomical drawing; in geography and astronomy, the mapping out of the globe or the charting of the heavens.

5 The passage used by Gell-Mann is the following: "Three quarks for Muster Mark!/Sure he has not got much of a bark/And sure any he has it's all beside the mark." Joyce, James. *Finnegans Wake Centennial Edition*. New York: Viking Press/Penguin Books (first published by Faber& Faber in 1939), 1982.

6 The Standard Model incorporates quarks, leptons and force carriers; it explains energy and mass but not gravitational force. Fundamental particles, or quarks (mesons and baryons), have mass. These are considered to have bulk or thickness and fall under the category of hadrons (from *hadros* or thick). Mass can only exist if there is sufficient energy to produce it. Having undergone some major repairs, including a short circuit problem, the LHC (Large Hadron Collider) will be restarted in the spring of 2015 (when this issue goes to press). It will be revving up to a speed of 13 TeV for a new set of experiments aiming to prove the Standard Model, discover new particles and/or chart the behaviour of already known particles. The first experiments at CERN (European Organization for Nuclear Research) have already confirmed the existence of three theorized particles, the famous "God particle" or Higgs Boson and the recently discovered baryons, Xi_b'- and Xi_b*-, which had been mathematically deduced by Randy Lewis and Richard M. Woloshyn.

7 It will come as no surprise that Ryoji Ikeda won the highly coveted and prestigious Ars Electronica Collide@CERN (Artists Residency) for 2014.

Note: *Superposition*, Place des arts, October 11, 2014 (North American premiere). The world premiere took place at the Centre Pompidou during the Festival d'automne, in Paris, in November of 2012. Duration: 65 minutes.



Ryoji Ikeda, *Superposition*, 2014.