

## ART/SCI NEXUS PRESENTS

### 9 Evenings Revisited: In Theory, as in Practice... HISTORICAL CONNECTION

In the style of avant-garde theater, improvisational orchestra, with a hint of Actionist sensibilities, *9 Evenings: Theatre and Engineering*, opened to an eager public in October 1966 in the 69th Regiment Armory in New York City. The space itself still held the faint scent of the spectacular shock of its last major exhibition, notably Cubism's debut on the New York scene (1913). *9 Evenings* was the culmination of a year's worth of organized chaos, involving 30 engineers from Bell Laboratories collaborating with 10 established artists. The production of the works, installation, and performances were filled with failed experiments, explosive successes, an overall playful waking dream of endless creative possibilities.

As a tribute to this monumental exhibition, *9 Evenings Revisited: In Theory, as in practice*, stands apart from its predecessor because it involves cellular and molecular life scientists, physicists, and mathematicians, rather than engineers, and therefore reflects the diversity and breadth of scientific culture. Working with scientists and artists representing several European countries, Russia, and the United States and Canada, we will focus on the theme "Bandwidth in Biology." We will place emphasis on exploring the culture of information exchange between scientists, a rapidly evolving feature of the global research community and the world at large. We will also incorporate bandwidth, parallelization, and Big Data as they apply to living systems and the study thereof – underscoring the symmetry between the behavior of researchers, the systems they study, and the tools they use to achieve this.

*We are all aware of the fact that any phenomenon, any event, or for that matter, any "knowledge," any transfer of information implies an interaction, and that no interaction may take place without an alteration, an evolution of the interacting system.*

- Jacques Monod, Proceedings of the 11th Nobel Symposium, Södergarn, Lidingö, Sweden, Aug. 1968.

**9 Evenings Revisited: In theory, as in practice...** is a collaborative travelling art exhibition, which explores the interface between science and art in contemporary practice. In 2015, the first stages of a network called **ART/SCI NEXUS** were established by myself, artist/curator Candace Goodrich, and biochemist John LaCava. The 9 Evenings project is a first attempt at this process of interdisciplinary symbiosis.

#### The Basics of the ART/SCI NEXUS

**ART/SCI NEXUS** is an independent platform that enables curiosity within and between the humanities, arts, and sciences, introducing professionals and the public to new creative modes of thinking. As these disciplines are epistemologically diverse, the transgression of their borders and expansion of their frontiers could allow for new forms of scientific research and artistic practice to develop.

**ART/SCI NEXUS** invites international artists and scientists to become members of a growing community and network, whose common ground is their curiosity in interdisciplinary exchange. Membership is on a voluntary basis and members can choose which level of commitment they are to offer, which is not fixed and can change over time, or on a project-to-project basis. Whether an exhibition host, a workshop host, a project leader, or a participating artist or scientist, **ART/SCI NEXUS** allows for one's role to fluctuate, so that members are able to experience different aspects of the collaborative process.

During mobile workshops, artists and scientists gather and educate one another about their respective practice and research, through artist talks, demonstrations, and scientific lectures, followed by open forum discussions. The public is invited to attend and participate in the discourse. This active debate leads to brainstorming new conceptual designs for interdisciplinary, collaborative works, which can result in new research and experiments, the creation of objects, happenings, performance, and even new modes of representation and interactivity. Once several concepts are established and agreed upon, the artists and scientists will collide, forming into teams of interacting matter. As the arrangements between forces and masses change, the change is manifested in terms of energy, bringing the new works to life. This may require independent exchange, institutional partnership, and/or the introduction of additional experts and practitioners. This frame encourages an equal contribution from each field in the creative process, while additionally educating its members and public in regards to contemporary culture and science. The workshops can happen anywhere, and is constituted by a minimum number of participants of at least 2 artists and 2 scientists. Final exhibitions may take place in a variety of different kinds of venues, however scientific museums, contemporary art spaces, and universities are preferred. The theme of each workshop will change annually. Each workshop and exhibition is funded through the hosting body.

#### First Experiment

To echo the achievement of our historic brother, **9 Evenings: Theatre and Engineering**, each exhibition will be open for 9 full days and 9 spectacular nights. The density of the whirlwind experience will contribute a spontaneous energy and concentration to the "happenings". Whenever possible, 9 Evenings will correspond with scientific conferences to further conceptually link the two disciplines. Scientific conferences typically draw hundreds to thousands of scientists from around the world to communicate their cumulative research expertise, functioning as a platform that facilitates the dissemination of knowledge among peers, globally. However, the public are rarely, if ever aware of these scientifically



important events – and are rarely-if-ever involved as an audience. We believe it is important to expand the communication of science beyond the laboratory, scientific journals, and symposium settings. With this end in mind, we propose to develop methods of public engagement through the experimental use of the artistic medium. Creative expression is an open, flexible, and inventive vehicle to extend the exposure of scientific themes to the public, using creative analogies and representations to make ideas accessible, promoting interest and literacy in the sciences.

**9 Evenings Revisited: In theory, as in practice...** will focus on one particular aspect of science that is especially shrouded from public perception - the worldwide sharing of information now fundamental to the scientific community. This is the soul of the scientific effort, without it, progress and discovery would move (by today's standards) impossibly slow. Technological advancements that assist scientists in collecting data and analysing effects have exponentially increased the flow of information between researchers. This is true even for traditionally data sparse sciences (e.g. the advent of the 'Omics' revolution and systems biology in life sciences), and a whole field of 'information science' exists to catalog, quantify, and coordinate information both as a concrete and abstract resource. For artists, technology has also provided them with a new set of tools and an entrance point into scientific topics. Throughout the exhibition, we will incorporate and explore a thematic component of "parallelization" and "bandwidth" within the artistic offerings. This, we feel, is a fitting subject to investigate, as these same terms apply to the enhancement of communication between people – broadening modes of education, fostering interconnectivity, diversifying our identities and ways of thinking, **9 Evenings Revisited: In theory, as in practice...** is a relevant contemporary format.

**9 Evenings Revisited: In theory, as in practice...** will include aspects of sculpture, audio/visual, print, and performance-based art – with emphasis on the above themes and interactivity, including direct audience engagement. Fittingly, the event will itself constitute an experiment - in its attempt to validate the efficacy of science communication through art. Furthermore, popular science lectures will be given by local and international scientists throughout the duration of the festival, in parallel with the artistic events. These lectures will crucially enable the public to engage directly with cutting edge science developments, as well as wrestling with the more general and abstract concepts that permeate science as a discipline – to further satisfy the crucial educational component of our scientific outreach objectives.

In preparation for the production of new works, in April 2016 we will host a five-day workshop at the Kunstkraftwerk Leipzig. We have invited scientists from various fields and artists that utilize different mediums and techniques to participate in this workshop. The ultimate aim of the work is to build team between the scientists and artists so that over the following 6 months they are equipped to independently consult with one another in the realization of new works. We hope that the first stages of these encounters will be only the beginning of long-term collaborations.

## CURATOR'S NOTES

Since the 1960's, new fields of research have developed in the sciences, and as a result, we have witnessed incredible advancements across the spectrum of scientific disciplines. Notably, life sciences are in the midst of a historical period of rapid expansion akin to the early 20th century in the physical sciences. Science has become a daily part of our lives, a fixture in our news media; social, economic, and political agendas; and shapes our understanding of ourselves biologically, as well as our place within the ecology of the planet. It has been proven again and again, that when the public has a broader education, and more of the populace has access to education, a more vital and adaptive society is possible. We can become more responsible consumers and generate innovative thinking to problem solving, promoting us to act as a conscious community rather than isolated individuals. The lack of comprehensive edification in the sciences has negative consequences, and therefore must be addressed, not only in schools but also in how the scientific community reports their research to the public. With this in mind, we intend to bring together scientists and their institutions and artists and cultural institutions, in order to begin a new dialogue with the public.

Artists working with scientific themes or techniques constructively critique the scientific process, asking questions of scientists as a direct communication between both parties, meaning that they must truly understand the science in a deep way, often provoking the scientist to open their own perspective of the research, which can lead to new directions and discoveries. Artists confront issues of socio-economic influence on research, such as stem cell research, eugenics, *in vitro* genetic selection, designer pharmaceuticals, patenting new organisms, and genetic modification technology involved in our food production. Artists play with the redefinition of the body by the machine; theorize on the changing concepts of the continuum of time and space; contemplate the reduction of biology to code and develop aesthetics from the code itself; address laboratory ethics that are tied to biological and medical research; and scrutinize and manipulate the indiscriminate amassing of Big Data and web usage and dissemination, acknowledging and debating hacking sub-cultures and surveillance, exposing us to the danger and the beauty of the algorithm.

**9 Evening Revisited** grew out of a lecture I gave last year at the Institut für Biochemie II, at the Goethe-Universität in Frankfurt am Main, titled **After C.P. Snow: A Brief History of Recapturing Consilience, Art and Science Collaborations since 1959**. The 33 minute lecture can be viewed on youtube, [https://www.youtube.com/watch?v=2shVii\\_Nq6E](https://www.youtube.com/watch?v=2shVii_Nq6E). The lecture is in part the basis of **9 Evenings Revisited: In Theory, As In Practice**. Among the concrete deliverables associated with this project is the production of a solid framework, built out of our expanding network, so that we can easily and regularly host art and science programming, both in our own institutions, as well as providing the service for other institutions, globally.

## CORE SCIENTIFIC CONTRIBUTORS

### **Prof. Dmitry Alexeev** (RU) - organizer and scientific contributor

Dmitry Alexeev is a motivated researcher in the field of biomedicine, having his own lab of 20 researchers including both students and senior scientists. Alexeev is a course teacher and research group founder in several major research institutions in Russia from the southern regions to Siberia. He has extensive experience in the organization of events ranging from camps and festivals for over 5000 people, to travel expeditions and scientific conferences. Dmitry Alexeev earned his PhD in Biology (Bioinformatics) in 2012, his MIPT (SU) – Moscow MS in Applied Physics and Mathematics in 2007. He is currently the Head of the Bioinformatics Laboratory, Research Institute of Physico Chemical Medicine (niifhm.ru), the editor of the Personal Medicine magazine (atlasmed.ru), CEO of the innovative research company Knomics LLC (knomics.ru). He is also working as a researcher in the Federal State Kazan University, Genomics Lab; and a professor at Moscow Institute of Physics and technology (mipt.ru).

### **Dr. John LaCava** (US) – organizer and scientific contributor

Research scientist in the area of molecular life sciences and science/art communicator living and working in New York City, NY. John received his PhD in molecular genetics from the University of Edinburgh and remains highly active in cutting edge molecular life science research at The Rockefeller University and the New York University Langone Medical Center. John is the founder of the Sounds of Science.net music portal and science sounds database and he frequently organizes, produces and participates in science / art outreach projects, recently collaborating on the Happigenetics Science Extravaganza (held at the Erarta museum of contemporary art, St. Petersburg). John also writes and lectures on the topic of science art and science communications.

[www.soundsofscience.net/happigenetics/](http://www.soundsofscience.net/happigenetics/)      [www.soundsofscience.net](http://www.soundsofscience.net)

### **Dr. Markus Löffler** (DE) - host and scientific contributor

Markus Löffler (born October 28, 1954 in Freiburg, Breisgau) is a German physician, physicist and biostatistician and Director of the Institute of Medical computer science, statistics and epidemiology (IMISE) at the Medical Faculty of the University of Leipzig. In 1973 Markus Löffler began his university studies in medicine, with a double major in physics, at the University of Cologne. In 1982-83 he completed his studies and earned his medical license. In 1990, he completed his qualification for Professor of Medical Documentation, Statistics and Biomathematics. In 1994, he was appointed a C4 professorship and took over as Managing Director of IMISE. Markus Löffler is a member of a number of German and international research networks (gliomas, malignant lymphoma, colon cancer, breast cancer, sepsis, congestive heart failure), is Scientific Director of the Coordinating Center for Clinical Trials in Leipzig (ZKS), Scientific Director of the Interdisciplinary Center for Bioinformatics (IZBI), Director of the Leipzig Research Center for Civilization Diseases (LIFE), and serves on the Board of the IFB. He is also the Coordinator of the Leipzig part of a national long-term health study. He is also one of the two owners of the newest cultural center in Leipzig, the Kunst Kraft Werk.

### **Dr. Nicholas Harrigan** (UK) - scientific contributor

Nicholas Harrigan received his PhD in quantum physics from Imperial College London and has been passionately talking about science to the general public for over ten years. Nic has demonstrated physics on ice skates for BBC Newsnight and talked about the science of Spiderman on BBC Radio One. He has also been involved in organising and presenting other live science events, such as a large Rube Goldberg machine project at the Manchester Science Festival. Nic's science communication has been recognised with various awards, including the 2007 FameLab science communication prize.

<https://www.youtube.com/watch?v=9OsFMLRA9so>

### **Dr. Alexander Kagansky** (UK) - scientific contributor

Alexander Kagansky is a Chancellor's fellow at the University of Edinburgh and head of the laboratory of Synthetic Epigenetics. His research interest is epigenetics and gene expression. In 2013 he was elected as a member of Young Academy of Scotland, established in 2011 by Royal Society. In 2005-2012 he was a post-doctoral fellow at the Wellcome Trust Centre for Cell Biology. He received his Ph.D. in Molecular Biology in 2004 after spending 3 years in National Institutes of Health in USA. In 1991 he participated as a member of the first Russian delegation to the European Youth Parliament. He is active in combining science and arts, and always looking for trans-disciplinary collaborations aimed at spreading experience and knowledge.

### **Dr. Anders Ledberg** (SE) - scientific contributor

Anders Ledberg received his PhD in Neuroscience from the Karolinska Institutet (Stockholm, Sweden) in 2001. His PhD work was on mapping the human brain and the relations between brains and behaviors have remained a central focus of his work ever since. After a post doctoral stay at the Center for Complex Systems, Florida Atlantic University, (Boca Raton, USA) he was an associate professor in the Computational Neuroscience Group at Universitat Pompeu Fabra (Barcelona, Spain) for seven years. Currently Anders is a senior researcher at Stockholm University. An overarching theme of Anders' work has been to understand how interactions between relatively simple parts (e.g. nerve cells) can result in coordinated behaviors. He has approached these issues by combining experimental work with theory and computational modeling, often in collaborations with workers from different scientific disciplines. Anders has always been interested in communicating science to lay persons and have written articles for magazines and participated in events serving to educate school children and young adults in Neuroscience.



## ARTISTS

**James Nizam** (Vancouver, CA) Nizam's art practice investigates the workings of memory by exploring the relationship between photography and architecture and their capacity (alone and in conjunction) to comment on the vagaries of the mnemonic artefact. Recent exhibitions include: Birch Libralato Toronto, Christophe Guye Zurich, Maerz Galerie, the Yukon Arts Centre. Awards Include: Canada Council for the Arts. Publications include: Canadian Art, Flash Art, Border Crossings, The British Journal of Photography, and Kalimat Magazine.

**Wolfgang Ganter** (Berlin, DE) – works with bacteria on photographic film. He studied der Bildenden Kunst an der Staatlichen Akademie der Bildenden Künste Karlsruhe bei Prof. Andreas Slominski und Anselm Reyle. He did his Meisterschüler bei Prof. Andreas Slominski. Recent awards include: Stipendium der Stiftung Kunstfonds; Stipendium der Kunststiftung Baden-Württemberg. Recent exhibitions include: »Afterglow« maerzgalerie, Leipzig; Olsson Galerie, Stockholm. Schweden; »Non Finito« maerzgalerie, Leipzig; »Bactereality« Städtische Galerie Tuttlingen. Here is a Deutsche Welle- Kurzdokumentar about Ganter's process <https://vimeo.com/78917383>.

**Mark Matthes / Anton Koch** (Hamburg, DE) - Chamberlab is a project by Anton Koch and Mark Matthes, based in experiemental music. The objective is to recontextualize classical music by reinterpreting movement by a new and inventive data accumulation method. The final piece is an amalgamation of theater and performance generated through algorithmic experimentation . Recent exhibitions include: "Geisterfahrer" Eine Malerei-Installation mit reaktivem Licht- und Sound at Westpol, Leipzig; and "Eyeliner" at Galerie Eigenheim, Weimar. <https://soundcloud.com/chamberlab>

**Henrik Isaksson Garnell** (Stockholm, SE) - works begin with a sculptural application to inanimate objects, referring to scientific motifs. Garnell studied photography at the Kulturama Higher Photography Education, Stockholm. Recent exhibitions include: Ephemera, Grundemark Nilsson Gallery; Apsis, Swedish Photography; Un-plugged, SODA Gallery, Istanbul; Macrocosmi at Due Punti Lab. in Bologna, SWE NEW, Pingyao Photography Festival, China.

**Gustav Hellberg** (Berlin, DE) – Swedish-born, Hellberg has his Master of Fine Arts from the Kungl. Konsthögskolan [Royal University College of Fine Arts], Stockholm. He makes large-scale sculpture, public works, and interactive installations, often working with algorithms and programmed code. Recent Exhibitions include: Stadsmuseet, Stockholm; Stadtgalerie Kiel, Kiel; Hamish Morrison Galerie, Berlin; Obstruction, Malmö; Dunkers Kulturhus, Helsingborg; Malmö Konstmuseum, Malmö.

**Bosch & Simons** (Valencia, ES) Bosch studied psychology at the Universities of Leiden and Amsterdam and sonology at the Royal Conservatory in The Hague. Simons studied at the audiovisual department of the Gerrit Rietveld Art Academy in Amsterdam. This Dutch-born duo work in sound installation, creating autonomous "music machines" and vibratory projects, often reflecting on phenomena from science such as the Wilberforce Pendulum. They have been awarded the Prix Ars Electronica, Linz; the 29th Competition of Bourges; and been commissioned by the Ives ensemble Amsterdam.

**Sergey Kostyrko** (St. Petersburg, RU) - is a musician/media artist/mathematian (Benzolnye Mertvecy, Mars-96, Coaxil). His solo project Kostyrko is involved in research of new trends in experimental electronica. His work combines different technologies to sound synthesis. Recent Exhibitions include: Cross Art, Erarta Motion Pictures, Teni Zvuka, The Night of the Museums, Open Look/Russian Look (St. Petersburg), Dzialdov Concert Series (Berlin), Life Zone! (Moscow). Kostyrko received his Ph.D. degree from St. Petersburg State University in 2008 and joined the Faculty of Applied Mathematics and Control Processes as an assistant professor, later in 2012 he was promoted to associate professor. Kostyrko has a background in solid mechanics and applied mathematics. His scientific interests include the different aspects of mechanics of thin film materials and nanomechanics: effect of surface and interface shape on the stress distribution in the film coatings; surface relief formation due to surface and volume diffusion; surface and interface stress effects; mechanical properties of multilayer films. His list of publications numbers about 40 scientific publications.

**Daichi Yoshikawa** (Berlin, DE) is a Japan-born percussionist using contact mics, Yamaha MSP3, MSP5, HS7, Mackie mixers, metal objects and small percussions to make acoustic feedback.

**Ya-Wen Fu** (Leipzig, DE) Taiwan-born, has her Meisterschüler in media arts from the HGB by Prof. Alba D'Urbano, and her Bachelor Fine Arts is from the National Taiwan University of Arts, Taipei. She is a multi-media performance and installation artist. Recent exhibitions include: WRO Art Center. Widok 7, Wrocław, Polen; "WIN / WIN 2015", HALLE 14 - Zentrum für zeitgenössische Kunst, Leipzig; "TEST EXPOSURE", 16th International Media Art Biennale WRO, Breslau, Poland; "Space-in-between", LABoral Centro de Arte y Creación Industrial, Gijon, Spain; "Festival MORPHOS".

**Tom Fritz** (Leipzig, DE) - since 2014 has been the leader of the research group "Music evoked brain plasticity" at das Max-Planck-Institut für Kognitions- und Neurowissenschaften, Leipzig. His Postdoc work has been in the department of Nuclear Medicine, Universität Leipzig, Institute for Psychoacoustics and Electronic Music (IPEM) at the Universität Gent, and the department of Neurology at MPG. Fritz has his Meisterschule from Kunsthochschule Berlin in interface design and new media. Major exhibitions include Erkundungen des Jetzt at the Hygienemuseum in Dresden in September 2014. Fritz is widely published and has been a keynote speaker at many conferences.

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