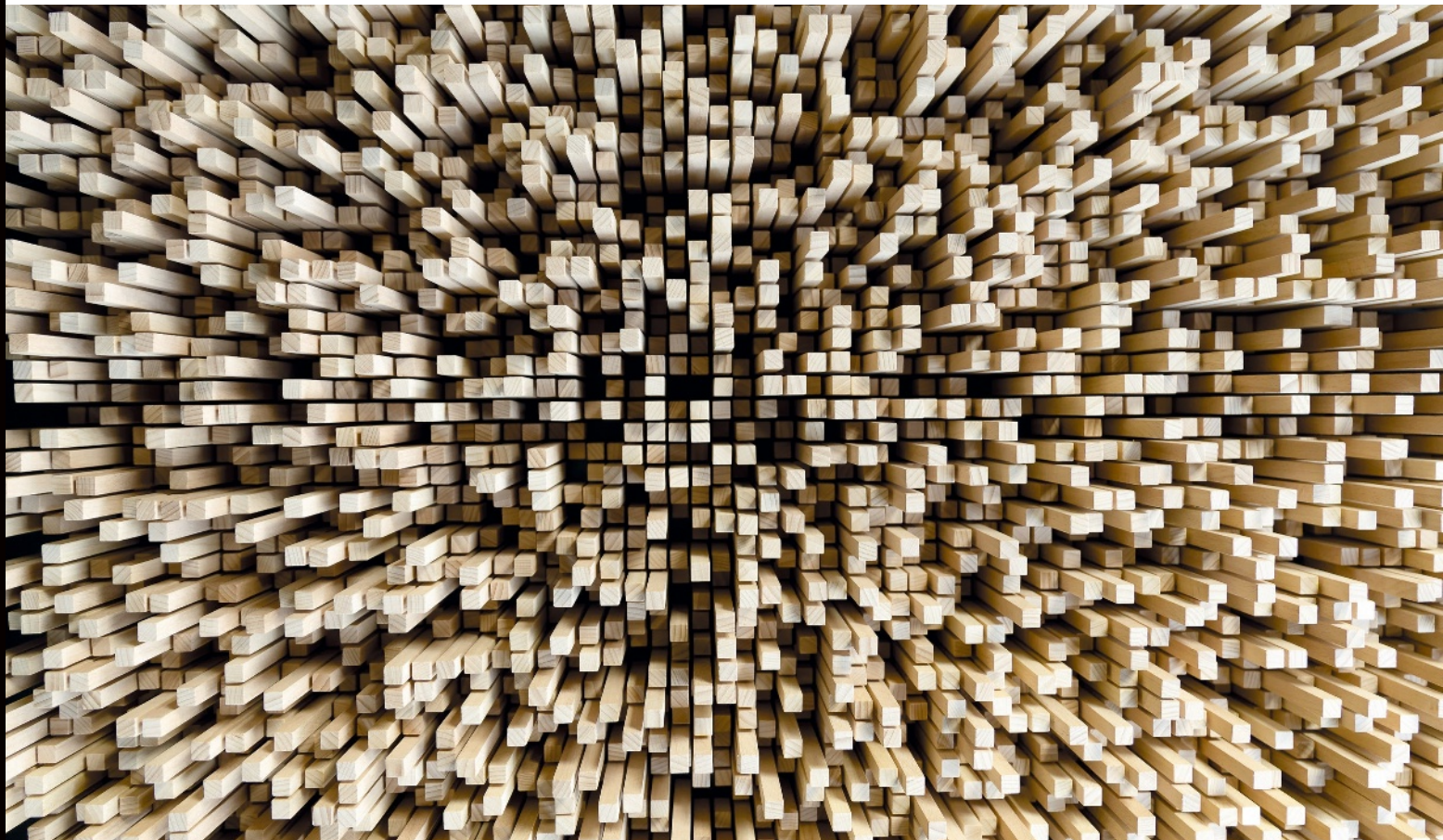


Conference cycle 2018

Smells like STEAM spirit

A wave of arts integration is spreading across the world of engineering. **"Smells like STEAM spirit... Come as you Art"** presents a set of interactive lectures highlighting some incredible projects at the nexus of arts, science, technology and industry. Raoul Sommeillier unveils this arts & engineering nirvana.



The "STEM" acronym was introduced in 2001 by US scientists to group together the disciplines of Science, Technology, Engineering and Mathematics. Well known in the context of education, STEM programmes promote the integration and application of knowledge of math and science in order to create technologies and solutions for real-world problems, using an engineering design approach (Jolly, 2014). These programmes are designed to develop a variety of skills that are essential for success: problem-solving, innovation, communication, collaboration and entrepreneurship, to name just a few.

ARTS + STEM = STEAM

I agree entirely with Piro (2010): "If creativity, collaboration, communication, and critical thinking – all touted as hallmark skills for 21st century success – are to be cultivated, we need to ensure that STEM subjects are drawn closer to the arts."

The push for STEAM (Arts + STEM) curriculums derives from the lack of creativity and innovation in recent university graduates in the US. The STEAM initiative offers more than the high-tech skills that are so valued by our society and businesses. Integration of the arts via STEAM empowers our society to foster

IN PRACTICE: "SMELLS LIKE STEAM SPIRIT... COME AS YOU ART"

▶ TUESDAY 22 MARCH (UD2.120) - SONICTASTE: DESIGNING SOUNDS TO ENHANCE TASTING EXPERIENCES



Felipe Reinoso Carvalho: researcher in Multisensory Experiential Design, PhD in Psychology (KUL) and in Engineering Sciences (VUB), boutique consultant.

For this lecture, Felipe will summarise his R&D work, where he tests auditory solutions aiming at improvement of the tasting experience. He will also talk about 'The Sound of Chocolate' (sonictaste.weebly.com), a project that he has co-developed in collaboration with the city of Brussels; science, arts and gastronomy interact in order to offer a new way of experiencing Belgian chocolate through music. This presentation will be accompanied by demonstrations where we will explore the importance of using all our senses, particularly while we eat and drink. Come and eat some chocolate, while your senses do the rest!

▶ TUESDAY 17 APRIL (UD2.218) – BIOMIMICRY AS A DRIVING FORCE FOR AESTHETICS, INNOVATION AND SUSTAINABLE ARCHITECTURE

Steven Ware: after graduating in Architecture from the Architectural Association (London) and in Biology from Western University (Canada), Steven is now Director and partner of Art & Build Paris and its R&D



branch AB_lab, he is an expert in urban ecology, bio-adaptive architecture and smart materials.

Humans are breaking with Nature's laws in the way in which they fashion their habitat; altering the delicate balance of energy and matter which all species must maintain in order to be successful. Architects must face the challenge of establishing new practices which better synchronise building cycles with ecological cycles. The lecture will address and illustrate several conceptual bridges which may be found between architecture and biology.

/ CONTINUED ON PAGE 18

curiosity and self-motivation, to meld technology and creative thinking, to push personal boundaries and develop individual conceptual methodologies in an innovative manner. Moreover, according to Land (2013), the Arts can enhance STEM skills due to their more divergent approach. They can provide a wider range of opportunities for communication and expression... and what is the purpose of science and engineering if they cannot be transferred, shared and applied?

The purpose of STEAM should not be focused so much on teaching Art as on applying Art in real situations. Indeed, every engineer will agree with Jolly (2014): "Applied knowledge leads to deeper learning."

TWO SIDES OF A SINGLE COIN

The integration of the arts in the STEM fields is a recent development in education. In my view, they have been on two sides of the same coin since time immemorial. Science and the arts may be perceived as being very different – even at opposite ends of the spectrum – but the processes used by both fields are very similar. The well-known British mathematician, science historian, dramatist, poet and inventor Jacob Bronowski had already stated in the early second half of the 20th century (1956): "There is a likeness between the creative acts of the mind in art and in science."

Indeed, the scientific method is a way to explore a problem, form and test a hypothesis, and answer questions. The creative process creates, interprets and expresses Art. In both cases, enquiry lies at the heart of either method (Nichols & Stephens, 2013). In both cases, the "researchers" attempt to bring meaning to their world's experiences and observations (Honvault, 2010). Moreover, the ability for simultaneous deconstruction of a complex problem using convergent thinking and application of the corresponding solution to the real world using divergent

/ CONTINUED ON PAGE 18

In this article **Raoul Sommeillier**, Teaching Assistant, PhD Student and director of the conference cycle, explains the STEAM concept to us.





© Ars Electronica

thinking (Land, 2013) involves processes required in both fields of Art and Science.

Starting from the following question "What makes some scientists more creative than others?" Root-Bernstein et al. (2008) demonstrated that almost all scientific geniuses between 1902 and 2005 had been proficient not just in science but also in the arts. What about Einstein and his musical talents? What about Da Vinci... and his entire artistic opus? And how many people know that the rock musician Brian May holds a PhD in astrophysics?

In the light of my research into how scientific theories evolve (Kuhn, 1962; Popper, 1959), I am increasingly convinced that studying Art History through the prism of Philosophy of Science would provide an infinite source of relevant discoveries about the way we create new knowledge.

AN ART & ENGINEERING CONFERENCE CYCLE

The conference cycle "Smells like STEAM spirit", organised by the Alumni in collaboration with Ohme (see G Square #25), aims to reveal the hidden interconnections that exist at the nexus of

REFERENCES

- ▶ Bronowski, J. (1956). Science and human values. Higher Education Quarterly, 11(1), 26–42.
- ▶ Honvault, J. (2010). Le pont d'un ingénieur entre l'art et la science. <http://jacqueshonvault.com/pdf/conf-pont.pdf>.
- ▶ Jolly, A. (2014). STEM vs. STEAM: Do the arts belong. Education Week, 18.
- ▶ Kuhn, T. S. (1962). The structure of scientific revolutions. University of Chicago press.
- ▶ Land, M. H. (2013). Full STEAM ahead: The benefits of integrating the arts into STEM. Procedia Computer Science, 20, 547–552.
- ▶ Nichols, A. J., & Stephens, A. H. (2013). The Scientific Method and the Creative Process: Implications for the K-6 Classroom. Journal for Learning through the Arts, 9(1).
- ▶ Piro, J. (2010). Going from STEM to STEAM. Education Week, 29(24), 28–29.
- ▶ Popper, K. (1959). The logic of scientific discovery. Routledge.
- ▶ Root-Bernstein, R., Allen, L., Beach, L. et al. (2008). Arts foster scientific success: Avocations of Nobel, National Academy, Royal Society and Sigma Xi Members. Journal of Psychology of Science and Technology, 1(2), 51–63.

arts, science, technology and industry. Internationally recognised lecturers and organisations drawn from both universes will introduce you to a myriad of art & engineering projects. From bio-adaptive architecture to control-gesture in video gaming, from multisensory experiences to joint arts-science research studies, the STEAM wave is not waiting in the wings... it's already arrived! ▶

▶ THURSDAY 3 MAY (UD2.120) – INTERNATIONAL AND COLLABORATIVE ARTS & SCIENCE PROJECTS BY ARS ELECTRONICA, BOZAR AND GLUON



Veronika Liebl: Director of Organization and Finance at Ars Electronica, the world-wide leader in the interlinkages between art, technology and society.



Christophe de Jaeger: Manager at BOZAR Art & Research and founder of Gluon, an organization running projects on the crossover points linking visual art, research, industry and education.

▶ TUESDAY 8 MAY (UD2.120) – HOW WILL DEPTH SENSING IMPACT YOUR WORLD?



Ward van der Tempel: Head of Technology at Sony DepthSensing Solutions (previously SoftKinetic). Electro-technical engineer with a PhD from the VUB.



Christopher Littlefair: Senior Marketing Manager at Sony DepthSensing Solutions.

Throughout history, emerging technologies have given rise to new forms of art. In the last century alone, electronic technologies have enabled artists to express themselves in ways previously unimaginable. Today, we'll present Sony's depthsensing technology, and examine how it might impact your world in the future. Through a series of hands-on demonstrations, you will be able to feel the power of depth sensing.



Events start at 7 pm. Each lecture will be followed by a convivial drink.
ULB, Solbosch Campus, building U, door D.
Free for students and members of École polytechnique de Bruxelles Alumni (EPBA ULB) and Brussels Engineering Alumni (BrEA VUB) - €10 for non-members, deductible from the 2018 subscription.
Registrations: <https://smellstiketeamspirit.eventbrite.fr>



Ohme

