



RELOGIA. INNOVATIVE RESEARCH & EDUCATION APPROACH INTEGRATING ART+SCI+TECH

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Abstract: *An overview of the new world movement uniting the three main pillars of human knowledge - art, science and technology. An emerging ecosystem embodying a comprehensive vision of the multidisciplinary of human knowledge and the time we live in, and that creates the conditions for the intersection between innovation, knowledge exchange, new forms of research and pedagogy. Why is the integration of art, science and technology such an important future skill for solving 21st Century fragmentation of culture, society, perception, research & education?*

New emerging field for meaning-making¹ *very brief overview of the new global movement*

“The further Art advances – the more it approaches Science, the further Science advances – the more it approaches Art.” Leonardo da Vinci

In mid 20 century, emerged a new Culture, uniting the pillars of human Knowledge - Art, Science and Technology, with transformative impact on all fields of knowledge, society, culture, policies and industry². Such a premise is the foundation for collapsing the barriers between wide apart disciplines such as art, technology, and science, pushing new knowledge and meaning-making to become an interdependent act.³

This is resulted from a world, which is highly diverse and increasingly fragmented, where science and technology operate on scales invisible to the eye and common understanding, and - where its discoveries become detached from experience. In today’s culture of democratized knowledge “we know much more than before - but we understand much less”⁴. Due to the clash with this dynamically changing reality, the personality strives

¹ Zeynep Birsal, Lenia Marques & Ellen Loots (2022): Daring to disentangle: towards a framework for art-science-technology collaborations, *Interdisciplinary Science Reviews*, <https://doi.org/10.1080/03080188.2022.2134539>

² Network for Sciences, Engineering, Arts and Design, National Science Foundation, (2012) <http://sead.viz.tamu.edu/about/index.html>

³ Wilson, S. (2002). *Information Arts, Intersections of Art, Science, and Technology*. London: The MIT Press.

⁴ Mostafa El Feky, director of Alexandria Library

to adapt much faster in order to achieve effective social presence, i.e. to clearly experience, understand, navigate and participate within the crossdisciplinary interconnected reality. Thus, many fields have become virtually inaccessible for the general public and formal education, to the point where these monumental, yet inexplicable and inaccessible, results are contributing to the discontinuity between understanding and experience, which in further steps influence the mental health and quality of citizen participation in the value co-creation and results in social and cultural fragmentation.

Interdependence is also a foregrounded notion with regard to the relationship between technology and culture, societal development, and creative production⁵.

In the era of technological, information and innovation revolutions our awareness is utterly new, transiting into a new cultural context where new mental models for meaning-making are extensively needed to manage the exponentially emerging higher orders of complexity.

Challenged to enter the unknown with the full creative and rational potential we have - such models are developed and applied in various experimental forms at the increasing number of emerging excellent art+sci+tech centers, museums, networks, academic disciplines, forums, workshops, hackathons, seminars, collaboration projects – to name just a few: European STARTS program, Art & Science NODE Network in Berlin, Ars Electronica, Arts@CERN, ISEA, MA Art & Science programs in most of the developed countries, ZKM museum in Karlsruhe, NOKIA Bell Labs E.A.T. project, Singapore Art & Science Museum, Dubai Museum of the Future, Futurium in Berlin, RELOGIA and many more. Each one with variety of focus agenda to explore and to master.

All huge achievements of Humankind in History are based on the ability to cooperate flexibly in large numbers across sectors and different types of intelligences. Art+sci+tech culture already plays an important role in addressing this challenge, but today it is rising increasingly in numbers and forms in diverse fields: science communication, art & science academic programs, innovation hubs, platforms and centers - to the point where it is hard to navigate, grasp and benefit from its research insights.

RELOGIA. The Golden Compass of the New Era.⁶

Embracing „participatory approach” as a main need for transformation of old stereotypes

Conceptual design for meaning-making and complexity navigation

RELOGIA is an emerging ecosystem embodying a comprehensive vision and practical navigation of the crossdisciplinarity of human knowledge and the time in which we live and which creates conditions for the intertwining of innovation, knowledge exchange, research and pedagogy.

As research, education and industry shift from disciplinary to inter-cross-trans-disciplinary (from the individual to the team), and from the classroom and research center to the gallery, the screen and the street (from the studio to the boardroom), there is a growing need for new organizational structures to affront this challenge, as well as new forms of leadership and team development.

⁵ Leach, J. (2005). “‘Being in Between’: Art-Science Collaborations and a Technological Culture, Social

Analysis.” *The International Journal of Anthropology* 49 (1): 141–160

⁶ RELOGIA ® <https://www.youtube.com/watch?v=WjXwSXacmQ0>



The Flood is already here - this time from information. Those who are curious enough to develop the “Google-it” or “chat-GPT-it” approach and play at the intersection of different disciplines, get even more puzzled. As a result - society is in constant need for stimulation, both visual and intellectual. We live in times when all known structures are collapsing – professions are changing, climate is changing. We have exhausted severely the resources of trust resulting in eroding the very foundation of culture and society and we’ve exhausted and polluted resources of nature, our shared home. The only way out is a new identity, a new you. With corresponding cooperative behavior, value system and education that cultivates responsibility and care, bread in a context of collaboration and transparency of the interdependency across different intelligences and sectors; protection of IP, intellectual virtues and knowledge integrity. The new you is the unity of all the creative, intellectual and technological potential we have. This requires specific polymath mental models and RELOGIA’s mission is to be the agency to curate them, differentiate them and train them.

Who are the Architects and the Composers of Intelligence today? Who are the Storytellers of today’s Culture while the body of Human Knowledge is expanding dynamically and exponentially and the wider access to it is disappearing. This depraves humanity from its most powerful asset for evolution and results in severe fragmentation among all Knowledge and Innovation workers. Understanding the processes taking place under these new conditions via adopting the integrated holistic approach of the new culture that unifies art, science and technology and embraces human creativity, requires polymath (aka encyclopaedic, renaissance) mental models – aka future skills, both for education and society and culture.

In order to address the above-described problems of: knowledge fragmentation, discontinuity between understanding and experience, extensive need for new mental models for meaning-making, navigation through art+sci+tech R&D insights and training; and to provide a framework for trans-disciplinary communication and research collaboration, Art & Science research foundation “Re:” introduced two new concepts to serve the purpose of navigation, analysis and integration agent in our transformative era:

RELOGIA | definition: RE – from the Revival of the complementarity potential of Art + Science + Technology (referring to the last European Renaissance); LOGIA – from Latin, concept, science, method. (hence its purpose to collect, analyse, differentiate and systematize art+sci+tech research as a roadmap for development and education methodologies and the design for new meaning-making.

trialogues | definition: trans-disciplinary form of communication between art, science, and technology.

RELOGIA is an agent for the ongoing transformation, when the main pillars of human knowledge - Art, Science and Technology managed to shift away from concrete experience toward a level of abstraction that is increasingly difficult to grasp. When history – be it economic, demographic or political – is moving at an unprecedented pace, new challenges

and new interests require us to enter into new dialogues⁷ and to form new questions to find new coherence scenarios.

RELOGIA dialogues⁸: cross-pollination between different intelligences

art +sci +tech fusion: curates and facilitates trans-disciplinary & trans-sectoral research and collaboration and fosters new forms of research, education and culture

Crossdisciplinary Exploration: RELOGIA Dialogues brings together art+sci+tech experts, researchers, artists, entrepreneurs - from across the quintuple helix of innovation - to engage in discussions, new knowledge and aesthetic experiences and workshops.

RELOGIA is designed as series of dialogue discussions and workshops that delve into the fascinating intersection of art, science, and technology. RELOGIA Dialogues aim to foster trans-disciplinary interactions and present collaboration between artists, scientists, and technologists, creating a space and conditions for innovative ideas and transdisciplinary approaches. Through these events, participants have the opportunity to explore the connections and synergies between these fields, and to discover new ways of thinking, researching, creating and developing, i.e. new forms of interaction with knowledge, discoveries, and innovations.

RELOGIA dialogues serves as a platform for the convergence of art, science, and technology intelligences, fostering cross-disciplinary collaboration and exploring the future of education, research, and culture. The fusion of these fields deploys new avenues for research, innovation, problem-solving, and expression. By bringing together diverse perspectives and methodologies, cross-disciplinary collaboration enriches both the process and the outcomes of research, development and education.

Benefits of Cross-Disciplinary Research and Education: cross-pollination between different intelligences

RELOGIA dialogues highlighted several **benefits** of crossdisciplinary research and education, including:

a. Holistic Understanding: art+sci+tech integration of different disciplines enhances our understanding of complex issues and encourages holistic (polymath, renaissance) thinking. Solves the problem of discontinuity between experience and understanding.

b. Innovation and Creativity: The convergence of art, science and technology fuels innovation and drives new creative questions and solutions to educational, research and societal challenges.

c. Transdisciplinary Skills: Crossdisciplinary research and education equips individuals with versatile skills, fostering polymathic thinking, one of the main future skills for adaptability in a rapidly changing world.

d. New Perspectives: Collaboration between artists, scientists, and technologists encourages fresh perspectives, leading to novel questions, ideas and breakthroughs.

⁷ Cvetana Ivanova “RELOGIA_Dialogues” Retrieved from:
<http://www.refoundation.net/projects/relogia-dialogues> ; http://media.refoundation.net/project-files/0/d/RELOGIA_dialogues_presentation_en.pdf

⁸ RELOGIA dialogues ® http://relogia.net/wp-content/uploads/2019/11/PROGRAM_RELOGIA_19-24NOV_18.pdf



RELOGIA affronts the challenges by outlining and adopting the **key Strategies for Promoting and Developing Cross- and Trans-Disciplinary Research and Education:**

a. Cross- and trans-disciplinary Curricula: Develop crossdisciplinary programs that integrate art, science, and technology, enabling students to explore multiple disciplines and bridge the gap between them.

b. Collaborative Spaces for co-creation: Create physical and virtual spaces where artists, scientists, and technologists can collaborate, exchange knowledge, and co-create. Sets up, at a micro level, the operational design of an integrated system that outperforms the current modular system.

c. Guided Networking and Partnerships: Facilitate connections between institutions, organizations, and individuals from diverse disciplines and sectors to encourage collaboration, knowledge sharing and holistic problem-solving approach.

d. Sourcing Funding and Support: Researching resources for financial support of cross-and trans-disciplinary projects, research, and initiatives to incentivize and sustain collaboration.

CONCEPTUAL FRAMEWORK holistic and integrated approach in three modules:

TRIALOGUES | WORKSHOPS | EXHIBITION

RELOGIA TRIALOGUES | module 01

Present & Perform new art+sci+tech knowledge & polymath mental models

Crossdisciplinary trialogues: RELOGIA Trialogues are designed as cross-disciplinary & cross-sectoral trialogues between the pillars of education and culture - art, science, and technology, and across the Quintuple Helix of Innovation. These trialogues bring together experts from diverse backgrounds to explore the connections and synergies between these fields and present their complimentary potential to provide integrated perspectives on the selected theme.

Theme-based triologue: Each RELOGIA Triologue session focuses on a specific theme (current hot topic) represented through art+sci+tech crossdisciplinary integration. These themes can range from education ecosystem experience design to the impact of AI innovations on culture. The trialogues provide a platform for art+sci+tech experts to share their insights, perspectives, and experiences and results in an overall holistic perspective on the subject and manifestation of polymath mental models in practice. They are moderated by questions from the audience.

Relogia Trialogues has an inclusive conceptual framework designed in three modules - in parallel with the three main ways we acquire and share knowledge (that happen to be also the three developmental stages of the birth, development and application of an idea): intellectual-perceptual, learning-by-doing and learning via experience, with the purpose of reaching out to the experts and non-experts audience without divide.

module 01: intellectual transfer of polymath knowledge and mental models

RELOGIA Trialogues explores the connections and synergies between art+sci+tech fields, fostering innovative ideas and approaches by a conceptual stage design, where perceptually (visually) knowledge is addressed as a verb not a noun, and the focus is on the

very process of new knowledge-production out of art+sci+tech integration with the purpose to reveal its transparency.

Therefore, the newly introduced operational term – trialogues - is translated into cognitive experience for the audience (and the participants) – where the three chairs on the stage are assigned respectively for each pillar of knowledge art, science and technology, referring to the background of the crossdisciplinary expert presenting on of them. On a wide multimedia background – the new art+sci+tech culture visually is communicated with a triple helix DNA, with distinctive design behind each chair. The leading role of RELOGIA, moderating the trialogues, is visualized as the creative energy uniting all intellectual disciplines and replacing the hierarchical model with the networked model of unity. The trialogues program consists of trans-disciplinary curricula and – in order to present what a holistic point of view looks like - the presentations on the same theme, from three points of view of the art, sci, tech chairs respectively. This is followed by active interaction with questions from the audience, where each question is answered by the three chairs' point of views, i.e. types of intelligences, and is placing them in a triologue discussion scenario to reach a collective conclusion.

The goal is to immerse the audience (and the speakers) into the holistic trans-disciplinary perspective of the selected theme and the appropriate narrative environment for the art+sci+tech triologue (between the three chairs) following the presentations. Consecutively, the triologue is followed by a Performance on the same theme, also an outcome of an art+sci+tech research, so that the audience can have not only the intellectual but also the emotional (artistic) experience on the subject theme.

RELOGIA EXHIBITION | module 02

Learning via experience and experience via learning

Knowledge translated into Experience - Educational Contemporary Art Forms

Why is the union of science, art and technology so important for the perception, research, education and future skills?

The emerging art+sci+tech research movement of crossdisciplinary co-creation, co-construction and co-production, so necessary for answering the challenges we face in our transformational historic period, is actualized in Educational Contemporary Art Forms. RELOGIA Exhibition's framework is based on the concept that understanding comes from “experience - the common mother of all the sciences and arts”⁹ aims to solve the problem of “discontinuity between knowledge and experience”.

RELOGIA Exhibition¹⁰ highlights the cutting-edge developments happening at the intersection of art, science, and technology. It embodies the art+sci+tech crossdisciplinarity concept and research paradigm through interactive and/or immersive artefacts that translate new knowledge into experience for both: the non-expert and expert audience, and have transformative impact on human understanding.

⁹ Leonardo da Vinci “Good judgment proceeds from a clear understanding, and a clear understanding comes from reason derived from sound rules, and sound rules are the daughters of sound experience - the common mother of all the sciences and arts”

¹⁰ RELOGIA® <https://relogia.net/exhibition/>



The trans-disciplinary Exploration of RELOGIA Exhibition brings together art+sci+tech experts, researchers, artists, entrepreneurs - from across the quintuple helix of innovation to re:contextualize knowledge into novel aesthetic experiences.

There is a special place for *real-time visuals* - working environment from which participants can explore the possibilities of real-time visuals. This focus allows participants to experiment with new forms of art expression, scientific discoveries and technological innovation.

Based on our practice - this approach inspired and encouraged participants and the audience to think beyond the boundaries of their respective disciplines and explore new cross-disciplinary art+sci+tech integrations, new ways of thinking, creating, and problem-solving.

With focus on the interplay between creative thinking, art expression, scientific inquiry, and technological innovation - by bringing together professionals from diverse backgrounds, these events inspire new perspectives, ideas, and approaches that can contribute to the advancement of trans-disciplinary knowledge and creativity in the art+sci+tech fields and act as agents for their deployment.

RELOGIA Workshops & Centre | module 03¹¹

Learning by doing: Exchange & Transfer of art+sci+tech Research Methodologies & Training

RELOGIA Workshops:

RELOGIA provides curated workshops for those interested in performing, facilitating or coordinating an art+sci+tech research or collaborative project. These workshops provide a space for cross- and trans-disciplinary researchers, artists, scientists and engineers to learn and acquire best collaboration, education and research practices.

In addition to RELOGIA dialogues and exhibition, the program design also includes workshops and hands-on activities, that translate the presented theory and experience into step-by-step practice. The workshops and hands-on activities are unique and highly valuable interactive training sessions that allow participants to engage directly with best art+sci+tech practices presented by the guest experts and to explore the creative potential of trans-disciplinarity through practical exercises.

RELOGIA Workshops program is for researchers, educators, innovators and students. Its aim is to evolve into a permanent education research and training centre with a regular program for “educating the educators” and complexity map navigation network across sectors. Its purpose is to continuously curate, analyse and promote best art+sci+tech transdisciplinary research and education practices and artefacts and to design novel trainings for educators and researchers, i.e. for upscaling knowledge workers.

RELOGIA vision. background and history.

RELOGIA® is the first international art+sci+tech communication, education and training platform in Bulgaria, addressing cross-and trans-disciplinarity across the Quadruple Helix of Innovation. RELOGIA, is the exit from the monodisciplinary thinking providing the conditions to create New Questions in order to find New Answers.

¹¹ RELOGIA® <https://relogia.net/workshops/>

RELOGIA is set up as the Golden Compass in the New Culture that is exponentially emerging and working towards fulfilling its role to recontextualize human knowledge – via navigating new trans-disciplinary knowledge production, exploration and learning.

In the context of Innovation Culture, that implies huge disruptive and transformative processes – RELOGIA aims to provide Understanding of the Patterns of Organizational Evolution and Navigation to adapt in a new trans-disciplinary environment.

As a first step there is need for understanding that the patterns of “organization evolution are not unique.¹² The sobering fact is that the cliché about increasing pace of change seems to be true. Sooner or later, discontinuities upset the congruence that has been part of the organization’s success (.....) and [it] must confront revolutionary change.” The underlying cause of this pattern can be found in an unlikely place: *evolutionary biology*. Evolution goes through long period of incremental change punctuated by brief periods of revolutionary or discontinuous change. The process was assumed to be one of variation, selection, retention. That, translated into Organizational Growth and Evolution is: **Innovation** (Variation), **Differentiation** (Selection) and **Cost** (Retention). While there is an exponential ongoing stage one (Innovation), RELOGIA is focused on stage two (Differentiation), i.e., the curation, analysis and differentiation of the parameters of Innovation - the variety of art+sci+tech projects. These parameters will derive from the research methodology patterns, “differentiated” via the accumulation of analysis of RELOGIA curated art+sci+tech projects, in order to co-create new operational scenarios and smart tools for constructive navigation and integration. In short, to be able to empirically answer the question: “What are the polymath mental models’ characteristics and parameters of new education design and meaning-making in the new environment (era)?”

The roadmap outlined by REOGIA are its four main dialogue themes: 1. Emotional Intelligence; 2. Experience Design; 3. Art+sci+tech education; 4. Spaces for co-creation.

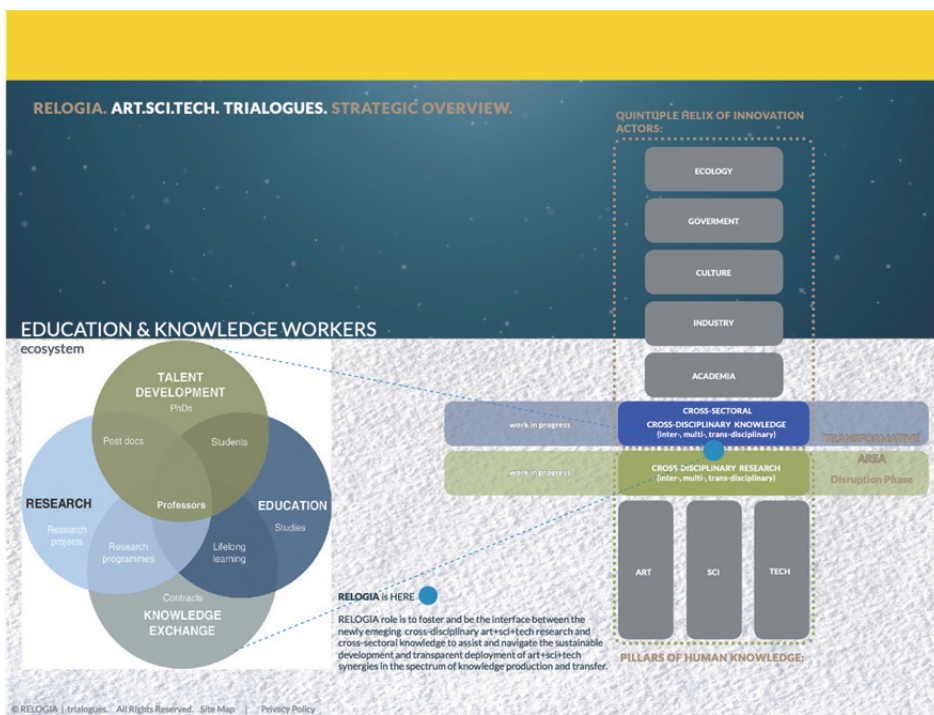
RELOGIA is HERE

RELOGIA role is to foster and be the interface between the newly emerging trans-disciplinary art+sci+tech research and development culture, and the Quintuple Helix of innovation¹³, that comprises Academia, Industry, Culture & Society, Government and Ecology. To add the cross-sectoral perspective and to assist and navigate the sustainable development and transparent deployment of art+sci+tech synergies in the spectrum of new knowledge production and transfer.

¹² Michael Tushman, Philip Anderson, “Managing Strategic Innovation and Change” (2004),p.278, Oxford University Press Inc., ISBN 978-0-19-5135770

¹³ Carayannis, E.G., Barth, T.D. & Campbell, D.F. The Quintuple Helix innovation model: global warming as a challenge and driver for innovation. J Innov Entrep 1, 2 (2012). <https://doi.org/10.1186/2192-5372-1-2>

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The exponential number of activities and resulting projects of the new art+sci+tech culture are dynamically expanding this new field of cross- and trans-disciplinarity and there is already an evident necessity for a map and navigation tool of this expanding dynamic territory in new Knowledge production. “Offering critical and ethical insights-tested by scientific methods and good academic standards – into the social and economic effects that accompany the transformation of natural sciences and technoscience and the scientific findings in the big data of the technological evolution at large is in my perspective one of the major tasks of the art+sci+tech synthesis, and therefore highly relevant today.”¹⁴

Background and history

RELOGIA dialogues have demonstrated the immense value of cross-disciplinary education, research and culture with its significant impactful and transformative potential. During and after the pandemic, RELOGIA co-created the conceptual and practical framework for the development of an art+sci+tech navigation tool (A+S+T transdisciplinary network & smart complexity navigation map) that will instrumentalize the fluent transition into the new culture of trans-disciplinarity for educators, students and researchers. Now we are actively looking for collaborators and partners for our next edition of RELOGIA.

¹⁴ Ivanova, Cvetana RELOGIA_25 Interviews_Art+Sci+Tech Visions in 7 contexts, p.80, quote from prof Ingeborg Reichle, ISBN:978-619-91458-0-7, 2019

Everything started in 2014 when Art & Science foundation “Re:” was founded in order to design and fill a missing stage dedicated to art+sci+tech research, innovations and culture. Along our development we realized that what also was missing is the polymath or renaissance model of thinking that would allow the access, understanding and appreciation of art+sci+tech projects. This informed the design of Re:Academia project – a series of lecture-discussions where we invited renown art+sci+tech experts from variety of professional backgrounds, some even Nobel Laureates, to share their projects, research journeys, values system and ... polymath way of thinking. We partnered with Academic and Cultural organisations to host us and we were blessed with genuine interest from the audience. After 3 years and 28 series into this project we realized that the impact we had was the one of “60 first dates”. There was no sustainable growth in mindset as there was no place where it could be practically systematically acquired, tested and applied – and no matter how much we promoted it to different institutions, we didn’t succeed. In parallel Re:foundation adopted a new approach, with the strong belief that if we succeed to show what kind of new knowledge results can flourish from it, we would have the support we need – performing a fundamental art+sci+tech research, integrating the intelligences of: quantum physics, genetics, molecular interactions, neuroscience, psycho-pharmacology, psychology, neuro-aesthetics, neuro-feedback, music theory and composition. We translated the Love hormone Oxytocin into Music. And the only body of knowledge who could verify if the translation was correct – the human body – confirmed. The whole project was published in MIT press¹⁵ and resulted in five PhDs. This fascinating success didn’t bring us further support. Re:academia evolved in RELOGIA dialogues and then we decided to change the scale – to organize a massive event that will bring the best art+sci+tech experts from across the globe and to design it around RELOGIA’s mission and essence. We did succeed this time and in 2019 we had the honorary support of Ministry of Education and Science, Ministry of Culture, Bulgaria Vice-President, EU Director General for Education and Culture and the Director of CERN who came to open RELOGIA.

The first **book RELOGIA dialogues | 25 art + sci +tech interviews**¹⁶ was out as well – strategically designed as a research tool reference for the new culture. There is an ongoing Word cloud research on the book that shows very interesting findings and that will be co-written with Dr Daniel Balestrini from University of Regensburg. “The book will serve as a basis for what is about to come. RELOGIA changes the way we perceive knowledge.”¹⁷ Its aim is to differentiate the current development and investigate art+sci+tech in seven distinct contexts: Personal, Cultural, Education, Science, Social, Industry and the seventh one ... **is up to us** – what context do we need to create in order for fluent, fruitful and sustainable trans-disciplinary evolution serving human wellbeing, intellectual virtues and cross-sectoral communication and coherence.

¹⁵ Tsvetana Ivanova, Leandar Litov, Rositza Marinova, Todor Ivanov, Mihail Iossifov, Agnieszka Deynovitch; The Music of Human Hormones. *Leonardo Music Journal* 2018; 28 38–46. doi: https://doi.org/10.1162/lmj_a_01033

¹⁶ RELOGIA® <https://www.youtube.com/watch?v=onOvIEIHi-Q>

¹⁷ Michael Katharakis, Vice-chairman of the Regional Research and Innovation Council of Crete; CEO Mediterranean Agri-food Competence Center at RELOGIA dialogues „Co-creative environments”



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