

Are you ready to think outside the box? Symbiosis between art, science and technology

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The two cultures

In Ancient Greece the word *tékne* (τέχνη) was used to express any task whether technological, scientific or artistic, there was no differentiation. After a long time, for the sake of specialization, attempts were made to divide the activities. Two sides arose and we had to choose: Humanities versus Science.

The apparent antagonism between arts and science generated many discussions, some of them took public status when Charles Percy Snow mentioned it in a conference called *The Two Cultures* in which he expressed the differences between science and literature, highlighting a sort of confrontation.

They seemed separate and specific domains, the humanists on the one hand and the scientists on the other. Much was said about how to achieve the convergence of Snow's two cultures, at this point we allow ourselves to disagree and talk about the symbiosis of the sciences and the arts rather than convergence, since in some way they were never separated, although theorists have shown us another scenario.

The evolution

Since ancient times, visual art have been the way that all the civilizations of the world found to express themselves beyond the oral word or writing. Perhaps this is one of the characteristics that makes us human. Always, and in every case, technology was necessary as a mean of expression, from cave paintings that required very elaborate technology to produce pigments to their application technique. The

evolution of art has had a remarkable acceleration in recent decades hand in hand with advances in science and technology. Until the nineteenth century from the point of view of art, only painting and sculpture existed, no other medium was valid. Only in the middle of the 20th century, photography was accepted as an artistic medium, 100 years after its creation. Until a couple of decades ago when it came to art and new media, these were photography and video. Today it is no longer necessary to seek that validation, any media is valid in itself to produce an artistic work; so the question that is disappearing is: is this art?

The main revolutions in the history of humanity, the Industrial Revolution and the Information Technology, changed the way in which the man relates to the environment. Now changes are presented in greater depth, we are in position to change the very essence of the human being. Today we are close to being able to design our DNA and, on the other hand, Artificial Intelligence (AI) learns how to seduce, control and take care of us. Could we create our children “à la carte” or maybe an artificial intelligence would be who designs us and decides which beings will populate this region of the Universe?

The predominant role of art

The contribution of artistic creativity fosters thinking outside the box, it becomes an important ingredient in research groups. The increasing complexities of the different disciplines lead us to think of interdisciplinarity as a fundamental tool to generate a synergistic effect and art cannot be absent. Art has the quality of going many times one step further, pointing to the future. A thought without barriers allows us to imagine a future in which there are still no tools to shape it, but we do not know, perhaps it is possible. Today we find ourselves imbued in a scientific and

technological world that, maybe, is shaping a new man, post-human or transhuman, perhaps a new body or perhaps the body loses relevance giving way to an ethereal being.

Today after millennia of progress we are facing a possible radical change. Will we have the technology in a short time to design an immortal being? Can we expand our intellect on any device? Can we let go of our body and remain who we are? Many works today envision that future showing alternatives and facets unimaginable today. Faced with the impending genetic revolution and exponential development of AI, will art be up to the challenge?

Art at the dawn of genetic revolution and AI

This special edition brings together a series of articles that explore the fascinating relationship between art, science and technology from very diverse topics that cover historical and theoretical aspects of this link, as well as technical and methodological developments.

The use of technology, traditionally related to disciplines such as engineering, informatics or biotechnology, transcends these areas to join the world of art, design, philosophy and even interpersonal social relations. It exists such a deep symbiosis that, sometimes, it is difficult to elucidate whether the human being has become technological or technology has been humanized.

In this sense, J. Adler presents an interesting article that covers the links between the human body and the machine in contemporary electronic arts. The cyborg, as a body that combines biological parts with technological ones, is nowadays transformed to the point of dismissing its organic parts. Consequently, the cyborg becomes a metaphor for the ontological rupture between physical and virtual bodies. In this way, artistic practice explores and problematizes these new humanized technologies that manage to capture the biological and affective behaviors of bodies through digital environments, artificial intelligence and data networks.

Along this line of thought, the article of A. Ceriani, R. Madou, M. Haberman and E. Spinelli, which describes the use of bioelectricity in artistic performances, is presented. Through joint and interdisciplinary research made by artists, electronic engineers, industrial designers and programmers, the development of a neuroprosthetic device called WIMUMO, is explained. This device captures the electrical signals produced by a performer's muscles during muscle contraction and sends the collected data to compose images and sound in real time.

Regarding the collection of biometric, biological and genetic data, F. Costa introduces with its article a shrewd look from social sciences to explore the construction of current identities. Through the analysis of artistic examples, Costa studies the incidence of Big Data, genetic data banks and fingerprints in the current scenario that is described as a biopolitical battlefield. The power over life ranges from the genetic information of living beings to their emotions, affects and everyday decisions.

Social decisions about living beings are also described by J. Lombardelli, D. Torres, B. Butera and A. Fernández. In this article, it is explored the specific gamification design of a wiki of Good Practices in Intensive Agro (*BPAi in Spanish*) based on a double axis of experience: a virtual environment and a physical one given by a robotic development linked to bioart.

Finally, and in relation to bioart, A. Marinaro describes an overview of the creation and operation of the Latin American Bioart Laboratory in which a series of works have been produced including robotics, genetic algorithms and artificial intelligence. As a consequence, the art works generate autonomy in their own future that promote, among other things, certain problems and discussions about copyright.

With this special issue we expect to encourage the audience to think out of the box.