

## Bio-digital Artworks as bio-digital applied to art

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In 2003, Claire Bailly and Jean Magerand invented the concept of « bio-digital », to hybridize complexity and digital, for living environments. In 2010, their "Bio-digital city" project was awarded in an international spanish competition. Claire Bailly and Jean Magerand co-founded the International Experimental Studio For Bio-Digital City (2009). They also co-founded the Experimental Laboratory of the Cité

des sciences et de l'industrie (Paris, 2015). They have also developed « bio-digital » artworks. They are both architects, landscape designers, urban planners. They each lead their own architecture office in Paris. Their professional work is recognized as they were appointed national consulting-landscaper and consulting-architect for the French Ministry of building and Environment. Claire Bailly 's office and Jean Magerand 's office applied together for many international competitions. They were awarded several times, such as for Versailles-Saclay OIN international competition (2007, Special Mention of the jury), « Self - Sufficient City » international competition (2010, Finalist Project over 700 applications), « City- sense » international competition (2012) and D3 competition (2012, projects selected for exhibition and publication). Claire Bailly and Jean Magerand are researchers of the EVCAU Laboratory (Espace Virtuel en Conception architecturale et urbaine, Ecole Nationale Supérieure d'architecture de Paris-Val de Seine). They hold the "prospectives" section in the « Cyberarchi », then « Le courrier de l'architecte » reviews until 2012. They were professors at the National School of Architecture of Paris-la Villette until 2014. Today Claire Bailly is professor at the National School of architecture of Montpellier (France) and Jean Magerand is a PhD supervisor at architecture school of Mons University (Belgium).

Moreover, Claire Bailly is founding member of Cap-Environnement Network since 2003. She is associated member of the LIFAM (Laboratoire Innovation Forme Architecture). She was invited researcher at the ENSCI (2014-2015) for a work she called « Informed City / Shaped City ». She is the author of book chapters and of numerous articles. Jean Magerand has a Ph.D in Information and communication sciences. He is director of the series « New cities, new technologies, new perspectives » of Harmattan editions. He is the author of *L'Architecture de l'architecture* (to be published, Harmattan editions), and the co-author, with E. Mortamais, of *Vers la cité hypermédiate* (2003, Harmattan editions) and *Vers l'hyper-paysage* (2006, Harmattan editions). He is also former mayor of a town in Nièvre (1989-2001), former member of « urbanism » commission of the 20th Paris district, former member of the « town planning » and « new technologies » commissions in the French mayors' association, former member of the national commission for exceptional sites of France.

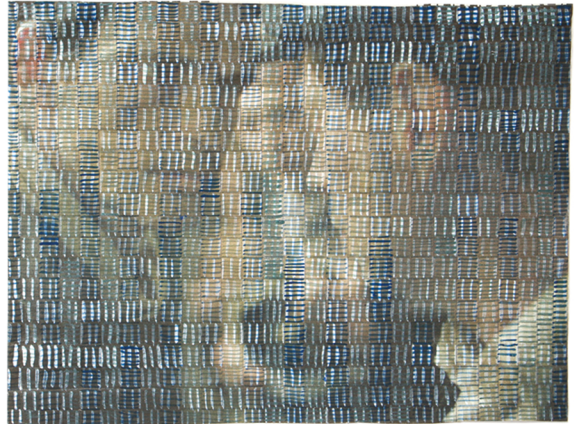


The bionumeric artworks exhibited in Seoul are in a situation of algorithmic morphogenesis and they already have a long history. From 2003, we worked in Paris on Bio-digital applied to city, Architecture, Landscape. The "bio-" brought the organic part. The "digital" carried the aspects related to computation in real time, digital, human and anthropology.

In 2009, on the basis of this way of conceiving the city, we invented the bio-digital Movement. We decided that, in addition to the bio-digital architecture, there would be a bio-digital Art. In 2014 we organized a bio-digital workshop in the Seoul City Hall with Professor Seungman BAEK from Yeungnam University. For the new 2017 exhibition, we wrote, in the Cité des sciences et de l'industrie de Paris, a set of artistic specifications. It is a kind of intellectual and conceptual guidelines that allows several teams of bio-digital artists to make different artworks with the same reference. Following this "artistic charter", the artists teams take place in the bio-digital Movement.

Cédric Brandilly, Sliders\_lab, Jean-Marie Dallet, Mike Destivelle and ourselves followed this charter to produce bio-numerical experimental artworks. These artworks exhibited in Seoul were started in Paris. Some fragments of the artworks in progress (images, photos or objects, videos) have been collected and exhibited at the Cité des sciences et de l'industrie in Paris. These fragments already had an earlier history. They were produced through algorithms or they were chosen ready-made in nature. They are each already a pre-work ; they are therefore also artworks themselves. They will then hybridize with each other. The bio-digital art has functions, it is aimed to be useful, it selects the contemporary avant-gardes. It spreads them. The cybernetic ancestors of the complex bio-numerical artwork impregnate and qualify it. The artwork creates articulations between living and artificial through methodical, via the notion of self-organization. Complex bio-digital artworks bring together and integrate advanced knowledge, discourses and methods. They convey tangible, understandable and evident phenomena. They are mediators. Their mission is to bring together the most cutting-edge speeches, sciences and technologies. They spread a complex thought, within the meaning of the science of complexity. By their own existence, they launch a debate that is part of them and constitutes them.

Complex bio-digital artworks are self-organized. They are hybridized emergences that help art to get better into the paradigm of the sciences of complexity. They are at the crossroads of the contexts where they developed. They constitute contexts by themselves. They are presented as neguentropic processes. They are organized as artificial ecosystems made of elements and actions in interactions. They are presented as neguentropic processes.



They are organized as artificial ecosystems made of elements and actions in interactions. Bio-digital artworks organize, as ecosystems and like living beings, dynamic balances. Like them, they are in permanent construction / renewal. What matters is the amount of information, the big data included in the complex artwork. The texts, reviews, photos, notes of a few lines, read articles, general information, are an integral part of the artwork and they are data. Each algorithm inspecting the artwork participates in the "artistic genesis". Artistic morphogenesis is never completely identifiable nor complete. Thanks to big data, complex artworks are constantly evolving and permanently to become. Mathematical algorithms frame their evolution. They exist through their "generative modes". It is the theoretical journey that allowed, and that will allow later, to federate the constituent elements of the artworks. Ultimately, a bio-digital artwork is the constant updating of a process where real time predominates. Complex artworks know how to react to their environment, thanks to the algorithms they have integrated. They mix their history, that of the artists who create them and that of the spectators who observe them. In the bio-digital art, each spectator goes through the complex artwork his own way. As in hypertextuality, the reader is also an author. As city, the artwork is never totally started and never totally ended, it is in perpetual (re-) beginning. At the same time, the bio-digital artwork is exposable (presentable) and therefore finalized as soon as it exists. The bio-digital complex artwork is a methodical and organizational model that can be used to prototype the Bio-digital City, Bio-digital Architecture, bio-digital-Landscape, Bio-digital Urbanism, bio-digital agriculture, bio-digital society, bio-digital geography, bio-digital ecology, bio-digital economics or bio-digital health.