

Active Matrix, a Serious Game to Play with Kandinsky's World

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From paintings to systems

We are now living in a world within which we communicate, act and re-act by the way of information technologies. We exchange words, images, sounds and transform them dynamically while moving our body and mind.

In the context of such a world that we now both experience and perceive as a changing, variable, and complex networked environment, it seems that painting is no longer a kind of system of representation that fits to depict our reality. Flows, exchanges, processes and interactions have replaced the closed and fixed images. We now conceive matter as energy and information. Einstein's Theories of Relativity have made a real shift in our scientific knowledge, even reaching the realm of Fine Arts. As a consequence, the shape has become a dynamic relationship with the objects and the persons. The ebb and flow of complex connections let happen a new space, made of an in-between moving and endlessly re-built spacing. This decline of the object¹ in aid of its abilities to behave, perceive and communicate goes with something that Lucy Lippard calls "The dematerialization of the art object".² There is no way to organize signs, forms and colours on a surface but to construct information architectures among data spaces. There is no way to consider space as a static 3D flagging, but as an assembly of points, which each one is regarded as an "event". Following Kandinsky's visionary thought about a "digital formula", we are now bearing witness to a paradigmatic shift in the economy of representations: from "Point and line on a plan"³ to "agents in interaction inside a complex system".

Historical examples of a new vision for scenic spaces

To build the world rather than to represent it is an idea that contains a sort of technological thought. But this did not wait for the electronic or digital technologies to exist. In the early twentieth century, László Moholy-Nagy, in the *Manifesto of dynamic constructive forces* (1922), published with Zoltan Kémény in *Der Sturm*,

as well as constructivists, futurists, Wassily Kandinsky, Oskar Schlemmer and most of the artists teaching at the Bauhaus School came up with the idea to energize space with dynamic-constructive systems. They wanted to apply the dynamic principle of life to their works of art. Rather than to realize static constructions based on relationships between matter and shape, they aimed to conceive structures like machines, but machines as dynamic systems within which the matter function is to carry energy.

Later on, artists like John Cage and Merce Cunningham made chaotic systems, applying simple rules to create complex dynamics, leading to a new vision of scenic spaces inspired by the Theory of General Relativity where every point only refers to itself or to points which are very close. In Cunningham's pieces, there is no centre, nor central motif but flow of energy that is the performance flow. The space is already treated like a network of energy, entity and circular information. Sounds, words, movements, colours and lights interact with each other on the scene in a way that allows new autonomous entities to appear, leading to uncharted new territories where unpredictability, autonomy, and unprecedented behaviors emerge.

The research project *Active Matrix*

The project is based on Kandinsky's theoretical and practical work — in particular, on his idea of making theatre "different" in conceiving what he calls "scenic paintings" where the scene becomes a sort of three-dimensional metamorphosis principle based on painting, where sounds, gestures, movements, lights, colours and time mix together in relationship to the "total-artwork" idea that Richard Wagner has theorised with the term he coined : "Gesamtkunstwerk".

According to Kandinsky's thought (*Regards sur le passé, Du spirituel dans l'art, Point et ligne sur plan*), the creator's mind has to conceive "living artworks". Our digital age provides the artists with new tools to make this happen.

It is in this sense that Yves Demazeau (head of the Multi-Agents System scientific laboratory LEIBNIZ – IMAG at the University Joseph Fourier in Grenoble) and I, came up with the idea to work together to realize the first prototype of this project.

It consists of setting Kandinsky's world into virtual data space, by modelizing a computing simulation that allows the spectator an active and play immersion into the poetic, cosmic and symbolic world of the painting by Kandinsky *Yellow-Red-Blue*, painted between March and May 1925. Every element of the painting is listed, the rules of composition and spatial organization are analysed, global and local tensions are located to computerize the artistic model and its interpretation. The painting, then, becomes a complex dynamic system where the elements interact with each other and with their environment.

Consequently, when playing with the modelized shapes and colours given by Kandinsky, the audience disturbs the whole connected elements which react with gameplay, leading to emergent behaviours. The spectator's interfaced human body interacting with the scenography by embodying the virtual actors and by moving a virtual camera that carries his(her) eyes and points of view into the scene is allowed to self-organize

his(her) perception, trying to find a balance between his or her mental state of mind and the equilibrium state of the spatial composition given by Kandinsky.

In doing so, the spectator discovers the construct and behaviour rules of the scenic elements inside the virtual world. By the way, it will provide him/her with means to see the painting with the eyes and indirectly with the hand (holding the mouse), for, finally have a new reading of it. This immersive pedagogical play trip is active and cognitive into the system/image conceived as a complex system.

In conclusion, I could say that this project aims at an aesthetic dimension provided by the emergence of a dynamic system which auto-organize itself and must find a constant balance between the interactions (action-reaction) of the virtual actors's rules of behaviour, the physical and mental movement of the human actors (audience) and their own environment, so that the serious game will be the product of virtual and human elements that interact between them and with their environment coinciding with Grégory Bateson's thinking⁴ that the mind is an assembly of parties or components interacting between them and their environment. As an experience to live, the "gamer" is invited to explore such complex concepts in a constructive and dynamic way.



"Active Matrix"
User view

The virtual camera begins its inner travelling



"Active Matrix"
Subjective view

The spectator is inside the element called Observateur 3

1 Popper, Frank. 1975. *Art, Action et Participation 1, Le déclin de l'objet*, Editions du Chêne.

2 Lippard, Lucy. 1973. *Six years: the dematerialization of the art object from 1966 to 1972*. Berkeley, Los Angeles: University of California Press.

3 Kandinsky, Wassily. 1991. *Point et ligne sur plan*, Gallimard.

4 Bateson, Gregory. 1979. *Mind and nature: a necessary unity*. New York, Dutton.