

# ABSTRACTION AND ART

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## 1. ABSTRACT

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In a given social context, artistic creation is made up of a set of processes which relate to the activity of the artist and the activity of the spectator. Through these processes we see and understand that the world is vaster than it is said to be. Artistic processes are mediated experiences that open up the world. A successful work of art expresses a reality beyond actual reality, it suggests an unknown world using the means and the signs of the known world. Artistic practices incorporate the means of creation developed by science and technology and change forms as they change. Artists and the public follow different processes of abstraction at different levels, in the definition of the means of creation, of representation and of perception of a work of art. This paper examines how the processes of abstraction are used within the framework of the visual arts and abstract painting which appeared during a period of growing importance of the processes of abstraction in science and technology at the beginning of the 20<sup>th</sup> century. The development of digital platforms and new man-machine interfaces allow multi-media creations. This is done under the constraint of phases of pluridisciplinary conceptualisation using generic representation languages which tend to abolish traditional frontiers between the arts: visual arts, drama, dance, music.

### Key words

Abstraction, lyric abstraction, geometric abstraction, art, multimedia, perception, process, reality, relation, representation.

## 2. INTRODUCTION

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Before addressing the question of the use of abstraction in the arts, it is necessary to try to show how a work of art is distinguished from another object. By definition the word "art" (*ars* in Latin and *techné* in Greek) means trade, know-how, effective and skillful transformation. Art is not produced by nature, it is not a given. It is the root of the word "artificial" although all that is skillful or artificial is not art and we have to take care not to confuse artefact and work of art. The most significant aspect of a work of art is not the know-how or the process itself. The seal or signature of the artist does not help to define something as a work of art because, if we look at history, many works of art were produced by slaves, artisans or workers. The pyramids in Egypt, many sculptures in ancient Greece, the building and decoration of the cathedrals during the Middle-Ages are good examples. Neither can one say that the artist is an artisan who has genius because, unlike artisans, many artists are unable to find the conditions which enabled them to create a particular work of art. The is not defined by its means of production either the dadaists<sup>1</sup> showed with their "ready mades", the first industrial objects to be exhibited as works of art, by being diverted from their normal use or simply taken out of context.

Can one therefore say that a work of art is defined by its beauty? For Kant<sup>2</sup> beauty is the experience of the "free and harmonious play of imagination and of comprehension". There is no such thing as objective criteria of beauty by which to measure an artist : if there were, freedom to create would no longer exist. Beauty is not a property of the work of art but a feeling which results from the relationship between the subject and the representation of the object. Representation in art means making present something which was not present before, it means making something perceptible to the senses (but not necessarily intelligible) which was not perceptible before. This something is made present and perceptible by an object which is its sign. A work of art may even represent nothing other than itself and express an idea or a feeling in perceptible form, etc. To paraphrase Paul Klee<sup>3</sup>, art does not express that which is visible one but makes it visible. A work of art is thus the objectivation (representation in the form of an object or an event) of a subjective relationship to the world by means of expression that are perceptible to the senses.

Representation through imitation is doomed to failure. Imitation is always disappointing because it is less than the real object. Artistic techniques are not reproductive techniques. The desire to imitate leads to the representation of appearances. The majority of artists and philosophers agree on this point: "art exists at the very minute that the artist deviates from nature. That by which he deviates gives him the right to live" said Jean Cocteau<sup>4</sup> in *The Difficulty of Being*. "To write is not to describe. To paint is not to depict. Similarity is only trompe-l'œil" said Georges Braque<sup>5</sup>.

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1 Artistic movement 1918-1921.

2 German philosophe (Königsberg 1724 – id, 1804).

3 Artist, german art theorist (Munchenbuschsee, near Berne, 1879 – Muralto-Locarno, 1940).

4 French artist and writer (Maison-Laffitte, 1889 – Milly-la-Forêt, 1963).

5 French artist (Argenteuil, 1882-Paris, 1963).



Figure 1 - Michel Angelo, "The last judgement"



Figure 2 - Giacometti, "The walker"

Paradoxically, it is through the deformation that art makes living reality perceptible. Michel-Angelo's characters of the *Last judgement*<sup>7</sup> are monstrous but they give the impression of heavenly wrath and Giacometti's<sup>8</sup> thread-like walker with both feet cast in the base seems to move in eternity. Our subjective relationship to the world is often expressed and represented by deformation and by the use of codes and rules which constitute languages. It is these languages that enable us to identify the different styles and schools of art. The discontinuities of language are often the signs of cultural changes. Art does not copy reality and its true function is not to represent it; it does so incidentally in figurative painting, but it can also radically do without as in "abstract" painting. The function of a work of art is not to represent reality and the reference to the real world is not central. Its function is to make the artist's relationship to the world perceptible through symbolic signs that objectify it. As a symbolic device, art, whether figurative or not, is an abstraction. A work of art is a collection of subjective relations, an interface between levels of consciousness in a shifting context. It is on this context that the codes, languages, rites, techniques which enable the creation of the work of art and its relation with a public depend. For the artist, the relation is the production process itself, for the public the relation is the perception process in its context. The elements of the context form a dynamic complex system and these elements change at different speeds. Some, over a given period of time, will be regarded as invariants, whereas others vary over the same period. In the language of visual arts, for example, the formats of the different supports have retained over the centuries the same significance as far as the symbolism of the vertical and the horizontal are concerned. They can be considered as invariants over this period whereas the use of colours and forms frequently changes.

We perceive more than we realize. Works of art bring out certain aspects of reality which were not perceptible before. They express, but no in so many words, that the world is vaster than we believe, "If we go further into what we feel in front of a Turner<sup>9</sup> or a Corot<sup>10</sup>, we will find that if we accept them and admire them, it is because we had already perceived something of what

6 Michelangelo Buonarroti, sculptor, artist and Italian architect (Caprese, près d'Arezzo, 1475 — Rome, 1564).

7 Michelangelo Buonarroti, Last Judgment 1537-41, fresco, Cappella Sistina, Vatican.

8 Swiss painter and sculptor (Stampa, Grisons, 1901 – Coire, 1966).

9 English painter (London, 1775 – id 1851).

10 French painter (Paris, 1796 – id, 1875).

they are showing us. But we had perceived without seeing" wrote Bergson<sup>11</sup> in *Thought and Movement*.

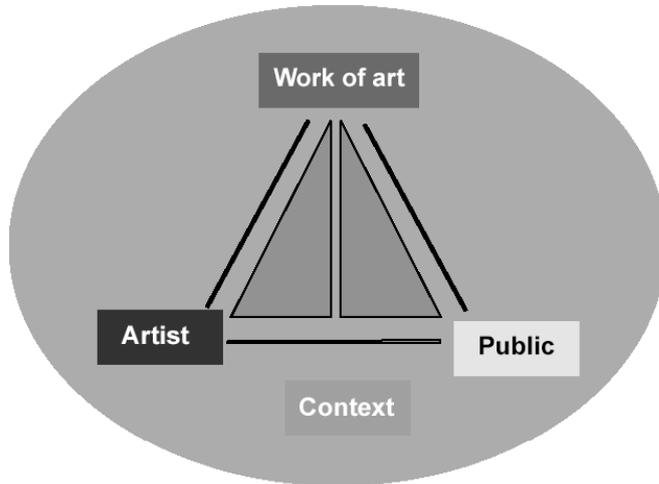


Figure 3 - Artistic relations are symbolised by the relations between the three apices of the triangle located in a context. The interactivity of these terms varies considerably depending of the artistic domain and technology used.

In this paper:

- artist means any person or group of persons who generates a work of art deliberately, whatever the method ;
- work of art means any permanent or transitory object or device which enable the artist and /or the public to have an artistic experience ;
- public means any person or groups of persons who establishes a relation with the work of art ;
- context means all the practices, behaviors and knowledge which characterise a society at a given time.

Most of the examples have been taken from Western visual arts

### **3. THE ARTIST CREATES, THE PUBLIC RE-CREATES**

The experience of the artist and the that of the public in relation to the work of art are processes that usually do not coincide in time and are always anchored in a dynamic context. The perceptions of the artist and those of the public are never the same. The major function of the artist is to act as a mediator between a representation and a public, not to transmit it. Possibly the work of art will enable the public to enjoy in turn a subjective artistic experience. Each work of art will resonate in its own way over the whole range of human emotions and each person will be touched in a different way.

<sup>11</sup> French philosopher (Paris, 1859 – id, 1941).

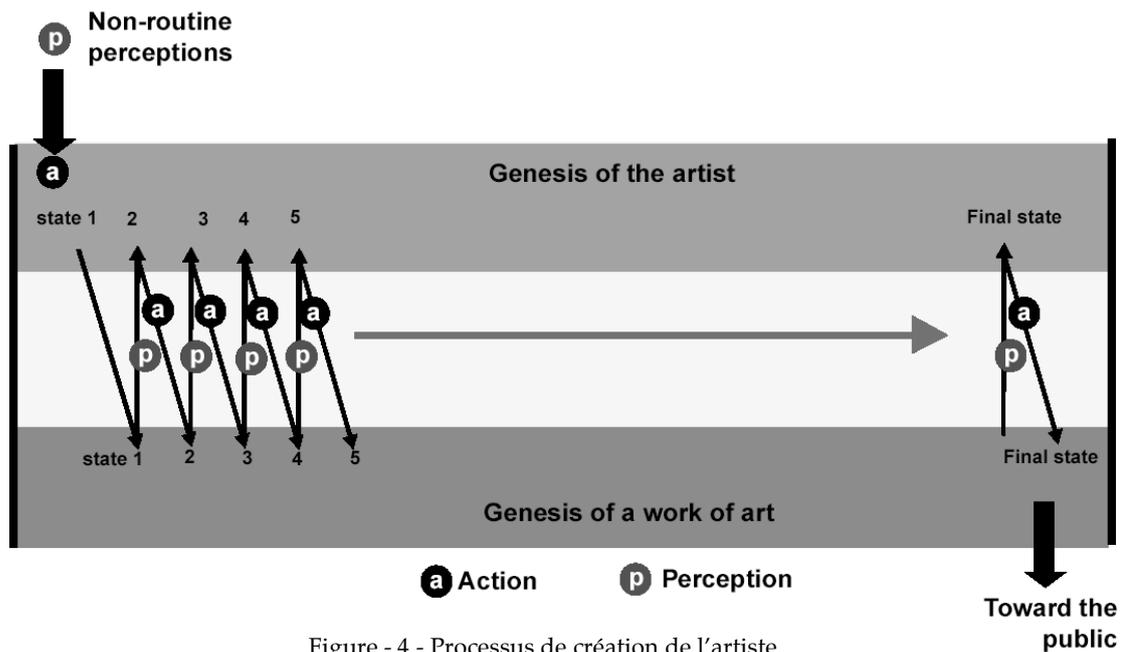


Figure - 4 - Processus de création de l'artiste

The artist expresses in an unusual way a new relation to reality. It is the artist who brings strategies, material things and sequences of actions and perceptions into play to experience this relationship to the world. The use of this process which is contingent to the artistic relation converges towards the production of works that we call *works of art* when they have a public. They emerge within various frameworks and take different forms. The work of art can be anything at all provided it is a trace of this process.



Figure 5 - B. Thomas, *Installation intime*, Neguev desert, 1995.

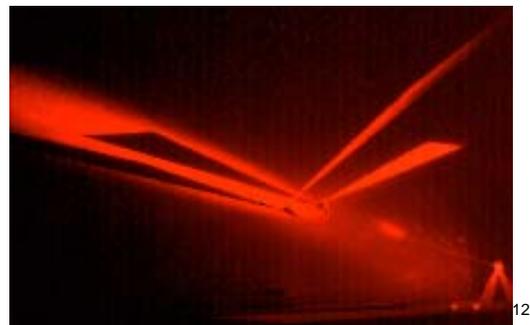


Figure 6 - B. Thomas, *Installation cohérente*, laser ray, Paris 1995.

It is considered to be good when it is effective, i.e. when it acts as a mediator between a non-routine relation and the public. The surprise caused initially by the artistic relation will disappear with the installation of new routines. A good example of this opening/closing process is that of the impressionist painting which caused a scandal at the beginning of the 20<sup>th</sup> century, was rejected outright by the Parisian bourgeoisie and academic circles, and which a few years later became the model of what should be put on the wall above the settee in the lounge.

12 French sculptor and multimedia artist (Constantine 1952 – Paris).

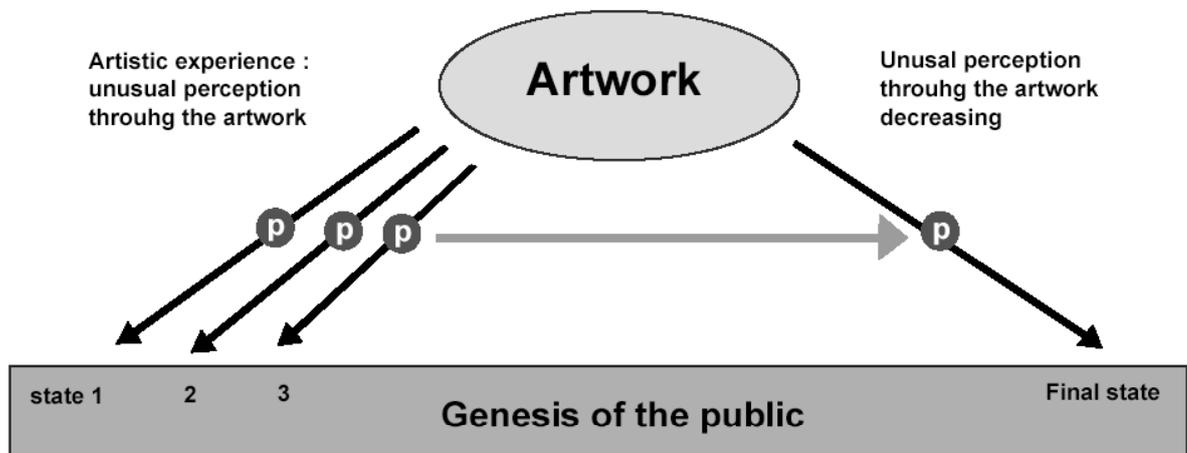


Figure 7– Public re-creation through the work of art

When the artistic form of expression changes, the language changes, constraints change but the function of art remains the same. Rather than review the various artistic expressions, let us look at one in more details, that of the visual arts ; let us study its syntax and see how the way it play with language evolved over time. If we understand the role of abstraction in this area we can understand the role of abstraction in other art forms. The concepts of structure, composition, rhythm, symmetry, regularity, contrast, and syntax are common even if their content is different.

#### 4. THE SYNTAX OF VISUAL ARTS AND ABSTRACTION

The conception of painting has always involved abstract processes: "*la pittura è cosa mentale*" said Leonardo da Vinci<sup>13</sup>. Maurice Denis<sup>14</sup> said "before being a battle horse, a naked woman or some anecdote or other, a painting is first and foremost a flat surface covered with colours assembled in a certain order". The word "language" refers to the expressive function of thought and communication between human beings by means of a system of vocal signs (words) and possibly graphic signs (writing). The visual arts constitute a language based on forms, formats, colours, constructions, rhythms, lines. These forms of expression become fully autonomous in nonfigurative painting. The history of Western Art coincides with the history of the autonomy of its language .

Before the Renaissance, paintings were done on close-grained wood panels coated with fish glue. The colours were mixed with linseed oil. Drying was very slow. To save time, a waterbased medium, tempera, was introduced. In both cases the light colours closer to the background appeared hollow while the dark colours stood out more. In about 1425, the Van Eyck<sup>15</sup> brothers

13 Italian artist and scientist (Vinci, near Florence, 1452 —Cloux Castle, near Amboise, 1519).

14 French painter (Granville, 1870 – Paris, 1943)

15 Flemish painters (end of XIVth century – middle of the XVth century)

invented a mixture of linseed oil and turpentine which made it possible to give greater depth to the colours. Titian<sup>16</sup> revolutionised the very conception of painting by starting with a dark background the colour of bull's blood to which the painter added lighter and lighter in richer and richer matter that bore the imprint of the painter's hand and tools.

From this moment on, two schools have existed side by side, The first corresponding to smooth flat surfaces, stretches from the Medieval painters and Florence to Dali<sup>17</sup>, Magritte<sup>18</sup> and the geometrical or so called "cold" abstraction of painters such as Mondrian<sup>19</sup>. The second where the body and the genesis of the painting are apparent runs from Rubens<sup>20</sup>, Delacroix<sup>21</sup> and Van Gogh<sup>22</sup> to the "lyrical" abstraction of Paul Klee, Jackson Pollock<sup>23</sup>, Rothko<sup>24</sup> and Pierre Soulages<sup>25</sup>.

### a) The Kandinsky<sup>26</sup> system

Painters and draughtsmen have always used the expressive functions of lines, surfaces and colours, but it was only at the beginning of the 20<sup>th</sup> century that these functions became completely abstract and removed from figurative representation and were used for themselves. At a time, when the Western world was persuaded of simultaneous progress of Science and Civilisation, Klee and Kandinsky raised the question of a science of art. Kandinsky believed in the progress of art and considered that abstract art, freed from the figurative representation, is a higher form of visual expression. This quasi-mystical search reaches out to the possible discovery of a universal generic formula from which all artistic creations would arise, or where all compositions would find a numerical formula. This would mean implicitly that all artistic expression could be taught to a computer.

**Space - Space is dynamic, forms are generated by forces.** Without, a form is an element ; within, a form is defined by its internal forces, by its tensions. The action of a force breathes life into a given material, and this life is expressed through tensions which, in turn, give an internal expression to the element. An element is the effective result of the action of a force upon the material. For Kandinsky, all phenomena from the internal or external world can be expressed in lines. For him, a form is made up of three fundamental elements : point, line, surface.

**Point - A point is the smallest base form, the elementary particle of painting.** It is both the symbol of the end of a sentence and the minimal graphic element and conveys a latent fertility. The geometrical point is immaterial. As a symbol of silence, it is introverted, concentric and static. Graphically, the point has a strong rhythmic effect ; its equivalent in sound would be a dry percussion. The time necessary to perceive a point is the

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16 Italian artist (Pieve di Cadore, 1488 – Venetia, 1576)

17 Spanish painter (Figueras, 1904 – id , 1989).

18 Belgium painter (Lessines, 1898 – Bruxelles, 1967).

19 Dutch ainter and art theorist (Amersfoort, 1872 – New York, 1944).

20 Flemish painter (Siegen, Westphalie, 1577 – Anvers, 1640).

21 French painter (Saint Maurice, Val de Marne, 1798 – Paris, 1863).

22 Dutch painter (Groot-Zundert, 1853 – Auvers-sur-Oise, 1863).

23 American painter, (Cody, Wyoming, 1912 –East Hamton, 1956).

24 American painter,(Dvinsk,1903 – New York 1970).

25 French painter (Rodez, 1919).

26 French painter and art theorist, (Moscou, 1866 – Neuilly-sur-Seine 1944).

minimum time of graphic perception. It is the most concise temporal form. It thus implies that there are times and durations of perception in painting. A point is also a fundamental element in choreography and in architecture: dancing on points, soaring arched Gothic cathedrals, etc.

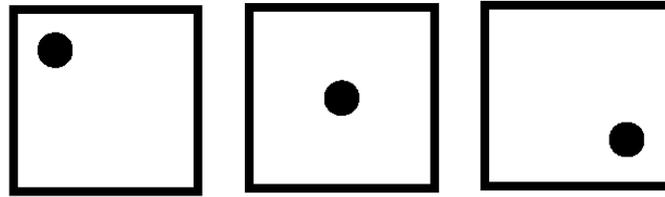


Figure 8 – Points resonating on a surface

A point resonates on a surface. A simple resonance is where the point located at the centre of the original surface emits a simple resonance. A point that is off centre in the original surface emits a double resonance: that of the point and that off being off-centre.

**Line - A line is created by a generator of points.**

A generator of points which moves at a constant speed and in the same direction plots a straight line. Three different impulses in different directions on a generator of points create a broken line or a triangle. Two different impulses to right in different directions on generator of points create an arc of a circle.

**Horizontal** - A horizontal line is the most concise form of an infinite number of cold movements. A horizontal line is the direction of chronological time, moving from left. The associated colour is black, the associated feeling is calm, the associated temperature is cold.

**Vertical** - A vertical line is the most concise form of an infinite number of hot movements. A vertical line is the direction of immediate time, of appearance, of emergence. The associated colour is white, the associated feeling is awakening, the associated temperature is hot.

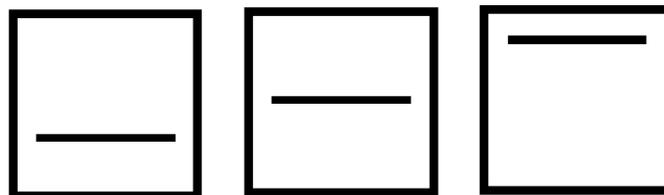


Figure 9 – Horizontals resonating on a surface

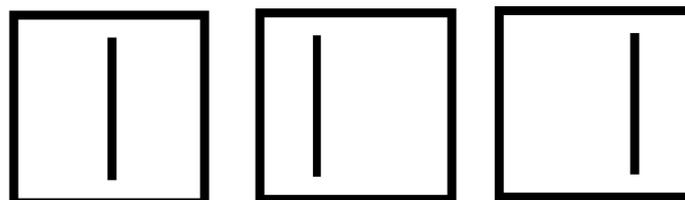


Figure 10 – Verticals resonating on a surface

**Diagonal** – A diagonal expresses the combination of hot and cold. The difference in gradient towards hot or cold defines their internal sound. A rising diagonal is red, a falling diagonal is grey or green.

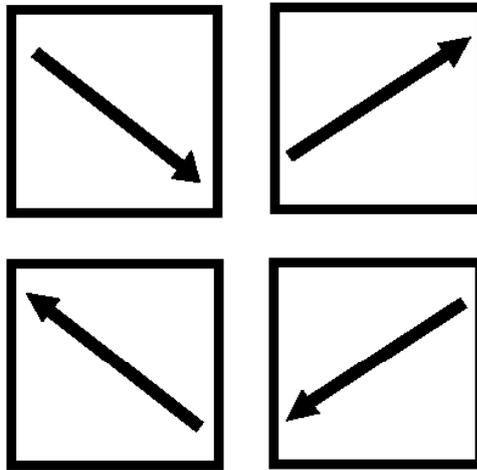


Figure 11 – Diagonals resonating on a surface

**Curved lines** - A curved line is a straight line that has been deformed by tensions. It is the antithesis of the straight line. For Kandinsky, a curve contains a more constant force than does a broken line, it is less aggressive and more durable. The most powerful contrast between lines is that which exists between the straight line and the curve.

Straight lines, broken lines, curves are characterised according to their tensions, the length of the segments, directions and thickness. All these characteristics are relativised with respect to the original surface: a curve signifies lyricism, a broken line represents drama.

**Angles** – A right angle corresponds to the colour red, to objectivity, to a square. An acute angle corresponds to the colour yellow, to dynamism, to a triangle and to dynamism. An obtuse angle corresponds to indigo, to melancholy, to a circle.

**Free lines** - A free line does not touch the edge of the frame and is thus subjected to a tension which increases as its extremity moves closer to the frame but cancels out once it has touched it.

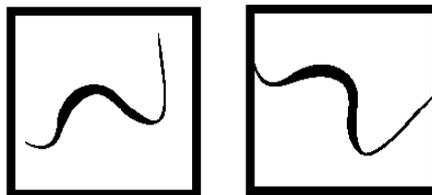


Figure 12 – Free lines resonating on a surface

**Surfaces** - The four sides of the original surface have a particular resonance. At the top, forces fall violently downwards, with a light tension towards the top meaning lightness. At the bottom, forces fall gently downwards with a

strong tension towards the bottom, meaning density. The right side of the surface is to the right of the spectator and means adventure, departure. The left side of the surface is to the left of the spectator, and means home, return.

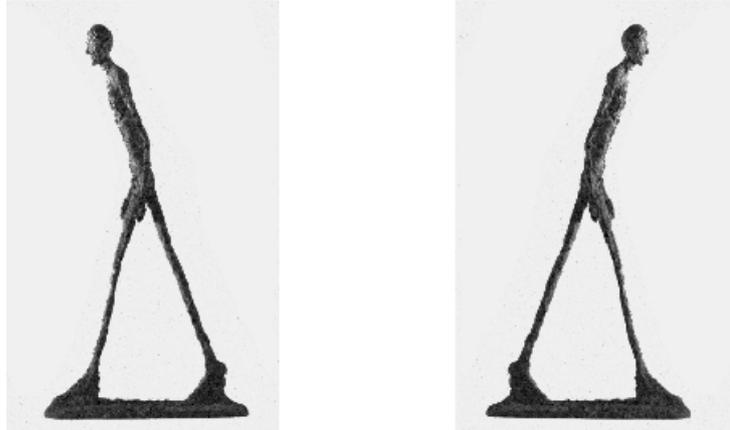


Figure 13 - Is Giacometti's "Walker" more melancholic when he returns towards the left than when he goes towards the right side?

## b) Strength and weakness of Kandinsky's analysis

Kandinsky was the first one to seek the primitives of a work of art and to associate them to an emotional symbolic content. It was a revolutionary move in which signs were freed from all figurative representation. The definition of fundamental elements in the constitution of graphic representation made it possible to propose a syntax and a language. This clearly raised the question of writing in painting and dance and their relationship to music. However, Kandinsky's system came up against several problems: the classification and analysis of the relations between the elements of a graphic work of art presuppose objective measurements, the number and complexity of which are immense. The qualitative analysis of the interactions between several elements becomes virtually impossible as soon as the number of elements increases. The distinction between points, lines and surfaces is uncertain. When does a point become a surface? Is it transformed into a circle? At what moment does a point emerge as a point in the perception of the painter and the spectator? Kandinsky left it up to his successors to decide. It will depend on the size of the original surface, the vicinity of the other elements and their size. For example, a small circle will be seen as a point on a given surface. But on an identical surface in the presence of a smaller form, it will be seen as a circle. It is a complex question which presupposes that the question of borders has been solved. The distinction between interior and exterior is always very difficult and relative to a reference space which can vary. The transformation of the point into a surface and the perception of its colour are subjective.

## c) Constructions

In both the Western visual arts and other arts, the perception of what is changing in the work is only possible if invariant abstract elements exist which provide structure and rhythm. In poetry, this gives the formats of the poems, the rhymes, the length of the stanzas; in music this gives the chorus, the melodic lines, the recurring chords, the tempo, etc. In painting, the spatial

structure often derives from the format of the support with its corresponding length/height ratio. The subdivisions of this ratio generate geometrical structures which underpin the whole creation. Let us take two examples : Alberti's<sup>27</sup> musical proportions based on the ratios of the first whole numbers on the musical scale : 2/3, 4/6/9, 9/12/16, and the Botticelli's<sup>28</sup> *Birth of Venus*. In the works of Veronese<sup>29</sup>, the golden number<sup>30</sup> generates all the proportional ratios. In the work of Tintoretto<sup>31</sup> and the baroque painters, dynamic compositions based on the use of diagonals avoid symmetry and exploit the proportions provided by the frame. In the 20<sup>th</sup> century, the works of Cezanne<sup>32</sup>, Matisse<sup>33</sup>, Kandinsky and Mondrian are good examples of rigorous geometrical compositions.

#### d) Colours

A colour is defined by its tint, saturation and luminosity (T, S, L). There are three primary colours (red, yellow, blue) and three secondary colours (green, orange, purple). The complementary colours result from the combination of two primary colours. If all three primary colours are mixed correctly this gives grey. It thus follows that each primary colour has a corresponding complementary colour which can be mixed with it to give grey. Some colours are considered warm (red, orange, yellow), others are considered cold (blue, green, purple). In the visual arts, colour variations are based on seven colour contrasts.

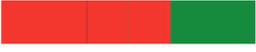
Type of contrast	Example	Symbolic register
Contrasts of the colours themselves; Primaries and secondaries, saturation S strong		Cheerfulness, vitality
Light / dark contrast $L_1$ high, $L_2$ low		Drama, mystery
Contrast of complementaries; tint T such $T_1 + T_2 = \text{gray}$		Static, solidity
Contrast of quality $L_1$ and $L_2 = K$ ; $S_1$ high, $S_2$ low		Serenity, calm
Contrast of quantity		Intensity
Simultaneous contrast $T_1, S_1$ high, and a grey $L_1 = L_2$		Instability
Warm/cold contrast $T_1$ warm, $T_2$ cold, $L_1$ et $L_2$ close		Vitality

Figure 14 – Types de contrastes

The simultaneous use of contrasts either reinforces or reduces them, depending on the case. The result is different rhetorics and laws of harmony

27 Italian architect and art theorist (Genoa, 1404 — Rome, 1472).

28 Italian painter (Florence, 1445 – id, 1510).

29 Italian painter (Verona, 1528 – Venice, 1588).

30 The golden section is also called the golden ratio. It is closely connected with the Fibonacci series and has a value of 0,61803... The golden section has been used in many designs, from the ancient Parthenon in Athens (400BC) to Stradivari's violins. It was known to artists such as Leonardo da Vinci and musicians and composers, notably Bartók and Debussy.

31 Italian painter (Venice, 1518 — id, 1594).

32 French painter (Aix-en-Provence, 1839 — id, 1906).

33 French painter (Le Cateau-Cambrésis, 1869 — Nice, 1954).

which evolve with the different schools and styles. What is important is that even if the perception of the colours is subjective, they serve as a symbolic means of expression for the whole range of our emotions.

### e) The time-image perception

An image can be regarded as a sign made up of signs. The time necessary to perceive a fixed image is both the time necessary to perceive the image as a sign and the time necessary to perceive the signs which make up the image. The first is global and virtually instantaneous, the second depends on the complexity of the image. The two are indissociable, each one referring back to the other. The game consists in feeling and identifying those elements that make up the work of art in establishing relations between them. This relational analysis which consists in isolating from the whole the elements in their respective categories is a task of abstraction which accentuates the feeling of meaning, direction and order in the perception of the work but without codifying it. Even if the experience of time is subjective, we can objectively say that we perceive a straight line more quickly than a line made up of bends and that the mind travels faster through a monochromatic painting by Malevitch<sup>34</sup> than through a painting by Rubens. This does not mean that we are making a normative judgment.

### f) Example : "The Piano Lesson"<sup>35</sup> by Henri Matisse

"Art is always more abstract than we imagine. The form and the colour speak to us about form and colour, and that's the end of it" said Oscar Wilde<sup>36</sup> in *The Picture of Dorian Gray*.

« The Piano Lesson », painted by Matisse in 1916 is a good example of the use of abstract language in a painting. A network of vertical and horizontal lines gives a somewhat severe rhythmic and musical structure to the space against which come into play the arabesque produced by the wrought iron of the balcony and the music stand on the piano. The diagonals are created by the right edge of the green surface, by the left edge of the pink surface of the table, and by the dark triangle in the eye of the young boy at the piano. They are also created by the relationship that the spectator creates between the green surface and the pink surface in the bottom right-hand corner of the painting.

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<sup>34</sup> Russian painter (Kiev, 1878 — Saint-Petersbourg, 1935).

<sup>35</sup> Henri Matisse, 1916, oil on canvas, 245 cm x 212 cm, Museum of Modern Art of New York.

<sup>36</sup> Irish writer (Dublin, 1854 — Paris, 1900).

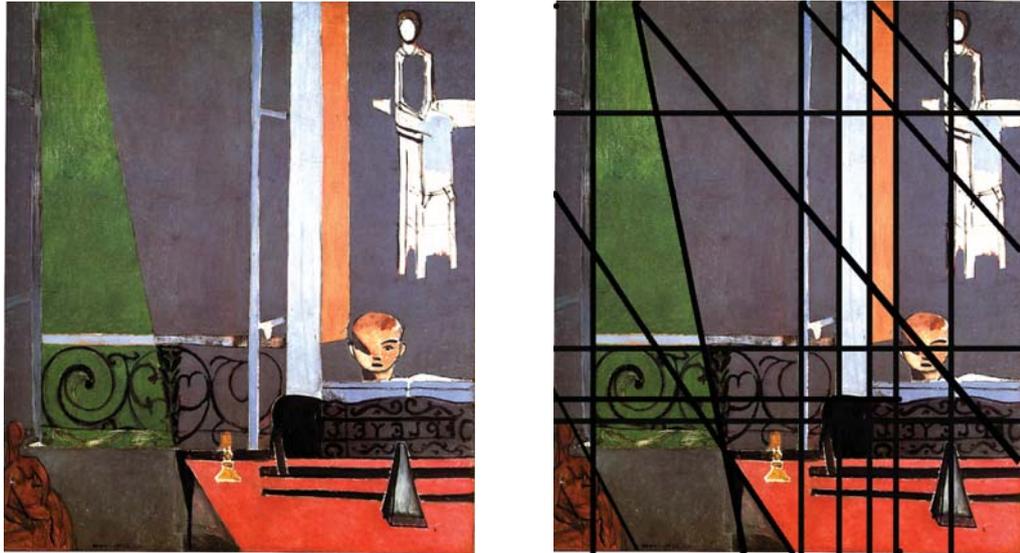


Figure 15 and 16 – "The piano lesson" H. Matisse, oil on canvas, 1916, example of the use of abstract language in painting.

The surface is stark, made up of flat brush-strokes of colour which produce two kinds of contrast: a contrast of simultaneous colours green/grey, pink/grey and a contrast of unsaturated complementary colours (green/pink) which produce calm, freshness and a touch of melancholy. As we can see, the elements which make up the painting can only be counted and described objectively whereas the way they are perceived can only be subjective and must be translated laboriously into words.

Except in the conceptual arts and multi-media, the artist does not usually start by formulating in words what he is going to do using signs, but the contrary. Even if it is sometimes possible after the event to justify associations of signs and contrasts of colours using rules a posteriori one can justify associations of signs and contrasts of colour rules, the rules are not the cause but the effect. "There are no rules to be laid down, otherwise it would be industrial art. How could it be any other way since when the artist has done something good, he has involuntarily surpassed himself and no longer understands what has gone on."<sup>37</sup>

## 5. LANGUAGES AND DIGITAL ART

The development of digital art goes hand in hand with the development of computer science and the multi-media. The use of computers in artistic creation entails specific constraints: orders are transmitted to the machine via language interfaces and behavioral models are used, which means adding a layer of language to the process of artistic creation and raising it to another form of abstraction. The effect of language and abstraction is increased, but this time on the human level, through the conditions in which multi-media works of art are produced, since this often requires pluridisciplinary production teams and conceptualisation phases during which the goal that the system must reach and the means to do so have to be defined.

<sup>37</sup> Henri Matisse *Ecrits et propos sur l'art*, Paris Hermann ed, 1972 .

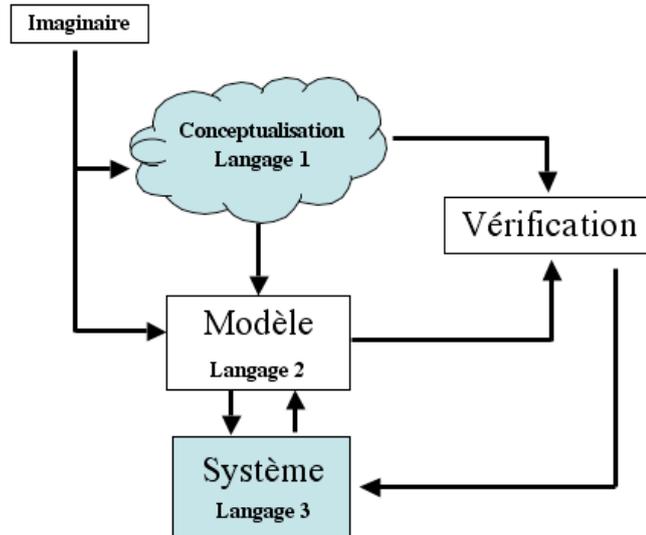


Figure 17 – Operating loop of an information processing system used to create a visual work of art. The artistic relation which underpins the project is explained in the conceptualisation phase (Language 1), translated into visual art language primitives (Language 2) then translated into a programming language (Language 3).

Digital processing uses interfaces and sensors to interconnect images, sound and movements on the same platform. The question of a kind of meta-language that is common to the various forms of artistic expression, visual arts, sound, choreographies is thus raised. Time and space are primitive elements which are common to the different media and constitute the simplest means to organise the way they inter-relate by acting on their structures and their rhythm.

## 6. EXPERIMENTAL PROTOCOL

Kandinsky came up against the difficulty of the huge number of possible combinations offered by language and by the subjectivity of the way in which we perceive works of arts.

Studying the semiology of the visual arts would mean making a systematic study of the interactions of the elements of its language: format, forms, colours, lines, etc. The project *Dancing with machines*<sup>38</sup> should lead to the setting up of an experimental protocol in order better to understand the compositional relationships within a specific artistic language and the correspondence between the different languages.

The device is made up of a multiagent system provided with sensors that can record the performance of an actor-dancer and propose a multi-media translation in real time in the form of sound and visual sequences. The language of the system is based on the traditional primitives of artistic expression and on a supervised learning system which enable it to modify its behavior according to the context, which is made up of the project and of the reaction of the director. The successive learning loops converge towards an agreement which is acceptable to both the director and the dancer within the

<sup>38</sup> <http://www.lami.univ-evry.fr/~hutzler/Projets/MisesEnScenes.htm>.

constraints of the system which defines a multi-media score of the performance.

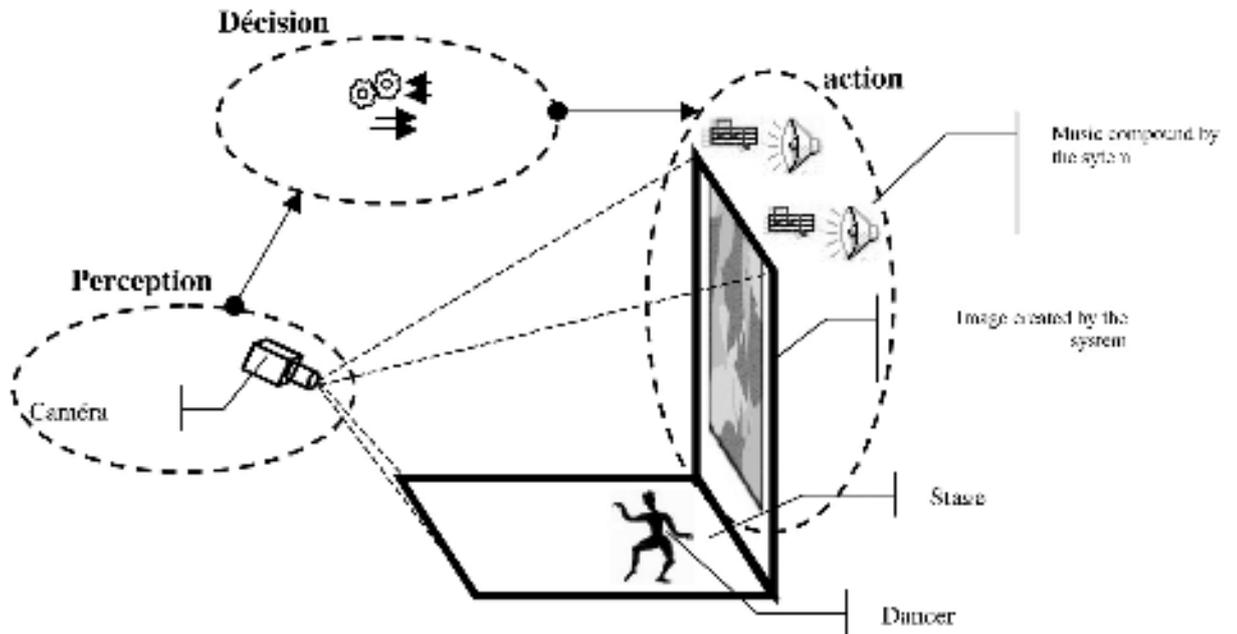


Figure 18 – The autonomous information processing system perceives the movements of the dancer through appropriate sensors, decides on a suitable response and carries it out.

## 7. CONCLUSION

The main function of a work of art is to be used as a support for processes creating relations between levels of consciousness which cannot usually exist. This true for both the artist and the public. The feelings of beauty, of ugliness, such or such emotion are induced effects of this relation but are not the cause. As for the visual arts, whether figurative or not, they are fundamentally abstract and based on primitives of form, colour, structure, rhythm, etc. This abstraction makes it possible for one level of consciousness to penetrate or brake into another one, so to speak. This momentary and, in a way, abnormal break-in validates the artistic quality of the work. The form of the relationship is part of the context and changes with it ; they both re-invent themselves all the time. The artistic capacity of work of art to create relations is not acquired once and for all, and the context in which it operates may change in such a way that the system of signs and references used loses all effectiveness. The examples given in this article come primarily from the Western visual arts but what this teaches us can be generalised to all artistic activities including the cinema and multi-media. A work of art function as a merging agent between a known world and a perceived world. This function is based on abstract means, structures, formats, compositions, rhythms, languages and contrasts and it must take into account the data of the context. Regardless of whether it is a matter of languages, signs, colours, movements or sounds, of whether the author is a person or a group of persons, of whether the system is interactive or not, it is only the practicalities that change, not the stake, that is common to all the arts. An approach addressing the strategic dimension of the artistic process (what opening strategy to

counter what closing strategy?) could usefully be developed for research, artistic creation and teaching, based on the concepts of perception routines and the inhibition/ disinhibition states of the artist and the public.

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