

## Introduction

I am a hands-on artist. As a theorist, I will certainly make mistakes.

Allowances will have to be made for them until our professional theorists, 99 per cent of whom are up in arms over yesterday, set their sights on the future. I pray they will not be held against me. I have endeavoured to ensure that the positive aspects of this modest work might prevail, even though the demands of scholarship will be anchored in a simultaneous regard for the broadest spectrum of lay readers.

The basis for this text is a manuscript that failed to find a publisher from 1924 to 1927.

For its finally obtaining, with little difficulty, the favour of the “Library of Visual Arts Education”, I am grateful to its director, Josef Vydra, and to Professor F. V. Mokrý.

My return to this task following more than 15 years was brought about by my attempt to ascertain the applicability of theory in practice and by my present-day close relations with the world of the applied arts, confirming to me the potential existence of new techniques, also in the world of the applied arts, which I am convinced may offer excellent opportunities for export in years to come.

If I dedicate most of my attention in the following pages to art, it is because I consider art to be the foundation of the world of the applied arts.

If I touch upon Post-Impressionist art with particular emphasis, I do so in the knowledge that its process of development is complete and that artistic kinetics will only be able to use those of its expressive means that can be carried over to new technologies such as film, fireworks, fountains, colour organs, kinetic light sculptures, etc.

## I. A chapter of questions

**The struggle for a new art. – New techniques. – Photography. – Film. – Questions.**

In the last decades, the evolution of the visual arts has undergone a great upheaval in the course of an extraordinary boom, especially if we consider the number of new forms that have emerged as a result of this boom. This is indispensable, as the large number of these new forms characterised the developments that occurred between 1925 and 1935.

Visual art, much like any other art, much like science, politics, crafts, and other fields of human activity, is just a component of life in a general sense and can also, like those other fields, be pursued well or badly, merely satisfying daily needs or searching for new paths. Searching like this is a good thing, even if not all that is “invented” can be used immediately in practice.

The book has been written as a contribution to the struggle for new art forms.

The final form of a work of art arises out of:

1. the relationship between the artist and the events of life unfolding all around as manifested in a given period;
2. expressive capabilities;
3. and, last but not least, the techniques used, and possibly also the production process, particularly in the decorative arts.

Art, like any other field of human endeavour, can be a forerunner of life processes or their continuation within the sphere of its functional capabilities.

Functional capabilities depend on the quality of a work only when assessing the maturity of the “recipient” and, again, on the technique.

Although technology does not distinguish between art and other fields of work – for both stonemasons in a quarry and artists can use a chisel – it does bestow essential features on various art forms and individual works.

Thus, a newly invented technology can mean both a new a field of work and a new kind of art.

**A new technology** can also close an epoch for an art form or prevent the spread of new art that uses old techniques in certain areas if it brings more economical working procedures or improved expressive capabilities.

Photography, as a new technology, managed to close the era of miniature painting. Film, as a consummate imitator of motion, almost prevented the venerable art of painting from noticing any of the new types of movement that came after the invention of film – for example, the movements of cars, motorboats, aircraft, etc.

The technologies of art have exerted this type of influence on art over the centuries, but only at long intervals, and they have never brought about upheavals as revolutionary as those of today.

That is only natural, too.

Technology has never been so superb, never so assertive.

What was the mosaic, or the descent of the fresco from its wall and onto a portable canvas against the advent of the cinematic moving picture on a screen?

Here we stand, then, before technology and its significance in art.

Nor is it possible today to deny the significance of image printing, film, or photography in art as new techniques, for in a sense that would also mean rejecting new forms of folk art – such as photography today. Similarly, it is impossible to deny the significance of light advertising, for example, as a new element of shape and light in the space of the street.

The same is true of the use of light on stage.

Among all the new technologies, the most characteristic and revolutionary are those of kinetic light. They will also take up the most space in this book.

Robbed of the magic of its broad base, the pyramid, the guardian of the shores of Egypt and the eternity of the silent gods carved into the rock, and of empires comprising many dynasties, would collapse like a scientific paragraph on the static nature of artistic expression in the twentieth century, before the neon-lit tobacconist's sign powered by thermal alternating current. Such signs will probably be described one day on the first pages of the shorthand

notes of art history students, along with an account of the technological principle involved and functional schematic drawings, such as the ground plans and sectional views of the graves of the pharaohs one might see today.

Claims regarding the static nature of art are mistaken; history will pause over them with incomprehension regarding the inertia of tradition, especially when it considers the dates when the first rocket-propelled fireworks were lit before crowds of people, as enraptured by the sensational moving lights as the faithful before the altars of miraculous Madonnas.

Objections to kinetics will probably be thought of in the same way one day.

In order to rebut them one by one, they will be presented first in the form of questions:

1. Is kinetics significant in the visual arts?
2. Does it influence art?
3. Can emotions be aroused by kinetic phenomena?
4. Will there be sufficient resources for kinetic projects?
5. Will kinetic phenomena be comprehensible?
6. Is kinetic art meaningful for the broader public as well?

In light of the last question, one might ask in addition whether kinetics is important for the development of the applied arts and hence for the financing of applied arts facilities and for the social welfare of a whole range of artists and employees.

## II. From Impressionism to Kineticism

**Technical foundations of kinetic art.** – The formal foundations of kinetic art lie in **Post-Impressionist art.** – **Real rhythm.** – The graphic notation of rhythmic, artistic processes. – **A series of consecutive images form a whole.** – **Harmony and melody.** – **Is a visual kinetic phenomenon art?** – **Eleven kinetic art techniques.**

If we were discussing film, the most famous form of kinetic art, we would certainly be able to answer all the above questions right at this moment. However, the evidence would consist of techniques

that are known too one-dimensionally from what we see on cinema screens on a daily basis. In order to understand the answers more easily, we also need to know more about the evolution of kinetic art in its current form. The technical foundations of kinetic art must be sought in apparatuses, machines, or instruments. So that the word “apparatus” might not inspire horror by bringing to mind mechanisms, let us quickly conjure up words – beside “visual arts” – such as “piano”, “organ”, and any other musical instrument, which, though inert mechanisms, do not seem at all dangerous to us.

It will be the task of the future to find out exactly what significance technological inventions have had for kinetic art, to what extent inventions have been influenced by the wishes of artists wanting an apparatus to fulfil their artistic visions, and, by contrast, to what extent inventions have driven the evolution of art toward kineticism.

The truth lies probably somewhere in the middle. We do, however, have the case of the photographic camera doing away with the miniature as a purely painterly form of art production.

However, we cannot assert that the new, consummate reality of photographic and film images caused a shift away from reality. Impressionist art, for example, appeared during the dramatic surge of photography and film. Conversely, it is certain that the history of Post-Impressionist art prepared a solid foundation for kinetic art. Therefore, before we proceed to describe the significance of kinetics, we will attempt a considered description of the history of the visual arts beginning with Impressionism.

Until the Impressionist period, impressions had slowly been freeing themselves from strict forms. Then, almost everything was wagered on a single card. Form was accompanied by coloured patches, inverting the state of things in painting until then, since colour had more or less been accompanied by exact forms. The colour in an impression is capable, regardless of form (understood in the old sense of the word), of expressing an artist’s wish. The harmonisation of colour began to be understood within a much broader framework. The gamut of colour was extended in practice to an infinite number of tone-timbres – though this occurred, ironically, in an attempt to break colours down into their fundamental tones.

**“Musical” images.** The gardens of restaurants visited by day-trippers, washed in the shade of trees with thousands of sun-spots quivering on the fluttering table covers, sing the accompaniment to a Sunday afternoon song. The rustle of leaves sends wavelets through the blue sky, traced imperceptibly on a horizon of rippling water, in a sole **chord** of multicoloured melodies with the silk of ladies in veiled dreams, parasol-coloured rays of sun spreading over ringlets of hair and lace on Sunday-clean bodices.

In the galleries of impressions, the song of the French Riviera sun alternates with the monotonous fog of the lead-grey sea of Cherbourg harbour and attempts to capture in pastel dust the momentary gestures of weeping or smiling ballerinas dancing in waves of gauze and stage lights.

Here we have the “musicalisation” not only of colour but also of form.

Cubist paintings possess no other relation to the reality of the objects depicted in them than those which a piece of sonic kinetism – music – has to its title, which is usually also its subject.

**They are not pictures of a “Woman with a Guitar”, a “Clarinet”, a “Glass and Cards”, etc. They are songs – poems, if you will – “about” a woman with a guitar, “about” a clarinet, etc.**

Although one might find the attempts, mentioned above, to synthesise both colour and form in the last stages of Cubism, the process of disintegration continues in Constructivism, too, which deliberately abandons the object that Cubism has only relaxed its hold of. Constructivism is no longer concerned with pictures “about” guitars, but simply with arrangements of form and colour numbered “1”, “2”, etc., though even here reality often occurs in full photographic nakedness. The pictures are already untitled. The delimitation of both surfaces and space is “constructed”.

The further simplification – now under the palpable influence of machines – of artistic elements to geometric shapes paved the way for the incursion of new techniques into art, techniques unthinkable without machines or tools.

Many of the new techniques (such as photography or image printing) make it possible to represent reality to perfection and allow images to retain their original static quality. Some of the new techniques, however, bring something quite novel to art: real movement and time measurement – rhythm. These were elements artists had never worked with before and knew, as Hirschfeld once said, merely as illusions.

The first impression made by the previous paragraph on the uninitiated can surely be summed up with words denying that real movement, time measurement, and real temporal rhythm are elements of art.

Such a misunderstanding might jeopardise our attempt to give an account of kinetic art, so I will avail myself quickly of an example.

Let us imagine a calmly lit arrow as an architectural element – say, of an artistically conceived façade. This arrow will surely not cease to be a part of the building's artistic design if it starts to switch on and off rhythmically.

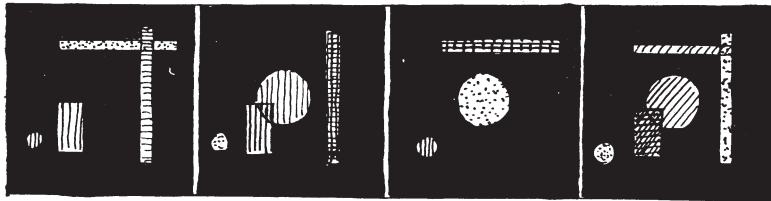
The intermittence will constitute a new formal element in the artistic design of the façade as a whole.

Let us forget the arrow and replace it with a light picture. Let us try to think of this picture as a static chord, as something that in music would be analogous to the sounds of factory whistles all blowing at once at a set time, or as a chord conjured up by a single hand on an organ keyboard. The old techniques of painting did not allow for any more than the effects of an unchanging “chord” consisting of colour and form.

New techniques are different. Individual parts of a picture can be replaced with other elements of form and colour, thereby constituting a different, new chord comprising patches of colour and form. If we continue to do so, we come not only to a series of images appearing in succession but to a new structure with an analogue in music, which assembles chords into the whole we call musical “movements”, which are then assembled into entire compositions.

For an example, we need not venture as far as Cubism. Let us recall Josef Šíma's period of simple colour harmonies from 1924 to 1925, or the work of František Kupka, which encompasses real

POINT:



YELLOW = 1 = RED = 3 = BLUE = 5 = WHITE = 7 =   
 ORANGE = 2 = PURPLE = 4 = GREEN = 6 =

Fig. 1.

chords of colour and form. Kupka studies harmony meticulously and even refers to compositions of cold or warm colours and forms, which is certainly not far from the type of naming (minor and major chords) found in music. His paintings are ready-made musical themes, ready to be “played”. Technology, machines, and tools in



their most real existence provided the opportunity to regroup the functional parts of an image – that is, patches, lines, dots, their shrinking, enlarging, darkening, etc. – in time.

Technology today has given art what music has had for a disproportionately longer time, and it is transforming what were once static visual arts into kinetic art – or at least expanding their creative base with new horizons.

Let us move on to the simplest example demonstrable in a book. By attempting to document kinetic processes graphically, we arrive at four different and interconnected pictures. As a starting point, let us take a surface containing a circle, a rectangle, a horizontal line, a vertical line, and a “point”.

In order to be able to graphically represent any changes we might envision, we shall create a system of graphical musical notation.

Let us use sheet music notation merely to simplify our task. (This should not, however, provide a pretext for believing that we are actually dealing with music in any way.) (Fig. 1)

It will be a sort of score: each staff will be devoted to an element of the picture. Above the staff will be a label establishing the element it is devoted to. Each line of a staff will correspond to one colour. White will be indicated on a separate line. Increased or reduced brightness will be indicated as in a musical score, with the terms “piano” and “forte”, abbreviated as “P”, “PP”, “PPP”, “F”, “FF”, etc. The appearance of an element in a picture will be indicated by a note.\*

---

\*) The scale used might also be a quarter tone scale, so that between the fundamental tones – for example, between red and yellow – there will not only be an orange half-tone, but also an orange-red quarter tone between orange and red. However, since we can only denote 12 tones and a white one using our lines, we can expand our scale by further dividing the quarter tone by half, so that we get a 24-tone scale and the colour white. (Black is represented by a darkening.) We can also use markings well known from musical notation. A sharp “#” will indicate that the tone is raised by one eighth of a tone and a “b” will mean that the colour tone is lowered by one eighth. “Raising” means approaching the colours of the lines above and “lowering” means approaching the colours of the lines below. We obtain another combination – which will give us a new tone – when we illuminate the same formal element with two colours (thereby producing not merely a harmony comprising two tones but a completely new tone.