

Visual Arts and Empirical Aesthetics Designing the Technical Aspects of Art

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Abstract

At this time—the Bauhaus centenary celebration—there are many discussions about this school’s legacy. The main discussions covered in this essay address the reunification of fine and applied arts, focusing on technical aspects that make it possible. This essay is organized in a moment (1919–2019) when the arts have achieved importance in industrial and economic development, as well as for pleasure and function. The configuration (*Gestaltung*) holds a balance between aesthetic and technical purposes—that conditions to the social needs. In this approach, the old notions of the arts were considered irreversible, as they gradually lose meaning in the new reality of practices and the creative activities of everyday urban life by humans and non-humans through design, contributing to the development of human perception, cognition, and empirical aesthetics. Consequently, the new demands of arts in society are analyzed as they relate to the very structure of science and technology. Mainly, this essay presents the fundamentals of knowledge for understanding design as art—and vice versa—based on technical aspects. The theme of art and technology is discussed as an essential faculty that enables humanity to materialize things—that is, the technical ability—which had significance for both intellectual and empirical activities in the origins of Western knowledge. Following this reasoning, this essay aims to approach art and design by recognizing that today, such creative processes—either subjective or objective—are technical, and these effects are part of an empirical aesthetics in continuous evolution. Equally essential is an understanding of the similarities between art and design. Therefore, as part of the cultural and social context, it is necessary to consider the specialization of fields of knowledge. It is thus shown that neither art nor design is merely disciplines or specializations in the field of humanities. However, above all, both are part of scientific progress and equally indispensable to the creative ability of the human mind.

The Theme of Art and Technology

Philosophy and science, religion or myth—all represent forms of thought that are used to seek meaning in the world from its origins—in the Western world, from the mythical or symbolic form to rationality as a means of understanding—defining the ways of thinking, each with its history and meaning since ancient Greece. However, at some point in the history of humankind, the origin of thought is the same as the principle of the organization of ideas about the world and its existence. Humanity has been guided by rational or logical thought, which is concerned with science and philosophy, and by symbolic, artistic, or mythical thought, which is concerned with art or religion. Two aspects are essential for transformations in the world: technique—contained within it is the notion of art—and science. Such transformations are consequences of human achievements in search of conquest and the domination of nature. Over time, with discoveries, beliefs, will, techniques, and inventions among so many more of their capabilities, humans have developed their intelligence, forming civilizations and cultures.

According to a synthesis by Ursula Meyer (2006), we can consider the technical aspect, from a philosophical perspective as the medium that allows humanity the capacity for imagination and representation. Individuals are conditioned to employ pragmatic forms to achieve their goals. Hence, in this approach, the origin of the term technology should be analyzed. This definition would have had an original technical meaning in ancient Greece. At the time, the term *technè* contained, as a whole, a broader definition than it does today. In ancient Greece, it was not only used for machines or for the production of objects. *Technè*, formerly, did not differentiate between activities such as those of manual, creative, and artistic work or military strategies. Thus, the use of *technè* expressed as much meaning for technical actions as for mental ones, such as rhetoric, poetry, and arithmetic. Today, the concept of the “technical” generates the idea of a procedure of technological knowledge—involving or concerned with applied and industrial sciences. As a phenomenon, technology is also the subject of philosophy and study by sociology and the arts. Additionally, among several definitions of the concept of the technical, the definition in English—technology—is known as the science of production and its processes. In Latin, the word *technologia* included arts education, systems, and the methods of Artes Liberales (the seven liberal arts: grammar, astronomy, music, rhetoric, dialectic, arithmetic, and geometry). These were the most important disciplines in Antiquity and the Middle Ages.

Its meaning later changed during the Age of Enlightenment; technology was understood as the science of knowledge, which is today's accepted meaning. Technique has been the major ally of knowledge and science in various fields of human activity throughout history, and it is the main purpose of the analysis of changes in society. The development of mechanization and industrialization, on the one hand, and the progress of science on the other has led to a complete transformation of the universe. Moreover, technique is also an object for philosophy, the subject of study for sociology, and embedded in subareas of study. In turn, unable to be contained in its evolution, technological innovation by itself will always be improved or modified by humans. Then, it will become valueless and give rise to the other innovations, so that whenever it is, an infinite and indefinite purpose to be achieved. Thus, the solutions to many artistic projects seek, through creativity and empirical aesthetics, a future time or redemption of the past to justify the development and importance to society.

Consequently, only by its result would it be perceived as possible adequacy or even a technical adjustment to a new logic of the present moment. Let us understand that the meaning or definition of time is quite significant. Therefore, if we seek an explanation of time in terms of physics or the natural sciences for this analysis, we understand that time is: the result of change; the transition from one situation to another; and originating in entropy.¹ As for the history and evolution of art, due to the techniques that made new forms possible, it is perceived that its "contents"—in the Hegelian sense—remain much longer and, even without change, over time compared human achievements, of course, by their technical development. It is an evolution that underwent ruptures of values, successions of solutions, transforming many habits and behaviors, but still resembling the origins—often the first intrinsic realizations of human nature—in its instincts.

For example, we can see this effect by comparing the Venus of Willendorf² to mobile phones. In this comparison was a necessity for human locomotion. The nomads in the Paleolithic period sculpted women models in palm-sized dimensions, which facilitated the transport of the object; for the paleolithic man—the nomad—Venus of Willendorf had a meaning, as well as many other little women models. Today, if we compare the same conditions, replacing the paleolithic nomad with the contemporary individual and his/her need for mobility and the Venus of Willendorf with the mobile phone, we realize that both individuals are conditioned to hold their important objects to attend to the values and objectives proper to a context and epoch.

Despite the evolution of technique and the specific functions of each of these objects, we perceive similarities in human behavior according to human instincts and constant needs. Art always depends on technique, so art and technique would be, by appearances and in their formal characteristics, responsible—regardless of content—for new modes of representation and trends. Throughout history, even if we could perceive the quality of a drawing or the classic paintings in terms of mastery of technique and the principles of imitation, we can also confirm that ruptures in the artistic universe also used the technique as a primary means of shaping and changing values established since antiquity.

In principle, for a reflection on art, we consider the period that revolutionized the meaning of art history—the Renaissance. This period is important for understanding the beginning of the sense of the autonomy of the artist and art. However, the autonomy of art only finds a space within the rupture of academic canons, with modern times and vanguards. Nevertheless, during the 16th century, the first art academies in Europe were emerging, and the canons of the academies of fine arts were being established. The primary reference was the Royal Academies of Art in France and England.

It was when the aesthetic discipline arose in the 18th century that art became not only the object of study of philosophers, but also of artists and the public who attended the first salons of painting and sculpture. They knew about the canons of the artistic universe through the notions, concepts, and categories that were offered and according to which artistic achievements were oriented. The reflection of aesthetics is sensibility (perception): intuition, imagination, sensuality, and passion, which can also offer access to knowledge as a cognitive faculty, thereby enabling the harmony between sensitivity and reason. But even so, reason prevails, being primordial for the mastery of the senses (perception) for a pure reason, in the Kantian sense. It also becomes necessary for an aesthetic reflection, separated from the sense of reason, which is associated with technical and scientific progress.

Even if sensitivity is always in opposition to rationality, it is considered the domain of the linearity of history by technological evolution. In my article, *Poïésis: entre la raison et la sensibilité. Les nouveaux médiums de l'art* (*Poïésis: between reason and sensitivity. The new mediums of art*), published by the French Journal for Media Research (2017), I dealt with the participation of the artist in his/her sensible representations regarding approaching of reason through new mediums of art. The value of the arts as an expression of human autonomy in the history of art was of significant importance in modernity. However, it is in the Renaissance—precisely in the period of the Cinquecento, the 16th century—that human experience and

reason positioned itself in the world. This position involved a long process, from the low Middle Ages to the Trecento, the 14th century, when the human next to the divine world—in the Platonic conception (Neoplatonism)—first acquires greater dominion of the human spirit. Later, by approaching a priori knowledge of the general structure of the sensible world in the conception of Aristotle, artists and artisans turned to the characteristics of the human values of the Renaissance. This process was decisive for the recognition of aesthetic autonomy in its modern sense in the 18th and early 19th centuries. However, not only during the Renaissance but also in the Middle Ages, the relationship between the works of the Greek philosophers of the fifth and sixth centuries BC, Plato and Aristotle, was a reference for philosophical reflections and science.

Moreover, it was necessary to wait for the Cinquecento in Western culture so that the concept of artistic creation could be conceived and accepted. It was a remarkable phenomenon because reflection on the idea of artistic creation and acceptance of human actions as creators of works and values was revealed in contradiction to religious philosophy. Let us remember that, until then, the power of creation belonged to an instance of divine dominion only, not to humans. Art remained a means by which all the senses were found; the human was still a creature, and God remained the Creator. However, the values of the Middle Ages coexisted with the contradictory and antagonistic aspects of human activity in the Renaissance, according to works of strong Neoplatonic influence and others focused on Aristotelian questions. Be they intellectual or material, these aspects were represented throughout the transformation, between the 14th and 16th centuries, divided by the art historians in Trecento, Quattrocento, and Cinquecento. However, for aesthetic reflection, a chronology of the theories or doctrines of art is not essential. There is no sense of evolution in aesthetics. The arts that are an indispensable part, and the focus of aesthetic reflections, can be analyzed and evaluated timelessly. Even today, one can apply a term—for example, "Platonic aesthetics"—to the doctrine of beauty, which is linked closely to Plato's theory of ideas regarding the considerations, in terms of which he describes the essence of beauty and the definition of the concept of imitation.

At the beginning of the Renaissance, the power of creation was sought without confrontation with its divine conception. This power of creation as a notion that knowledge does not arise from anything, but from the knowledge acquired by science, arose with Leon Battista Alberti (1404–1472), a painter and sculptor, musician and architect, who developed perspective as a norm in the Renaissance in agreement with the painters of the Quattrocento.

Alberti insisted on mathematics and showed the need for geometry. Both pre-Socratic knowledge, whether from the Pythagorean school or Tales, and reference to the works of Plato and Aristotle enabled humanism to triumph over reason and sensibility in the Renaissance. Humanism became the measure of the creative act for an artist, the interpreter of nature, according to the formula of Leonardo Da Vinci.³ The Vitruvian Man (*L'Uomo Vitruviano*) is a work from 1490 that was based on an older work of architecture by the famous Vitruvius. It mentions the perfect divine proportions; therefore, this man would be the human ideal. The whole work has dimensions based on the number 'phi' (1.618) that the Greeks spread.

However, during this period, there was still some time before the artist could express his/her subjectivity, if we refer to a human as a subject in the modern conception. In the Cinquecento, the talented artist was able to be recognized as a genius, even though he/she was considered by religion as being endowed with a divine gift; he/she performed his/her art through *mimesis* of the encounter with beautiful nature. With this subject of genius, the object of discussions between intellectual artists, humanists, and theologians, it was questioned who would be a creator. The convincing answer came from Da Vinci in claiming to be the artist. The artist teaches us to see the world: "the painter does not paint what he sees, he paints what he thinks, and because he paints what he thinks he also sees what he thinks." This statement resembles a well-known German saying that arose from Kant's *Critique of Practical Reason* (1788), in which he reflects on the balance between reason and feeling: "thoughts without content are empty, visions without concepts are blind" ("*Gedanken ohne Inhalt sind leer, Anschauungen ohne Begriffe sind blind*"). Thus, from the Renaissance to modern day, an issue still exists in the arts: Where does the force that leads to creation, in the sense of innovation, come from? Is it from reason or from feeling? In the Renaissance, the binomial reason and sensitivity were not in question.

Beauty as rational convenience in what concerns harmony, that is, scientific knowledge, is analytical knowledge. It means that the imagination, intuition, and emotion could be considered creative faculties or able to idealize beauty, according to Kant and Hegel. Thus, between reason and sensibility, imitation was the aesthetic principle. As an artistic motif, the object of the arts was nature, the human, and God. Mathematics, geometry, and arithmetic in the Quattrocento were the means of applying this aesthetic principle. Leonardo and Alberti were painters and sculptors who favored applied arts as the status of liberal arts, rather than thinking of them as mechanical arts any longer, as the leading theory of this period by Giorgio Vasari⁴ shows us in *The Lives of the Most Excellent Painters*,

Sculptors, and Architects. However, it was not until the end of the 15th century that the transition from a traditional mode of production to a capitalist mode of production arose. This change decisively influenced the artist. The progressive detachment of the painters and sculptors of corporations and the feudal system was significant. However, this detachment occurred without copying nature, but rather interpreting it in the sense of *mimesis*, a principle of Aristotle's conception, based on the work of *Poetics*, which remained in force until the early avant-garde of the 19th century. In short, many factors have influenced this quest for the autonomy for art. The most important were the recognition of the artist as creator and the relationship between reason and sensibility in the intellectual artists, which allowed them to ascend to beauty as a feeling of freedom.

Creation and Technological Extensions

In aesthetics, the *poiétique* (in French) is the object of study of all that one would like to produce through technological extension, even the most advanced. It always tries to verify the use and traces of the creation of achievements, which is often obscure compared to the production, the configurations, and the elaborations—in short, to the mechanical and artistic works.

Paul Valéry coined the word *poiétique* in 1937 based on the traditional poetic feeling—not only in the development of the poem but in the ability of a force by means of which everything is concentrated within the being and expresses itself in the world. In this sense, referring to *poiésis* (the Greek word for the production of works of art) is ontological and involves metaphysics. We first consider the reflection of artistic creation, then the means leading to conception. In this production space, artists and artisans are technicians and experts in the manufacture of objects. These objects are not necessarily useful or even objectifying forms of action, such as poetry or tragedy, requiring *catharsis* and mimetic syntheses—fictions from which urban life takes its pleasure.

In contemporary art, many artworks give great importance to the objects of our new environments, where physical and digital objects co-exist and interact in real time. For example, consider the historical works of digital and interactive art, the *Poietic Generator* by Olivier Auber, from 1986.⁵ At this stage, the aesthetic experience through technology platforms available from design, as well as new platforms developed by empirical aesthetics, have been deeply researched. Recently, it was highlighted by the Research Group Moving Image Science in Kiel

and Münster, Germany. This research group has been studying modern media theory, including technology and the media configuration concerning "multimodality and intermediality." Also, it includes "phenomenological and semiotic approaches, art history, aesthetics, presence research, game studies, theories of perception and psychology and other research areas related to the moving image." One significant work is *Image Transformation: The Hyperaisthesis of Digital Images*: "that multimodal image media technologies are enhancing the processes of sensory media perception" by Lars Christian. Grabbe (2019).⁶

Now, if we compare the technology of ancient times with that of the present day, we find that all our senses have been adapted to another technology; perception has also changed. However, in the measuring of evolution and technical progress, the individual has always sought means of achievement through imitation in the arts, where poetic *mimesis* is the predominant technique. To discern what is represented or not, we must understand the ability to evaluate the degree of image production in art and technology. The project development process, the design, and configuration of the relationship between the object and the product, the environment, and the user are the primary means of technological innovation. It is in this way that we can remember some of the accomplishments of the members of Bauhaus and, afterwards, by other designers.

There are good quotes on exploration methodologies for design projects. They relate more to the aesthetic and technical design; Bernhard Bürdek's work (2015) is a reference. What matters is the logic of technological innovation and creativity as a social representation when configured with the user in mind—for example, new software, a toy, or some other object of the production line or recently released. The first is the new design of great social importance. It determines not only the difference between the models and the design itself but, above all, the difference in social class. The subtleties of style, the redefinition of the functions versus current technologies, which fit a concept of innovation—all this and other elements involve the work of the designer.

Design is also a game of power that necessarily encompasses the difference between social classes. At that moment, the creative designer's repertoire is confronted with its professional survival, and it is the internal logic of capitalism—the profit motive. Apart from questions of political and ideological background, as part of the capitalist system, even unconditionally, there is the probability that this professional, by his/her creative power, conceives of serial objects without the redundancy of its characters, its aesthetics, and even the quality to be differentiated. Therefore, the strength of the stratification of consumption and the

internal logic of exchange relationships weighs. Similarly, there is the weight of purchasing power that distinguishes classes in terms of the balance of consumption. Aesthetic innovation and the renewal process directly involve creation but also the significant turnover of consumption. Technological innovations and the desire for new objects encourage consumers to integrate further into the logic of mass society, in search of the visibility of others. Thus, the production and mass reproduction industry require a certain audacity of the creator in his/her creative process.

All social discourse is in a zone of deterrence articulated by the ideologies of visibility, transparency, versatility, and consensus to expose objects in a relationship that transforms cultural goods into consumer goods. Art for the object or the object for art is revealed in spaces without any aesthetic sense. However, something is expected, which can be a new look or any other sense of innovation, with new representations of the old ways.

Knowledge and the Art of Design

There are many similarities in the process of creation. In the development and methods of each art and field of knowledge, the following can be distinguished: while artists seek to express their ideas, opinions, and thoughts through their creativity, in general, the subjective aspects of artists are expressed in their works of art and are consequently interpreted by people. These interpretations vary according to the context, culture, knowledge, and experience of the viewer. Meanwhile, the designer seeks the functionality of his/her creation objectively so that there is homogeneous receptivity in his/her understanding. In this way, the message aims to be understood by all and to establish communication. It is the function of the design. However, would not art also be produced with objectives similar to those of design? Does art not provide communication? Understanding by means of communication establishes, above all, a relationship between sender and receiver. In this way, I think art also provides an interface to establish a communication process.

On the one hand, there are many examples in the universe of art that exhibit the same characteristics as designs. However, would it not be too naive to think that the artist produces only according to inspiration to express his/her ideas, even without rules? And fine arts, with its canons? Indeed, there are rules and also purposes. This question is, of course, related to our ambitions in a market society and in many culturally particular segments. Therefore, regardless of whether the creator is an artist or designer, his/her achievements depend on receptivity, which is to be both understood and interpreted in a way that can meet the purpose of its creator. In general, to establish an exchange of values, seeking almost always the reward and the profit, whether projecting solutions or questioning, both find the same goal of resolving the problems of our society.

Other characteristics relate to the fact that the design is focused on industrial production, marketing, and reproduction. However, since the market system has been developed, when has art ceased to have these same concerns? However, regardless of ideologies, what prevails is progress and the will to create new techniques, resources, and methods, the novelty as a solution for many situations that are still unanswered. However, if the rules are not good enough, break them and make them better! Hence, instead of discussing whether design is art, or the values of each feature in isolation, why not be open to new experiences for the sake of creativity and knowledge?

Art and design have their differences, but nothing prevents design from being art—and vice versa. In the visual arts, this idea results in both being part of the same work without distinction. On the one hand, a creation can include the emotional aspects or opinions of its creator, as interpreted by different people, as well as having the meaning of its message assimilated, motivating the viewer in its purpose. On the other hand, specifically in a promotional proposal, the message should be clear and focused on its effects—the art of design. Conversely, if the artist only expresses his/her feelings about something in the world—whether it is a matter of questioning his/her existence or culture, politics, economics, and the like—then there remains a potential for the work interpretation to be exposed as art—designing the art, if it is received and interpreted as such by the public. However, in my essay in the previous edition of Art Style Magazine (March 2019)—*What Matters in Contemporary Art?*—I clarify that the main question according to Goodman (1978) is not whether it is art, but another: *When is art?*

This question appeared in Goodman's book, *Ways of Worldmaking* (1978).⁷ However, both questions generally lead to aesthetic judgment, not only to the meaning of the concept of beauty but to evaluating whether it is design or art, whether it is art or non-art, and whether it is good design or not. However, what governs aesthetic judgment is criticism, in the sense of evaluating, analyzing, and describing at the limit of our understanding, through certain categories of quantity, quality, relation, possibility, and existence, the necessity of forming an opinion. The central question is whether there is a measure for beauty and, considering that a particular image of beauty is similar to all and that we are accustomed to certain appearances, we could also, despite the individual aesthetic experience, question whether everyone has the same taste. Based on these aspects, design can be evaluated by the formation of an objective—not subjective—opinion, only in its functional elements based on the criteria that give its aim purpose. Meanwhile, with art, the interpretation based on the taste remains. It is not about the ability to judge some preference but to enable the formation of correct and appropriate judgments.

Of course, subjective aspects must be considered. For example, the art critic says that Rembrandt's painting is beautiful. No universal concept is attained, for that is a thoroughly personal characteristic of the art critic. It is not a judgment, but his or her preference. However, had the art critic said that Rembrandt's painting is known to be beautiful, he/she implicitly supposes that everyone recognizes Rembrandt's painting is a beautiful painting. Thus, we attain an *a priori* reflection of the action of the subject, for it is the critic who makes a judgment regarding the beauty of painting. Beauty is not contained in the object (painting), it is the art critic who qualifies it as a beautiful painting. In this sense, it is the subject who determines the purpose of things. Aesthetic judgment (taste) is reflexive and can be universal. However, it is not taste connected with sense, on the basis of which a preference is freely expressed or not according to the condition of whether or not there is pleasure, for this condition will always be subjective. It is taste associated with a reflection that can determine aesthetic judgment. An aesthetic common sense is assumed in each person, to the effect that one or certain people have the same sense of what they feel. Thus, the one who expresses his/her taste gains the acceptance of others, the consent of their personal purpose, and their agreement. In this way, it is considered that feeling is universally communicable without the mediation of concepts. The search for satisfaction with beauty as its purpose, which is the feeling of pleasure for something, allowing the other people's joy to be identical is behind this phenomenon.

At the same time, if beauty satisfies more than one person, the moment in which one feels the same means that the communication of that satisfaction, which feels or represents the feeling of beauty to another person, may result in a universal sense. This concept also applies, of course, to taste for the ugly—that is, of the non-compliant. Nothing more than a process of communication, which the hypothesis of common sense prevails, is required for a relation of the emission and reception of aesthetic values.

In short, relating art and design can be simple or complex, yet there are two things they have in common that are universal: beauty and its reverse. Thus, from the beginning of the development of Western thought, of the importance of perfecting some fields that employ specializations, we can still consider the critiques of Immanuel Kant as being current. Hence, regarding Kant's (1790) clarification of esthetic judgment, taste is not a judgment about beautiful things, but rather concerns the relationship between the representation of things and our faculties, through understanding and imagination. No rules and no goal mean that taste is a subjective feeling. It is possible only as a hypothesis of universal communication according to those who have aesthetic common sense.

Science and Technology in Kandinsky's Work

One of the most important members of the Bauhaus, laying the new foundation for the arts, was Wassily Kandinsky. In the early 1920s, he joined the Bauhaus masters, and during that time, his teaching and research came to be characterized by abstract compositions comprised of geometric shapes, configurations with an emphasis on form and color. The initial aesthetic experience of this phase was limited to just one form, the circle, in an array of colors and compositions in the space of the screen, as can be seen (fig.1) in the work *Several Circles* (1926).



Figure 1. Wassily Kandinsky, *Several Circles*, 1926 [Geometric abstraction].
The Solomon R. Guggenheim Museum, New York. Photo by Maia Valenzuela.
September 20, 2009. Licensed under CC BY 2.0.

Kandinsky, in his lessons on analytical design, called for a rational interaction of aesthetic design principles. The primary method focused on perception and configuration. Kandinsky's teachings were a core subject in the Bauhaus design course, with experimental compositions and the theory of color at both the beginning and the end of a semester linking art, architecture, and technology.

The cultural and scientific context at the beginning of the 20th century was responding not only to technical progress but to the evolution of science. At that time, Kandinsky's abstract art offered a new form of painting; importantly, too, society as a whole was being transformed, with the leading thinkers of the humanities reflecting on art in this period. Science and technology are clearly present in Kandinsky's work, which maintains a continuous dialog on the relationship between art and the contemporary progress of science and technology—especially the most concurrent, and much discussed, discoveries in quantum physics and even theories of teleportation.

These were essential themes in the last "documenta (13)"—international contemporary art exhibition—in Kassel, Germany, in 2012. A theme of particular importance in Kandinsky is the presence of spirituality within a painting and an artistic accomplishment. In the early 20th century, when Albert Einstein's new theories revolutionized the world, Kandinsky's abstractionism—the immediate perception conveyed in composition—revealed the "interior" of the artist and their relationship with the universe in a concrete way. Thus, it characterized metaphysical expression, which remains current today.

Empirical Aesthetics: Visual Arts and Science

Selected Artworks from László Moholy-Nagy to Paul Friedlander in Focus

The Bauhaus leaves its legacy. In addition to all of Kandinsky's importance in this regard, it highlighted the empirical studies of László Moholy-Nagy on photography and an aesthetic experience that outlined the concepts of the New Vision and New Objectivity. Moholy-Nagy explored photography in all its technical possibilities for mastering light in frames using ordinary, everyday objects. Although the technique was not new, the innovative aspect was the use of such a technique for formal results through light in abstract compositions (figs. 2-3).



Figure 2. László Moholy-Nagy, Fotogramm, 1923- 1925. The Moholy-Nagy Foundation. United States of America. Public Domain Dedication (CC0)

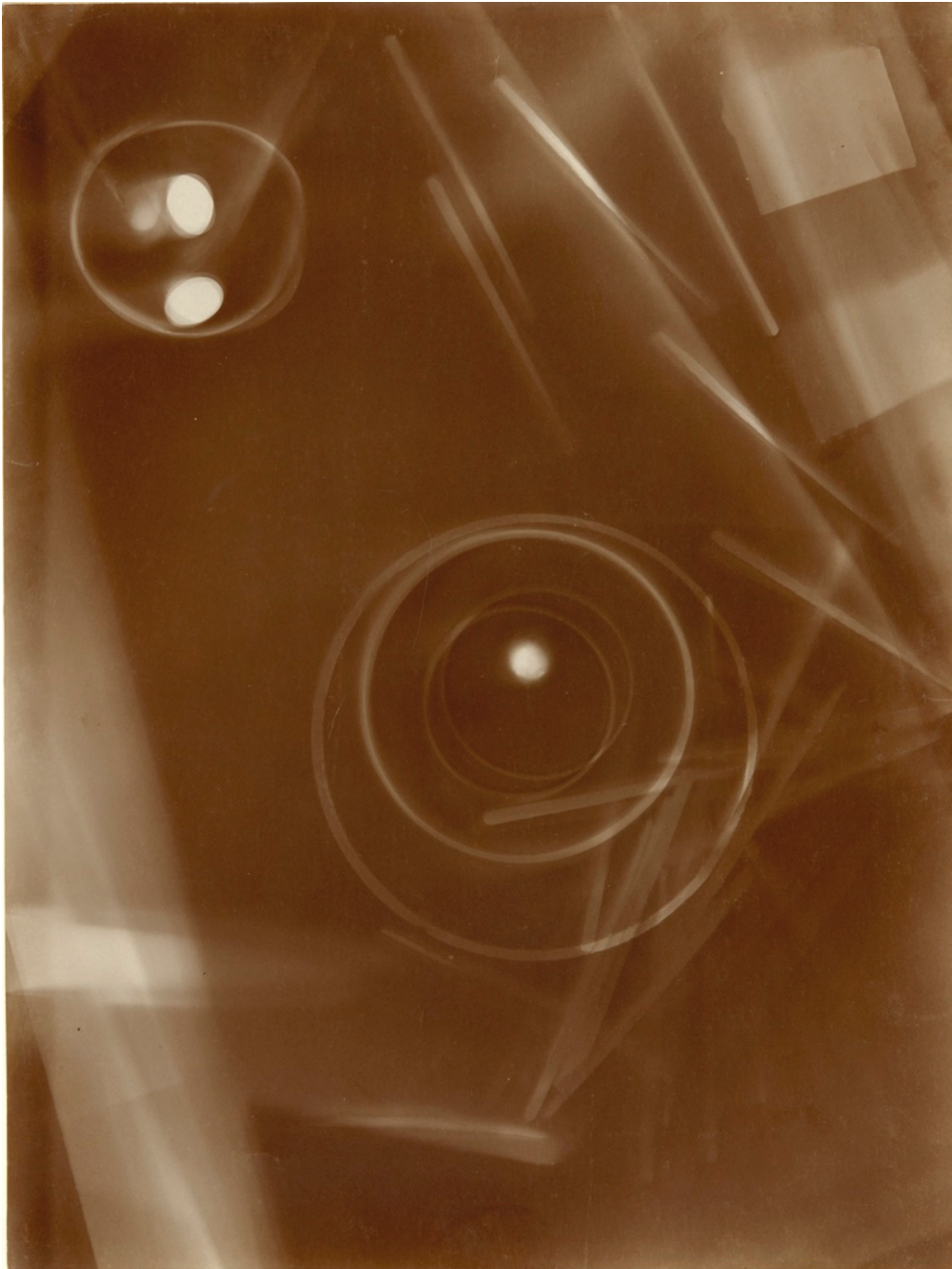


Figure 3. László Moholy-Nagy, Fotogramm, 1923-1925. The Moholy-Nagy Foundation. United States of America. Public Domain Dedication (CC0)

László Moholy-Nagy influenced avant-garde artists in the 20th century to explore the optical properties of light as a technique. Contemporaneously, the most significant artist is Paul Friedlander, with his "kinetic light sculptures."⁸ Friedlander has researched various technologies to achieve shape and volume in light as a plastic material. As can be seen in the image of Paul Friedlander's exhibits in Art Futura in Barcelona 2002 (fig. 4).



Figure 4. Paul Friedlander's exhibits. Art Futura, Barcelona 2002.
Photo by Ernest Adams. Licensed under CC BY 2.0.

"The exhibition's first point of departure could only be that of the relationships between art and science. The intellectual tradition that has worked since the mid-20th century to forge a new culture combining the empirical and the humanistic finds its natural continuation in practices in which the boundaries between aesthetic exploration and scientific investigation disappear. This is true of the work of Paul Friedlander" (Science as an Aesthetic Horizon 2012).⁹

Without a doubt, the evolution of knowledge through new theoretical and empirical studies eliminates the boundaries between art and science. Currently, the most interesting study in this regard is on empirical aesthetics, which explores projects that focus on art and science in new media, virtual reality, interactive design, and digital animation. Empirical aesthetics is a study that uses scientific methods to investigate aesthetic experience, pleasure, and beauty in visual arts, music, and literature by employing objective measures, an inverse sense to the deductive, the reflexive focused on subjectivity, and taste as previously discussed, concerning Kant's *Critique of the Power of Judgment* (1790): "Kant developed a coherent and static description of judgments on the beautiful, while modern empiricists conduct experiments to construct a dynamic explanation of aesthetic experiences" (Hayn-Leichsenring and Chatterjee 2018). However, the Kantian thoughts—still current—on judgments of the beautiful related to contemporary studies in empirical aesthetics leads us to question the differences. That could not be answered in this essay. A possible orientation and response to some of these questions can be found in the article entitled *Colliding Terminological Systems—Immanuel Kant and Contemporary Empirical Aesthetics* by Gregor U. Hayn-Leichsenring and Anjan Chatterjee (2018).

Final Considerations

In principle, we see the importance of a global vision guided by artistic achievements, that the starting point is the meaning of the creations through which the connection with applied arts and fine arts was created—especially when thinking about the legacy of the Bauhaus and its methods and practices. However, considering theory and practice, the objective is the critical application and understanding of reflections on aesthetics and art theory in relation to art and design in their technical essence. In this sense, it is a process in which it is possible to understand the influence of artistic and cultural creation in its representative aspects and the meaning of empirical aesthetics. Of course, of the most considerable significance is the direction of the arts and artists in search of the autonomy of each artwork. Thus, the arts have become free for formal innovations, creating their own rules, transgressing imitation without the interference of one art on the other. This is the reason for the dissolution of the fine arts, the radical separation of the arts.

Before the 20th century, architecture, sculpture, drawing, painting, poetry, and music were oriented to and compared to one another by theories that had beauty as their object, which was always related to a refined judgment—good taste—that differentiated masterpieces from popular art and applied arts under the values of fine arts. Undoubtedly, since the Renaissance, the techniques for the realization of the main formats, such as painting and sculpture, have been developed and improved based on the conditions determined by the academies of fine arts in Europe. This, in a way, conditioned artistic achievement in a very objective way through its materials, rules of composition, and even content. Nevertheless, with the rupture of the academic canons, the greater autonomy of the artists, and the emergence of the modernist movements, successively, the arts were modified in terms of their formal aspects and criteria of accomplishment. Acquiring more freedom, artists presented new styles and new techniques. These transformations have involved a large and complex definition of what art should be. This change has occurred mainly by means of the constant new forms that characterize their own artistic and manifest movements, in a period in which ideologies almost always defined the content and purpose of artistic creations, bringing art closer to social and political reality.

However, the diversity of opinions and perspectives that modern people and artists have transferred to art mean that personal values have become a significant feature of modern art. All this transformation without the old criteria that guided artistic creation has made the definition of what should be art ambiguous. On the one hand, this ambiguity applies to the fine arts. However, with the end of World War II and the emergence of a new setting for the arts, a new world for new forms and trends emerged: North America. The reference for the arts, which had focused on Paris and London, was transferred to New York. Moreover, today, the cultural reflex influencing the European tradition and, above all, the Royal Academies no longer seems to have the same importance. If this is the case, it is a natural process of the transformation of humans and their creations. In short, the visual arts today encompass both fine art and new formats. In ancient times, the decorative and applied arts were seen as inferior in relation to the fine arts. Today, new disciplines such as design have acquired greater prominence and an essential significance for the development of a globalized society. However, it must be understood that the definition of art is limited to every age and culture. With this, there is no longer space for either the old concepts or the prejudices. Where there is still social stratification, there is also a strong democratic ideal and the freedom to break from the elitist imperatives that stimulate inequality.

With the development and evolution of knowledge, the need for new disciplines, classifications, and subclassifications of knowledge conditioned the artistic activities in their specific areas, according to the orientation of their more extensive areas of expertise. This can even be understood as greater autonomy for the evolution of each artistic specificity. In the case of design, as well as communication, they are found to be subareas of applied social sciences. In a general way, the visual arts have come to encompass a synthesis or general proposition summarizing the main concepts in the arts and human sciences. Above all, this definition legitimates a fundamental knowledge for reflection. For this, discussion based on art and design encompasses the limits of knowledge of the distinction between the real and the imagined, as an issue susceptible to abstractions as it is guided by the process of creation and technological evolution, cultural transformation, and economic and social development. Under these conditions, the arts and their respective formats and innovative ideas attain a new status in actuality concerning the empirical aesthetics and the technological evolution. This theme was discussed at the 10th Congress of the German Society of Aesthetics and the European Society for Aesthetics Conference in 2017 and will be discussed at the 21st International Congress of Aesthetics in July 2019.

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Notes

1. Cf. "Setting aside the guidance of consciousness, we discover a signpost for time in the physical world itself. The signpost is a rather peculiar one, and I would not venture to say that the discovery of the signpost amounts to the same thing as the discovery of an objective 'going on of time' in the universe. But at any rate it provides a unique criterion for discriminating between past and future, whereas there is no corresponding absolute distinction between right and left. The signpost depends on a certain measurable physical quantity called entropy. Take an isolated system and measure its entropy at two instants t_1 and t_2 : the rule is that the instant which corresponds to the greater entropy is the later. We can thus find out by purely physical measurements whether t_1 is before or after t_2 without trusting to the intuitive perception of the direction of progress of time in our consciousness." DOI https://doi.org/10.1007/978-94-010-1727-5_70

Eddington A.S. "The Arrow of Time, Entropy and the Expansion of the Universe." In: Čapek M. (eds) *The Concepts of Space and Time*. Boston Studies in the Philosophy of Science, vol 22. (Dordrecht: Springer, 1976).

2. Cf. "Venus of Willendorf, also called Woman of Willendorf or Nude Woman, Upper Paleolithic female figurine found in 1908 at Willendorf, Austria, that is perhaps the most familiar of some 40 small portable human figures (mostly female) that had been found intact or nearly so by the early 21st century. (Roughly 80 more exist as fragments or partial figures.) The statuette—made of oolitic limestone tinted with red ochre pigment—is dated to circa 28,000–25,000 BCE. At 4 3/8 inches (11.1 cm) high, it was easily transportable by hand. Both its size (portability) and the material from which it was made (not found in Willendorf) are indicators that the artifact was made elsewhere and carried to Willendorf," in Kathleen Kuiper. (2016). Venus of Willendorf. Encyclopedia Britannica. <https://www.britannica.com/topic/Venus-of-Willendorf>

3. Lionardo Da Vinci, *Disegni che illustrano l'opera del Trattato della Pittura di Lionardo Da Vinci*, Tratti Fedelmente dagli originali del Codice Vaticano, (Roma. MDCCCXVII). http://commons.wikimedia.org/wiki/File:Tratado_de_pintura_-_leonardo.jpg

4. Cf. *The Lives of the Most Excellent Painters, Sculptors, and Architects*. Revised and extended by the same, along with their portraits, and with the addition of the "Lives" of Living Artists and those who died between the years 1550 and 1567, translated by Julia Conaway (New York: Oxford University Press, 1998).

5. Cf. Poietic Generator. Contemplative social network experiment. <http://poietic-generator.net>

6. Cf. The Research Group Moving Image Science Kiel and Münster publish yearly *The Yearbook of Moving Image Studies* (YoMIS), which reflects and discusses the academic, intellectual, and artistic dimensions of the moving image with an international perspective. The publications include contributions from 'disciplines like media and film studies, image science, (film) philosophy, perception studies, art history, game studies, neuroaesthetics, phenomenology, semiotics and other research areas related to the moving image in general. YoMIS is a premium publication planned and managed by the founders and administration board of Prof. Dr. Lars C. Grabbe, Prof. Dr. Patrick Rupert-Kruse and Prof. Dr. Norbert M. Schmitz.' <https://www.movingimagescience.com>

7. Cf. author's definition: "the aesthetic properties of a picture include not only those found by looking at it but also those that determine how it is to be looked at" (1976, 111– 112). In short, Goodman did not differentiate science from art, as in the empirical observation of aesthetic experience. Art and science would be a symbolic system and a means of constructing the world—*Ways of Worldmaking* (1978). However, since Baumgarten, aesthetics has strictly existed in another dimension, not the dimension of logical knowledge, because it instead belongs to the dimension of sensibilities and emotions. However, for Baumgarten, art is a medium, the principle of knowledge, not just the medium of representation, while Goodman defines an aesthetic based no longer on an essence with tradition in Western Europe. Goodman's philosophical orientation with an Anglo-American art of thought defines analytical aesthetics to include an understanding of works of art as a form of communication, a message medium.

8. Science as an aesthetic horizon, <https://www.artfutura.org/v3/en/souls-machines-exhibition/>

9. Science as an Aesthetic Horizon, <https://www.artfutura.org/v3/en/souls-machines-exhibition/>

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