

DESIGN SOURCES AND ARTISTIC TRENDS

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La capătul unor descoperiri științifice și tehnice, în același timp cu creșterea producției industriale și obținerea de noi materiale, un nou tip de produs a devenit necesar. Acesta trebuie să fie capabil să îmbunătățească viitorul produselor și legătura cu mediul înconjurător. Noile situații create au făcut necesare legăturile geometrice dintre formele elementelor, impunând condiții cu privire la metoda de concepere, proiectare și performanță. Pentru ca obiectul să fie plăcut și frumos, este util ca formele să fie într-o perfectă legătură cu cele artistice. Tendințele artistice au o contribuție fundamentală la definirea noilor orientări pe ambele nivele de idei și performanțe vizuale.

On terms of some scientific and technical discoveries, at the same time with increasing industrial production and achieving new materials, a new production type has become necessary. It has to be able to improve the product features and its environment relationship. The new created terms have made necessary the geometrical connection of shapes' elements, imposing conditions on the method of conception, designing and performing. For the object to be nice and beautiful, its useful shapes should be connected perfectly with the artistic ones. The artistic trends had a fundamental contribution on defining some new orientations on both the ideas and visual performing level.

Keywords: design, aesthetics, artistic, geometry, industry, applied arts, architecture, environment.

Introduction

From the historical point of view, the origins of design are located at the end of the 18th century, at the same time with the steam engine discovery (J. Watt – 1769). That period is also considered as the beginning of the industrial production although the industrialization did not begin all of a sudden but by a slow development caused by many reasons. Many previous inventions considerably acted upon the industry development.

By discovering the engines and repetitive manufacturing, the necessity of a previous set-up (project, drawing) in the method of operation was required. On the other hand, the new materials manufacturing gave new characteristics in terms of natural materials used by handicraftsmen. Unlike the handicraft production, the

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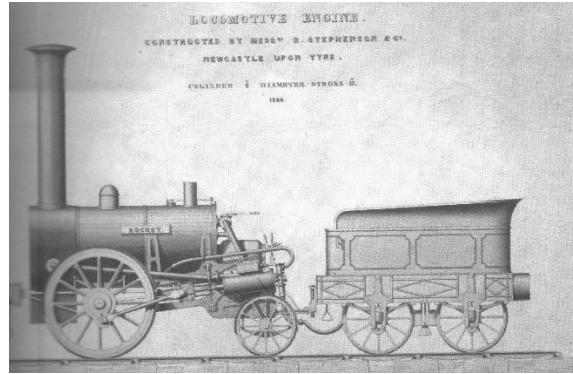


Fig. 1. Robert Stephenson, Rocket engine, 1831

new (industrial) one could examine the product features and behavior under working conditions and environment relationship.

Theoretical studies and artistic trends also led to the design appearance and development.

The paper “*Vorschule der Ästhetik*” by Theodor G. Fechner published in 1876 was the first one of several papers on the experimental aesthetic field. It brings up-to-date the “secret” geometry as a basis of aesthetic shapes. Wolfgang Köhler (*The task of gestalt psychology* – 1969), Rudolf Arnheim (*Art and visual perception* – 1974, *Force of visual centre* – 1988) and others wrote papers about the perception process of volumes, lines, colours and light using new experimental methods.

The artistic trend called “*Style 1900*”, and also known as “*Art Nouveau*” (France), “*Jugendstil*” (Germany), “*Sezession*” (Austria), “*Modern Style*” (England), “*Stile Liberty*” (Italy), along with paintings, sculptures, architectural works and applied arts gave attention to the design field as well. On this way one could notice the contribution of certain groups (“*Arts and Crafts*”, ruled by William Morris; Glasgow School ruled by Ch. R. Mackintosh, Belgian and German trends ruled by Henry Van de Velde), which considered the connection between artistic and social as a basis of their creation.

Although the industrial production of functional shapes, influenced by “*Style 1900*”, still preferred plentiful decoration, new trends in both the overlook plan and the visual achievement one were noticed (linear expressiveness, dynamism).

In 1915 “*Design and Industries Association*” was established having as an aim the cooperation between artists and usual products manufacturers. Welcoming this association, the “*Times*” newspaper issue on May 17, 1915 noticed: “*Our mistake, in the whole applied arts was that we had presumed there was an*

incompatibility, an inevitable conflict between artistic aptitudes, on the one hand and mechanical, scientific and commercial aptitudes on the other hand. That, in fact, the art and common sense should not have any kind of connection. But, neither art without common sense (in the applied art) nor common sense without art".

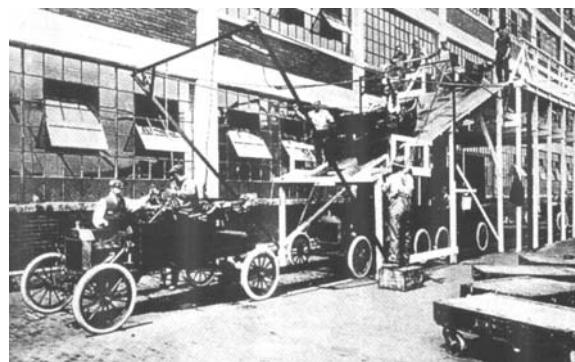


Fig. 2. First car manufactured on a conveyer line, Ford Model T, called "Lizzy", Detroit, 1913

“Bauhaus” School (1919 – 1933) ruled by **Walter Gropius** (1883 – 1969) brought a substantial contribution in studying modern aesthetic shapes. The aim of the school was to adapt the visual arts (architecture; painting; sculpture; decorative shapes made of pottery, glass, metal; fabrics; furniture) to the new industry conditions and to make daily using objects, with aesthetic look but without adornments and decorations. It was also suggested the increase of the industrial production contribution to the creation process, a new relation between object *function* and *shape* and the coming out of the general notion of *standard* by reducing to a minimum the unique condition of some products.

Paul Souriau (1852 – 1925) in his paper “*La beauté rationnelle*” (1904) showed his opinion and noticed that an object was beautiful when its shape tallied with its own function as in case of industrial products, engines, tools, furniture. **Étienne Souriau** (1891 – 1978) in his book “*L’avenir de l’esthétique*” (Paris, 1929) resumed and developed the theoretical ideas of his father. After the Second World War, **Jacques Viénot** laid the foundation of a new discipline – theoretical and practical – “*Industrial aesthetics*”.

The definition given by J. Viénot in 1935 is that: “*The industrial aesthetic is a beautiful science in the industrial production field. Its scope is that of place and labour environment, of production means and products*”.

Two major cultural trends are considered in design:

Modernism;

Postmodernism.

Modernism showed up at the end of the last century and continued to exist up to the present. The main modernism trends and schools are: Deutscher Werkbund (Germany), Constructivism (Russia), De Stijl (Netherlander), Bauhaus (Germany), International Style (the U.S.A.).

The typical materials and styles for modernism are: concrete and glass in architecture, steel pipe and plywood in furniture; showing internal structures, abstracting, leaving out adornment and applied colours.

The originality of that trend consisted in achieving some most favourable relations among aesthetics, technology and society. Ideologically modernism is described by: removing sections, social morality, universality, internationalism.

Postmodernism is typical for the last half of the XX century with a peak period in the sixth decade. The postmodernist artists use, sometimes in excess, colours, adornments and symbols, their works being sometimes “communication ecstasy”.

Artistic and intellectual trends

Among artistic and intellectual trends of modernism, the most important are:

■ **Arts and Crafts (Exhibition Society).** Artistic society of Arts and Crafts organized and ruled by Walter Crane, in London, in 1888.

The aim of that organization was the promotion of originality and values in applied arts and the need to extend the social bases of the artistic creation, by bringing the applied arts considered as “minor” to the people’s interest being directly involved in the life environment. When the industrial production emerged, the creation was not prepared to use properly the car, being as **G.C. Argan** said “*beneath the culture degree that performed the car*”. Hence, the conservative side of the trend the contributions of which to develop the new discipline of the **design** were indisputable.

The trends and tendencies would manage to handle the problem theoretically accepted by the English representatives’ trend – artistic production suitable to the new industrial period and using the car at its real capacity. The sources of those trends and tendencies were certainly the English ideas launched by **Arts and Crafts** and, prior to this, by the organization established in 1861 (**The Fine Arts Workmen**) and ruled by **William Morris, Marshall and Faulkner**, and especially the German trend that, passing through the **Deutscher Werkbund** stage, would reach a climax with **Bauhaus** School.

By international exhibitions in those times they succeeded in conveying to the representatives of the arts and architecture the ideas on a living space as a cosy place, in terms of physical and spiritual comfort. The study on domestic things

like furniture, wallpaper, plates and dishes, jewelleries and decorative things was extended to architecture as well.

The English trend was influenced by Ruskin's aesthetics and remarkable personalities such as **W. Morris, A.H. Mackmurdo, C.R. Ashbee, W.A.S. Benson, W. de Morgan, M.H. Billie-Scott, and Richard Riemmerschmid**. They all tried to achieve the unity and homogeneity of the living space in terms of value and aesthetics to be extended from district to dwelling place, to the things in dwelling, to newspapers and books, so to the information carriers.

The main ideas of the trend were the machine removal, return to handicraft, looking for a new available beauty.

One may say that the English trend represented by **Arts and Crafts** is the basis of some most typical departments of artistic creation in the 20th century, those about the environment and its fashioning.

■ **1900's STYLE.** An artistic trend emphasizing the end of the 19th century and the beginning of the 20th (1890 – 1910). Its name known in different countries was given by its characteristic adornment type: linear-vegetable (*stile floreale* in Italy; “*coup de fouet*” style or *paling style*, in Belgium; “*nouille*” style in France) or linear-abstract as in Austria and Scotland; by some personalities' names connected to the trend affirmation (*Guimard* style in France; *Tiffany*, in the U.S.A.); by pointing out its new program like in France (*Art Nouveau*), Germany (*Jugendstil*), Austria (*Sezession*), England (*Modern Style*), Italy (*Stile Liberty*), Spain (*Modernismo*).

In a great number of cases, the **1900's STYLE** was treated as an exclusive decorative style because of its striking ornamental character, concerns for line and surface as plastic expression means. Thus, was ignored the significant contribution brought to revolutionize different fields of visual arts – painting, sculpture, architecture, applied arts, was ignored.

At the same time, that contradictory style committing excesses sometimes had the ability to open perspectives for the affirmation of certain national schools (Finnish, Scottish, Spanish, Magyar, Romanian, etc.) based on using the ornamental elements and traditional symbols. It contributed to the preparation of an international style ruled by several defining characteristics on both visual level (two dimensions, linear expressiveness, dynamism).

In the last decade of the 19th century, the artistic trades were developed and the handicraftsmen begun drawing objects with no tradition, no archaeological style and no common aspect of the industrial productions. Artists looked for setting out a link between art and community by returning to the daily life creations. At the basis of **Art Nouveau** style, we recognize the studies of some English artists such as **W. Morris** (inspired by prerafael artists), **Voysey**, and then **Mackintosh**.

In France, because of the Nancy School, the minor arts found again their audience, being stimulated by **Émile Gallé** (1846 – 1904). In this group, L. Majorelle and E. Vallin tried to bring the vital force of plant in the furniture design. In Paris, **Hector Guimard** became famous due to its drawing of the entrances of subway stations and some private buildings called “style nouille”.



Fig. 3. Henry van de Velde, “Hohenhof” Bedroom, Germany, 1908

In Belgium, **Henry Van de Velde** left painting in order to give oneself up to decorative art and architecture. Architects like **Paul Hankar** and **Victor Horta** (1861 – 1947) made a group around him.

On the “land” of that trend, we find the origins of some new fields like **design**. They could not talk about it without taking into account the essential contribution of some groups (*Arts and Crafts* ruled by **William Morris**; Glasgow School ruled by **Ch. R. Mackintosh**; Belgium and German trends stimulated by **Henry Van de Velde**). They all laid at the bedrock of their creation the idea of the link between the social environment and the artistic one, considering the aesthetics as an element of interference in the daily life.

By using new building materials like iron, concrete, glass (also used by some architects and engineers like **Dutert**, **Contamin**, **Eifell**, **Labrouste**) new perspectives were opened both for partitioning the indoor space, for handling some issues on building technique and for the suggestive handling of the architectural expression thus allowing the surface smoothness. The comfort trend is also found at the suggestions on furniture, tapestry, any kind of domestic and decorative things and clothes creation. Glass and metal things (become famous in France, with **Gallé**, in England, with **W. Crane**, **McMurdo** and **W. Morris**, in Scotland, with **the four group**), tapestries and wallpapers (of **Ch. Voysey** and **W. Morris**), furniture pieces (of **Van de Velde**, **Burne-Jones**, **Ch. Voysey** or **Gaudi**), could be found in the insides of the 1900’s buildings, having elements that would extend and keep an unique environment, a faultless space.

That time trend was also found at the printing of book and newspapers, posters, theatre scenaries. The plentiful adornment especially linear, full of

luxurious, slipping between the need of abstracting (which any two-dimension approaching has against the concretization given by the three-dimension illusion), sometimes extreme, full of allegorical hints, and in case of country schools it became *kitsch*, remained sometimes the prevailing element of that trend where the existence among the symbolist dreaming, aristocratic aesthetic and democratic spirit was deep and fine.

■ DEUTSCHER WERKBUND

A complex professional association having in mind to aesthetically improve the industrial products and a new synthesis between architecture and objects of decorative and applied art. It was established by **Hermann Muthesius**, a German architect who was the counsellor for arts and handicrafts of Berlin Industry Ministry. He was attaché at German Embassy in England from 1896 to 1903. During that time, he acquainted with the program “**Arts and Crafts**” organized by **W. Morris**.

Muthesius’s opinion was that the objects beauty was given by the spiritual shapes and not by the adornment applied. **Deutscher Werkbund** took care of the audience aesthetic taste considering that different shapes could reflect a national identity and the aesthetic development of shapes should not be left at the level of individual taste.

Architects like **Theodor Fischer**, **Richard Riemerschmid**, **Hans Poelzig**, **Peter Behrens**, **Josef Hoffmann**, **Henry Van de Velde** and representatives of industry and trade were members of **Deutscher Werkbund**. The association introduced a new profession, namely *counsellor for products aesthetics* for the large industrial factories (as Peter Behrens was for ““Allgemeine Elektrizitäts Gesellschaft” – AEG). The exhibition organised in 1914 in Köln displayed several works made by **Behrens** (*Deutscher Werkbund Stall*), **Van De Velde** (*Theatre*), **W. Gropius** and **Adolf Meyer** (*Model factory*), J. Hoffmann (*Austrian Stall*).

At the International Exhibition in Paris in 1930, **Deutscher Werkbund** represented Germany. The German stall was made by **Gropius** together with **Marcel Breuer**, **László Moholy-Nagy** and **Herbert Bayer**.

On that association, a conflict took place regarding the autonomy extent that would have to be allowed for designer and drafter. **Muthesius** endorsed the standardization in order to make easy the gross production and **Henry Van de Velde** was a supporter of the entire autonomy of the designer.

■ **STIJL (De) – THE STYLE**. Artistic magazine and group appeared in Holland in 1917 having the aim to promote a creation based on the fundamental laws of colors and space, on rational principles opposite to the emotion as an impure element, as an expression of personality. **Theo van Doesburg** together with **Piet Mondrian** (1872 – 1944) who was the leading theoretician of the new trend published the first issue of magazine “*De Stijl*” in October 1917 at Leyda.

The group ruled by **Theo van Doesburg** included **Piet Mondrian**, **Johannes Pieter Oud**, **Gerrit Rietveld**, **Georges Vantongerlo** and **Jan Wils**. The group encouraged the exclusive use of the essential laws of color and geometric space by removing curved lines and spirals. *The trend representatives considered, for the first time in the design history, the functionality as an essential notion for making products.*

The principles put forth and backed up by **Mondrian's** and **van Doesburg's** works had in view the creation of a *new plasticity (Neoplasticism)* based on logical structures. The main elements were the straight line – horizontal or vertical – and right angles. Before **Bauhaus School** had begun its activity directed to a maximum performance, the artists of “**De Stijl**” developed enthusiastically the geometrical rationalist principles considering them as the solution to counteract “the modern baroque” resulted from the extreme affirmation of the maker's subjectivity.

The artistic trend looked for the reinstatement of the space traditional elements and seek for a balance among empty spaces, colors and surfaces in the two-dimension space.



Fig. 4. Gerrit Thomas Rietveld, Schröder House in Utrecht, 1924

In a motto at *the Foreword II* in magazine “**De Stijl**” (1919), it was written, “*The goal of the nature is the man, and the man's goal is the style*”. That style could generally belong to the human being only, which in imagine resorted to geometric diagram and pure colors relieved by the symbolic values assigned to them during the time in different cultures. “*When plastic art makers – it was also written in the same foreword – understand that they have to use a universal language they will not hang on to their own individuality*”.

Mondrian considering his colleagues' attitude – **van Doesburg** (who used the diagonal line in painting) and **Vantongerlos** (the curved line in sculptures) – as a return to the arbitrary forms of the individualism broke off his relations with “**De Stijl**” group and came near to **Bauhaus** where his study “*New representation*” was published.

Van Doesburg, Hans Arp and **Sophie Taeuber-Arp** conceived the inner adornments for **Aubette** nightclub in Strasbourg (1928), in this way going on the program of “**De Stijl**” group, essentially. **Van Doesburg** made the plans of his house at Meudon (1929) following the same principles.

Other architectural works showing the group's aesthetics are: *Ter Heide* house in Utrecht, built by **Van't Hoff** (1917); *Schröder* country residence, built in the same city by **Rietveld** (1924); *De Umie* coffee house built by **Oud** in Rotterdam.

■ **CONSTRUCTIVISM.** Artistic trend in Moscow coming out a little time before the First World War. The Russian artists were looking for their own way and trying to give an answer to a social program by their creations. According to **Gabo's** and **Pevsner's** ideas the arts had to become a stimulating element of the consciences and construction must be made in the place where in the past there were general notions only.

In the “Realism Manifesto” in 1920 it was written that: “*The arts should accompany us anywhere the life is: at working place, at table, at rest, at play, on working days and holidays, at home and in the street, so that the life flame will not be put out in humanity*”.

The Russian constructivism representatives co-operated with the group of artists from “**De Stijl**” magazine. A connection between Russian constructivism and **Bauhaus** School took place through **El Lissitzky** who met **Moholy-Nagy** in Germany.

The pursuit of the mathematic laws of space and colour, the refusal to use adornment as a superstructure element, a painting ideal, sculpture and architecture based on the perfect suitability of useful means for the utilitarian exigencies of language led the constructivism artists, especially after their contact with “**De Stijl**” group and Bauhaus School, to more general co-ordinate of functionality.

■ **BAUHAUS. School of trades and handicrafts, design and architecture**, established in 1919, at Weimar under the leadership of **Walter Gropius (1883 – 1969)** by joining two higher art establishments – **Arts and Trades Schools** and **The fine Arts Institute**.

The school had three periods:

Headmaster **Walter Gropius**, 1919 – 1925 at Weimar and 1926 – 1927 at Dessau;

Headmaster **Hannes Meyer**, 1928 – 1930 at Dessau;

Headmaster **L. Mies Van der Rohe**, 1930 – 1931 at Dessau and 1932 – 1933 at Berlin.

Gropius's original intention was to group “*the entire artistic creation in a unit...to reunite the artistic and hand disciplines as inseparable component parts*”. During the time, Gropius and especially the headmasters who followed him changed those ideas as well.

Unlike the past period when the students' training was based on the study of some compositions and stiff shapes, at that moment the training begun from **the shape and material study** in order to reach to **the object configuration**, released by any formal or conceptual predetermination.

On the other hand Gropius succeeded in balancing and attuning the extremely different artistic tendencies of the people at Bauhaus. Artist had a very important role in setting the programs and preparing the teaching methods. Thus, Bauhaus become “*a school with an extraordinary anticipating vision*”.

At that school, a new teaching method based on group work was introduced. It gradually removed the handicraft in industry, gave back to it the old traditions, and made it as a part of the modern life. The formal element was not any longer placed in the independent scope of individual experience but was placed in the centre of production activity. The value of the shape was given only by the extent it had effect on the human life environment.

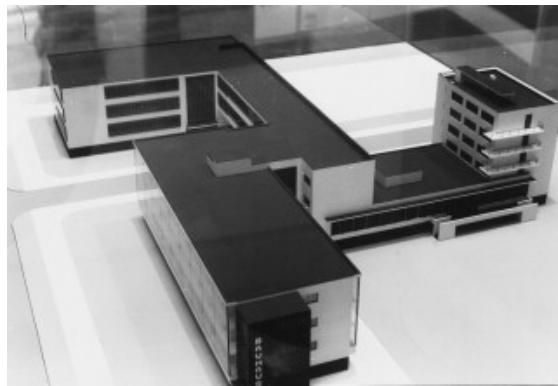


Fig. 5. Walter Gropius, Model – Bauhaus headquarter, Dresda, 1925

After 1922, the old trend having as a goal the setting of a judicious relation between arts and handicraft was changed. The new trend had the logo “**arts and techniques – a new unit**”.

A great number of important architects and artists of 20th century were trained at that school. Based on some older premises, **Bauhaus** school specified one of the arts defining attitudes of last century, **a theoretical system and a creating and teaching methodology at the same time**.

In his theoretical works Gropius emphasised the importance of the creating training of the beginners for industrial work as a teaching means to educate the modern designers, competent to give a clear formal orientation to the production. According to Gropius ***"The final aim of any modelling activity is the construction"***.

Remarkable artists and intellectuals like **Walter Gropius, Paul Klee** (1879 – 1940), **Vassily Kandinsky** (1866 – 1944), **Johannes Itten** (1888 – 1967), **Oscar Schlemmer** (1888 – 1943) and later **Josef Albers** (1888 – 1976) and **Laszlo Moholy-Nagy** (1895 – 1946) drew up Bauhaus School program.

Under the sign of a severe rationalism, the school program synthesized the ideas of the romantic trends at the end of the 19th century like **"Art and Crafts"** in England, the representatives of French architects trend like **Tony Garnier** (1869 – 1948) and **Auguste Perret** (1874 – 1954) and **"Deutscher Werkbund"**. That trend program that was theoretically substantiated on the ideas of **John Ruskin** (1819 – 1900), **William Morris** (1834 – 1897), **Muthesius** aimed to the democratization of the artistic creation, one of the last great **"romantic ideas"** as Argan called. His goal was the social involvement of the artistic action on the one hand and the involvement in the technical and industrial reality on the other hand. That assumed the interest transfer from the creation moment to the consumption one so from the maker personality to the community of beneficiaries who indicate the aesthetic needs.

The theoretical basis of **Bauhaus** School was also influenced by Viennese theoretician contributions (especially **Konrad Fiedler**) who worked with the theory of pure visualization – a moving off from the artistic object and of the artistic object to the nature, by concentrating the interest on the plastic shape.

■ **ART DECO.** Trend of decorative arts, design and architecture emerged at the 1920's years and developed in the third decade. Its name derived from the International Exhibition of Modern Decorative and Industrial Arts in Paris in 1925.

The goal of that artistic trend was the adaptation of the design to the gross production. The style was shown in the design of glass objects, posters, bookbindings, golden objects and furniture. Materials like jade, obsidian, rock crystals, onyx and plastics were also used, although they were less used until that time.

At the beginning of that period, the shapes were curvilinear and asymmetrical. Later they become simpler, being rectilinear and symmetrical. In 1930 – 1945, the features of American product design were determined by the streamline style, thus appearing a new tendency of Art Deco furniture called Streamline Modern (the 1930's years).

An object was considered as being beautiful if it had a smooth and slidable shape, although that shape did not improve its operational performances (household things, lighters, etc.).

The designers like **Jacques Ruhmann**, **Maurice Dufrene**, **René Lalique** (fragrance bottles for companies **Coty** and **D'Orsay**), **Charles Schneider** (coloured inclusions among glass levels) were the most important representatives of that trend.

■ **INTERNATIONALE STYLE.** Trend in the design of the 1930's years described as simple, useful and without adornment. It appeared at the same time with the ideas spreading of **Bauhaus School** refugees. There were applied general notions like applicability, abstraction, against-history and employment of suitable materials.

The imagine of corporation and town planning was reflected by the trend in Europe and especially in America in the 1950's. That name was given to all operational, against-adornment and geometric shapes in the architecture of the second quarter of our century. In 1932, **Henri-Russell Hitchcock** and **Philip Johnson** organized the exhibition called "*The International Style – Arhitectura since 1922*" at the Modern Art Museum in New York. A book with the same title was published later. **The international style** was materialized by the work of **W. Gropius** and **Mies Van der Rohe**, in France by **Le Corbusier** and in Holland by **J.J.P. Oud**.

As a representative of the international style, **W. Gropius** considered the "open box" as a fundamental unit in space. He changed the volume and grouped several such "boxes" in order to make a correlated cubes configuration. A flat roof, white and smooth walls, line windows and pillars are the features of the **international style** which they wanted to be "*a struggle for a new life style*" (Mies Van der Rohe).

The levelling in the wide world was opposed to the national magniloquence of the new European dictatorships. Thus, in the 1930's years, the totalitarian regime in Germany (see *the German Art House*) Italy and Spain, and Russia as well, erected monumental buildings in the classic style.

Between 1957 and 1960, **Lúcio Costa** and **Oscar Niemeyer**, two followers of **Le Corbusier** were able to achieve the town vision of the international style parents by building the city of Brasilia, the new capital of Brazil which would be a failure. The magnificent huge buildings tried to give a photogenic futurist imagine; the town forgot its people and the real life was on the outskirts of the town.

The international style in architecture was developed on the basis of the same **clear mathematical laws**, of large generality, having **a large capacity of abstracting**, and following the strictness of cubism, constructivism and the Holland neoplasticism ("*De Stijl*"). Generally, such attributes belong to the

human experience and therefore the architecture created in the spirit of that style did no longer belong to local and national traditions but rather it became a feature of the 20th century civilisation understood on the basis of its typical dimensions. The international architecture has to be dedicated especially to build dwellings and industrial buildings; it wants to be democratic. The building part defined by simplicity and strictness decreases to the one's of a cover, depending on those buildings destination. Schools, hospitals, factories and dwellings should have an aspect that meets their social function.

Conclusions

The present design sources have passed great historical, political, social and economical moments, typically from geographical and cultural point of view. The design was heavily influenced by architecture and by other artistic creations such as sculpture, painting, and tapestry as well.

A great number of artistic and intellectual trends had mutual influences and many new orientations. We could not make a difference among them because of the events and personalities interactions.

Thus, it is difficult to leave aside the connection that existed among Deutscher Werkbundt, Art Nouveau and Bauhaus, for example.

The fast industrialization has made possible the industrial objects manufactured serially bringing modern technology in day-by-day life.

The great universal exhibitions influenced the contemporary creation too and many towns became important cultural and creation centres.



Fig. 6. Ferdinand Dutert, Victor Contamin, Machines gallery, Universal Exposition in Paris, 1898.
The hall had a bay with only one opening of 115m × 420 m.

The universal exhibitions in London (1851) and Paris (1898) which were real sanctuaries of progress made known the new industrial techniques to the large audience, making imperative the presence of the engineer, material and

functionality as main elements of a building and at the same time emphasizing the power and dominations of machines.

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