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Impact of High Technology on Esthetics - the Aerospace influence

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Abstract
A more or less subliminal impact of the aerospace technology over the general art of design is revealed. Some of the most visible trends are related to the implicit perception of the "best" geometrical shapes and their esthetical perception and exploitation in arts of design. Examples are driven along a century-long time period of arts history.

Keywords: *Esthetics, art of design, aerospace, high technology, mimetic*

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Introduction

The influence of the artistic vision of any specific historic epoch over the stile of its industrial design is known and new facts that underline the impact are only added permanently. Of less perceptible evidence is the reversed influence, meaning the one of the technology over the global artistic style of the epoch, although the influences are quite actual10.

In advancing on the subject, different levels of interconnecting pressure appear even between particular industrial design fields. When one is trying to detect the main interconnections between the utility, design arts and the global artistic stile, the fields of technology look like aligning one after the other, sequenced by their impact power, with Astronautics ranking first. We tempt to propose here a scale for these technological influences upon the art of design, based on relevant examples.

The Influence of High Technologies

Medium or low level technologies appear as continuously permeable to changes and enhancements, endured from the part of higher level technologies. We discern here the permissive or open character of the low-level technological design, much more un-subordinated to dimensional, eigen- or shape constraints.

On the other hand, the relatively high speed with which the styles are succeeding and the technologies are renewed does not allow the tendencies to finish off. A relative scale could be imagined to measure the relative level of the rate of change and the rate of assimilation of styles. A quantitative criterion $\Re$ should be represented under the form of the equation

$$\hat{A} \circ t_s / t_a : 1$$

where t_s is the time for change and t_a denotes the time of assimilation.

When $t_s > t_a$, the above mentioned effect is produced; while on $t_s < t_a$, an effect of conservatism is produced.

The rhythm in which the styles are changing and inter-protruding, to a main extent springs from men's boredom and, on the other hand, from the fact that, specific countries must recover some stages that, from

different reasons, as for example the political context, were missing.

Regarding the boredom, we may recollect here the theory of mental oscillation, expressed in the esthetics of Bergson-Blaga, which for short says that the method for exiting the boredom is the variation accomplished through a pending oscillation between the conscious and the abyssal. The esthetical reaction is, to some extent, a satisfaction caused by exiting a boredom state of the intellect. Worth saying how joyful the Marxist preachers would have been to flag here another success of the "dialectical method", or of the "struggle of opposites".

In a different sense, the high technology, more specifically the *space-tech*, had propelled the other branches of the technology, ending in a general, increased development of the industrial design. It obviously offered to the human being and particularly to the artist new dimensions of expression.

The effects of globalization also, gradually developing, based on extended media means like the film, the global TV, the Internet, the radio had influenced inclinations towards the study of other peoples' culture. It thus became easier the technology impact to influence the artistic vision of our times.

Also possible it was that even the S.F. literature had a major role in the materialization of some projects that first belonged to the area of fiction.

Consequently we may consider that some writers manifested the courage to dare a lot and are seen today as real visionaries, as for example Jules Verne. They decisively opened trends in design arts of the century.

The U. F. O. perception, that has influenced so many resorts of technology, although hardly accepted, is one of the strangest examples of technological influence on the art of design. My believe is that this phenomenon had started from the curiosity of people to find life forms, possibly similar to ours, in the universe. Yet for the very moment the presumed shape of UFO-s had visibly influenced the industrial art (Fig. 1).

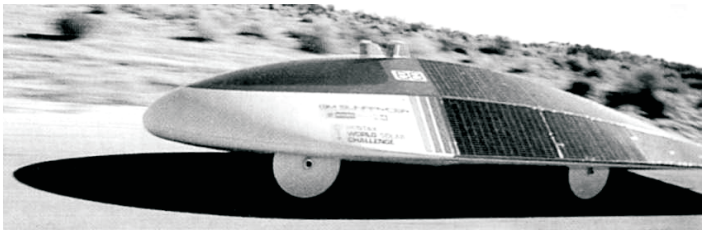

Figure 1. UFO shaped electric car 1987 [Sourse:Marshall Cavendish Encyclopedia]

The influence of technological design concepts upon the arts in general seams to act very gradual, non-declared, soft and faint, almost subliminal.

The Impact of Space Technology on Arts

Returning to the high technology of space (as a product of the same curiosity to find what should happen "*if*?" or "*why*?"), we observe that the influences are direct, not only regarding the working techniques but regarding also the real take over of shapes from the aerospace technology, as from cybernetics and robotics.

The effects of the aeronautical technology may be clearly pursued over determined periods, manifesting some dominant features along that stage. Between 1900-1940 for example, observe that the shapes considered in aeronautics have a trend versus what is generally called a "water droplet" concept (Fig.2-3).

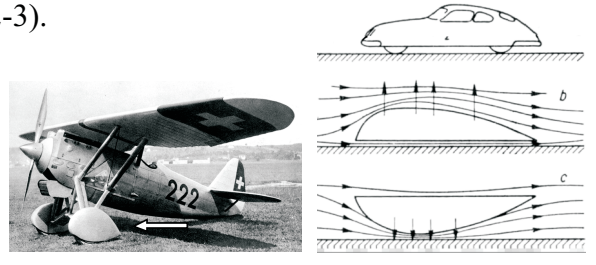

Figure 2. Vision on optimal airflow in 1930 [Source: S. Elder, 1937].

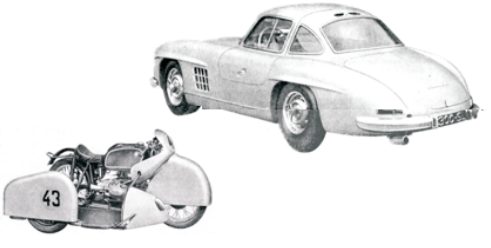

Figure 3. BMW 500 motorcycle and Mercedes 300 SL car [Source:K-H. Edler,1956]

Such rounded shapes, though more difficult to manufacture, were introduced in the design of common furniture also, as in the design of electrical home appliances also, like the well-known furniture-integrated early radio sets of the years '30 (see Fig. 4).

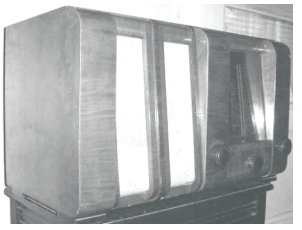

Figure 4. Design of Orion 1930 radio [Source: Author's photo].

Between 1940-1950 we may talk of a period of transition, regarding the influences of aerodynamics on arts.

Between 1950-1970 the main characteristic of consumables esthetics becomes that of stark sharpened shapes, which we interpret now as markedly influenced by the incipient supersonic aerodynamics of the 50-s. We emphasize that in this early phase the aerodynamicists saw the angular profiles of airfoils as optimal. The vision spread immediately over the conventional art of design (Fig.5).

Figure 5. Sharp-angular furniture in 1960 [Source: Author's photo]

Between 1970-1980 the tendencies turn to blunt shapes, a direct consequence of the aerodynamics of reentry bodies of the advanced hypersonic flight (Fig. 6, 7).

Figure 6. Blunt shape design [Source: B. Beer et al, 1957].

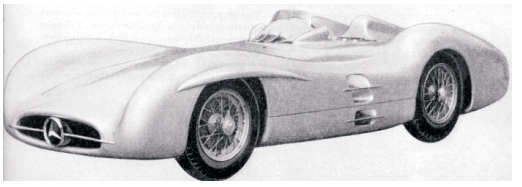

Figure 7. Car of blunt shape design [Source: K-H. Edler,1956].

Between 1980-2003 a return manifests to a combined sharp-rounded tendency in consumables esthetics, due to the return to real optimum aerodynamic shapes of the hypersonic flight after Concorde.

Figure 8. Return to sharp-rounded design [Source: Author's photo,Marshall Cavendish Encyclopedia].

The above mentioned trends are very well outlined in the successive design concepts, to which the train manufacturers adhered. Those successive trends during a century long period of development are suggestively shown in Fig.9.

Regarding the influence of robotics over the art of design, its beginnings send back in the 40-s to the shapes of anthropomorphic origin. They evolve thereafter, gradually departing from the anthropomorphic

representation, in a trend towards sharp shapes rather, as found in the aerospace technology of the years '50 and already mentioned.

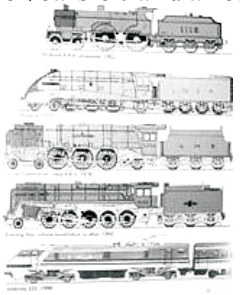

Figure 9. Train design evolution [Source: Marshall Cavendish Encyclopedia].

Today, a renewed come back to the beloved anthropomorphism is noticed, though we may talk again of rounded-sharpening, downloaded again from today's space technology. The effect is a combination of technological constraints and of the relatively free artistic vision, as for example those manifested in electronic engineering and electric home appliances. We sustain this assertion with reference to a recent vacuum cleaner set and a radio combine, both of visible anthropomorphic design (Fig. 10, 11).

Figure 10. Anthropomorphic vacuum cleaner [Source: Author's photo]

Figure 11. Anthropomorphic radio set [Source: Author's photo]

The garment had also received influences from the sphere of high level technologies, especially from the sphere of space technology. This

effect had been produced after the years 1970, when the overwhelming success of the Apollo lunar program had neared the distance of the great public to space technology and this aspect devotes a special emphasize. The impact had entered unexpected areas of industrial design, starting form the furniture design and up to architecture and urban furniture as presented below. This influence had not ceased yet after so many years and proves still continuously powerful.

It is obvious that one of the domains at hand for anyone was the architecture, interior design or sculpture. I am saying at hand because each of us is influencing those domains in some manner, without a special training or knowledge for their manipulation. In those fields a very important factor intervenes, namely the taste. Even an amateur is able to observe how lines which are by far not new in the arts history are combined in the architecture with the most modern elements, belonging to build materials and go up to the interior design, with all implications (Fig. 12).

Figure 12. Industrial furniture design [Source: Constantin,1979]

The industrial style in architecture, often controversial so far, had been marked in 1967 by the very disputed Pompidou art center in Paris (Fig. 13), considered by a large public as a defiant protrusion of the left-handed politics into the public domain of large architecture. None can avoid considering the massive leftist inclination of the French.

Figure 13. Industrial design in architecture [Source:Marshall Cavendish Encyclopedia]

Figure 14. Architecture design of the 50-s [Source: Constantin, 1979].

The influence of the typical sharp-rounded rims of the aerospace technology is also visible in the architecture of the 50-s, as for example that of the innovative architecture of the house in Fig. 14.

Space and the Art of Design

A direct invasion of the space technology of the very special, protective clothing of pilots and astronauts is strikingly visible in the today's' common fashion design. For much of the people this is often mixed up with the sport fashion, while in fact the sport clothing itself is invaded by the space garment manufacturing techniques and thus both fields equally benefit from the huge investments pumped in the development of new space technologies. A long series of example support the assessment: the porous, air-conflated jackets, the thick, cast sole boots, flashed flannel under vests, large applied-pockets, segmented man trousers are only a few visible effects of the space design clothing entered in common use. In respect to the color, the texture, the shape in the whole, the soft-cotton had thus appeared, the waterproofs, the transparencies, the plastic, the very

large and thick, rather flexible soles on the footwear, the silver, the golden etc.

The outer shape of the American space shuttle, controversial itself, had been in the recent years non-voluntarily and almost literally imitated by the designers of travel bus cars. Rows of such un-winged shuttles are ingenuously marching on the highways everywhere.

Figure 15. US Space Shuttle Columbia [Source: Driscoll,1981].

Figure 16. Typical Air-conditioned Bus [Source: Author's photo].

Inside and outside, millions of youngsters and elders are also ingenuously wearing porous, air-bag type helmets, or hardly bagged and zipped trousers of clear space suit technology origin, downloaded to a common terrestrial use. Landing on Earth from space technology is also the more and more manifested through the frequent use of sophisticated materials as titanium alloys.

A special design of flexible, stainless titanium spectacles frames are in rapid dissemination all over the world, for the common use again.

Returning to the rapidity with which the styles are succeeding, one

may talk about a general stile, of the whole, that marks a definite time period, which comprises stiles of seasonal character, at its turn. The most specific example yet comes from the sphere of garment, more definite from its branch called "textile art". Here one may talk about a coercive trend: the manufacturers of consumables remain in some periods with stocks and impose their consumption on the art market, implicitly imposing a dictated stile during that season.

This massive trend is obviously powered by the desire of the manufacturers to capitalize on the open market the valuable technological experience gained during the processing of the newly developed manufacturing procedures (spin-off) for the space industry. It proves being an effect of the economical pressures of the market economy to save the costly investment in development through a mass production with high technologies. It matches nevertheless the psychology of the creative eye (Arnheim, 1974).

Concluding Remarks

The given examples support the assessment that the present impact of the aerospace technology in the day-to-day life, especially through the esthetics of consumables' design, and even in the field of general arts has a long history and is strong and increasing. A recursive insight over such influences during the last century is especially striking in that respect, although its roots are found even in the middle age.We neither assess this trend as progressive nor as a fruitful one, but it proves to be nevertheless an extending one.

At least two motivations strongly stand at its basis: one-the subliminal conviction that the high level aerospace technologies are a credible source of optimal design fashion and two-the ever increasing profit pressure of aerospace by-industries to capitalize their experience in the costly developments of new manufacturing technologies.

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