An investigation of futurist architectural design

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“Erect solid constructions for the future city, may it rise in the sky free of aviators.”
(Paolo Buzzi)

Abstract

This paper explores the relations between drawing and its influences on architectural language. It uses as a resource the examination of the so-called futurist architecture, above all, the graphic production of Antonio Sant’Elia. The interest of the study lies in the verification that, despite the futurist movement having failed to erect a single work of architecture as representative of its ideology, the historic recognition of this modality is undeniable. This acknowledgment shows the value of graphic representation as a structural fact in the comprehension and development of architectural design.

The research analysed the proposals and architectural propositions of the futurist movement. It sought to conduct a reading of the drawings through the existent relations between the designs and the main supporting texts of the Movement (Manifesto). In the present text, parallels are established between works of fine arts by Umberto Boccioni and Giacomo Balla and Sant’Elia’s architectural proposals. The etymologic roots of the drawings are also studied, visualizing the Power Stations as the foundry of formal imagery. Through a perceptive semiotic reading, the investigation also tries to establish a grammatical interpretation of the meanings and elements used in Sant’Elia’s drawings.

In the conclusion, a few uses of futurist references are indicated, such as the “Une Ville Contemporaine” by Le Corbusier, as well as the later consequences, such as the urban plan of Brasilia where architect Lucio Costa employs the idea of installing the urban transportation terminal in the middle of the city. Revelation lies in the ways that work contained in drawings of architectural propositions, seen as strictly paper-bound designs, can bring about significant changes in the construction of the constructed space.

Introduction

Appreciation of the self-professed futurist architecture leads to a point of particular interest in the study of drawings as signs of architecture: the investigation of an architecture known only through its graphic pre-figurations.

Historical authors such as Benévolo (1974), Zevi (1980) and Frampton (1987) highlight the influences of the figurative abstract movements in the construction of modern architecture. They all note on the influences of expressionism, cubism, neo-plasticism and other “isms” in the configuration of significant changes in architecture and design occurring in the first decades of the 20th century.

The appreciation of the relationships between futurism and modern architecture and design is of particular relevance amongst these movements. Firstly for having been a general movement bringing together literature, fine arts, music and not consisting merely as a visual arts movement. Further relevance can be found in the fact that sanction of a futuristic architecture, in the absence of materialized works, come solely from the study of its drawings as signs of that architecture:
One should, initially, agree with Zevi’s opinion that “futurism did not have an architecture” (1980:175), nevertheless, the inexistence of significant constructed edifices should not be confused with the absence of a design. The graphic pre-figurations embodied by the futurist movement contributed, in forming a modern architecture, to the development of a new visual problem, to the renovation of design programs, to the proposal of a stylistic ideology, to the definition of an objective relationship between architecture and building techniques and, above all, it inspired the coining of a whole new vocabulary and materialization of new directions and occupations for the architectural activity.

From an architectural standpoint, futurism was characterized by the absorption of a set of drawings and a proposal elaborated, for the most part, by Antonio Sant'Elia, in Italy, between 1912 and 1914. In 1916, Sant'Elia was killed prematurely at the age of 28 in action during the 1st World War. As a result, his architectural designs were never built, nevertheless the set of graphic literature he produced was upheld by the futurist group. This body of work influenced European architecture in its entirety, mainly due to the propagandistic effect taken on by the movement, under Marinetti’s command. Although there is some controversy as to the elaborated program as well as the pertinence of Sant'Elia’s work to the futurist movement1; no doubt remains as to the authenticity and clarity of his drawings.

Futurism

The futurist movement was one of cultural excitement intended to reach all areas of artistic production. Strictly speaking, it was an Italian movement known as, according to Argan, “the first movement which can be called vanguard. This term was understood as suggesting a movement which invests an ideological interest in the arts, preparing and announcing a radical subversion of the cultural and even social customs, firmly negating the past and substituting systematic research for daring experimentation” (Argan,1992: 310).

The premises of this artistic subversion were enunciated through the various manifestos, which established their ground on the futurist ideal. Marinetti launches, in 1909, the movement’s founding literary manifesto; following close behind are the futurist painting manifesto (1910, by G. Balla, C. Carra, U. Boccioni and L. Russolo), the musician’s manifesto (1911, by B. Pratella), and the sculptor’s manifesto (1911, by U. Boccioni).

In broad terms, the common ground shared by these manifestos is expressed in the following predispositions:

1. “Destroy adoration of the past, obsession with the antique, academic arrogance and formalism.”
2. Exalt technology, the machine. Seek out the beauty of speed;
3. Drive artistic thematic to the city. The new city thought of as a machine in movement;
4. Reinforce the original behaviour based on daring, courage and rebellion as essential elements of artistic transformation.

The existence of the various manifestos being circulated and even, more often than not, complemented by particular technical manifestos (technical painting manifesto, 1910; technical music manifesto, 1911, etc.), leads to the assertion that futurism intended to be larger than the sum of its activities. All findings indicate that futurism formulated a general posture without, however, supplying specific means for the diverse manifestations it sought to entail.
When, in 1909, Marinetti states that: “we will sing to the large crowds, agitated by work, by pleasure or by mutiny, we will sing to the multicoloured and polyphonic waves of the revolutions in the modern capitals, we will sing to the barns...; the stations...; the workshops...; to the locomotives...; to the hedgehopping airplanes...”\(^3\), he places the industrial city, the new city and its dynamism as central to the theme of the futurist movement. This theme, clearly urban and architectural, is chiselled with a dose of maturity in the approach towards poetry and painting, as is revealed in one of Boccioni’s pictures, “The road enters home” (Figure 1), 1911. Meanwhile, a firm positioning relative to the new architecture and the new city, on the part of the futurists, only really occurs in 1914, in the development of the “Manifesto on futurist architecture”\(^4\).

![Figure 1: Painting "The road enters home", by Umberto Boccioni, 1911](image)

The “Manifesto” text is an adaptation and an expansion by, it is believed, Marinetti of the “Messagio” text. The latter was, in turn, an explanatory document on modern architecture, signed by Sant’Elia and partnered by Ugo Nébia.

The “Messagio” was written for the catalogue of the group’s drawings exhibition “Nuove Tendenze”, its members included Mario Chiattone, Nebia and Sant’Elia. The “Messsagio” text and the exhibition are dated 1914. The “Manifesto” first appeared in July, signed by Sant’Elia and, compared to the “Messagio”, displayed certain alterations and attachments.

Historical concerns as to the authorship of these texts, their differences and the relevance of Sant’Elia to the futurist movement, have been the object of controversy. Said controversy is highly signalled by the involvement of a group of futurist artist in the Mussolini regime, through use of the visionary propagandistic capacity of drawings by Sant’Elia as an instrument of patriotic validation, during the Fascist government. This propaganda intended to glorify an alleged Italian superiority in European vanguard.

Contrary to dubious views arising from debates on authorship and interpretation of the texts, observation of Sant’Elia’s drawings may, on the other hand, backed up by the “Messagio” text (over which no doubt remains as to its authenticity), enable an identification of the elements contained in the so-called futurist architecture.

The “Messagio” text, written in 1914, presented in a very lucid and innovative manner, a set of propositions which were in turn incorporated to modern architecture in the 1920s. In synthesis, it highlighted the following ideas:

“The problem of modern architecture is not to rearrange lines; nor is it a matter of finding new frames, new beams for doors and windows; nor of substituting columns, pillars and medallions for cariethides, big wasps and toads, nor is it a matter of leaving one facade in
brick or covering it with stone or plaster; to sum it up, it has nothing to do with defining formalist differences between new and old buildings. It does, however, concern raising the newly-constructed structure on a rational surface, reaping all the benefits of science and technology, generously deciding on every requirement of our habits and our spirits, rejecting all which is heavy, grotesque and unappealing (tradition, style, aesthetics, proportion), establishing new shapes, new lines, new reasons for existence based purely on the special conditions of modern life, and its projection as an aesthetic value to our sensibilities..."

In the subsequent paragraphs, the text denied any possibility of historic continuity for architecture and stated that, faced with the needs of modern life, architecture based on tradition had ended its cycle of existence, making the edification of a new doctrine, from new materials and their technologies, necessary.

"...The calculations of material resistance, the use of structured concrete and steel exclude 'Architecture' from the way it was traditionally and classically understood. Modern structuring materials and our scientific concepts no longer work at all, in the disciplines of the historic styles and are the main cause of the grotesque aspect of trendy constructions, where we see lightness and the proud sleekness of master beams, and slender structured concrete, folded in the heavy curve of an arc, imitating the impassiveness of marble..."

More declarations followed, indicating that the distinction, the use and meaning of the building and its scale, had also been brutally modified. The "Messagio" also conducted the citation of some buildings, would-be themes of the modern city.

"...We have lost the sense of the monument, of the solidity, of the static, and we have enriched our sensibilities with a taste for the light and practical. We no longer feel ourselves men of cathedrals and ancient silent rooms, but men of great buildings, railway stations, huge highways, colossal bays, covered markets, shiny domes, reconstruction areas and the salutary tear down of slums..."

Continuing in the visionary character of the text, the task of architecture is extended to encompass the complete urban environment. The "Messagio" reflected that the new modifications should approach the city and the building as an integrated phenomenon.

"...We should invent and rebuild 'ex-new' our modern city as an enormous and tumultuous barn, active, immobile and everywhere dynamic, and the modern building as a giant machine. The elevators should no longer hide in stairway shafts like solitary vermin, but the stairways – now useless – should be abolished, and the elevators should crowd the facades like glass and steel serpents. The cement, steel and glass box, free of ornament, painting or relief, rich only in the inherent beauty of its lines and shape, extraordinarily rude in its mechanical simplicity, as big as need demands and not merely as big as zoning laws allow, it should be erected boarding the tumultuous abyss; the street itself, which will no longer be immobile as a doormat on the sidewalk level, but will dive many stories underground, gathering the city traffic, connecting, for the necessary transfers, with steel scaffolds and high-speed conveyor belts..."

In its final section, the "Messagio" condemns the architecture of style, the attitude of preservation. From the formal point of view, it turns away form the use of "perpendicular and horizontal lines, cubic and pyramid shapes which are static, grave and oppressing and absolutely strange to our most recent sensibilities."

And finally, after declaring "that the new architecture is the architecture of the cold calculation, of the simplicity and fearful audacity..." asserts that "...true architecture is not,
due to all of this, an arid combination of practicality and utility, but remains as art, that is, as synthesis and expression."

It cannot be questioned that, for 1914, the "Messagio" text clearly possessed many of the principles of modern architecture. However, its original vision was almost unknown. The version produced by Marinetti, which became the "Manifesto on futurist architecture", was the more regularly adopted point of reference in studying the aims of the movement.

In the absence of works, the study of the "Messagio" text made "Manifesto", when further augmented by other of Marinetti's bombastic writings, lead to the exaltation of the futurist architecture as rupture, as an expression of the novel, as an invention of the original, an interpretation which is at best debatable, as will be shown in the reading of the drawings by Sant'Elia.

In discussing the texts, we momentarily moved away from the object of discord; in the inventory found in literary description, words, as symbolic representations, end by distancing us even further from the referent drawn images. These, due to their iconic character, present themselves much closer to the represented object for being exempt from the abstractions of symbolic signalling, of the barriers of languages and peoples.

In this light, the reading of the graphic-structural and semiotic elements contained in the drawings should be conducted in the safest way in order to evaluate the meaning and extension of the "futurist architecture", characterized as a product-less activity.

**Graphic Manifestations**

**The drawings**

Analysis of the drawings, contrary to others based solely on the texts, may verify the meaning of “futurist architecture”, placing exaltation as admiration and the intended original invention as the correct visionary adequacy.

For this reason, in studying the drawings of Sant'Elia, despite observing the anticipation of his "futurist" project, one should proceed in the manner described by Banham (1975) when he rescued, in the "Messagio" text, continuity and the possibilities of re-evaluating the more ancient bodies of the architectural doctrine.

Thus, the exegesis of the drawings should, firstly, investigate and salvage their etymons and the path of the figurative transformations, which may have been used in the innovative process intended by Sant'Elia.

The most common figurative transformation is the one occurring inside the group of artists of the movement; yet, this transformation seems not to have been the tonic between architecture and the general futurist movement. This can be verified in the fact that Sant'Elia’s drawings were only effectively absorbed by the futurist movement body, after the exhibition of his work had taken place. It would be, thus difficult to prejudge them on the view of the intended figurative transfer of pictorial elements performed by others before him, by futurist artists such as Boccioni, Carra or Balla.

In a certain sense, futurist painting and sculpture, above all the works of Boccioni and Balla, enticed the maturation of a language. This language was clearly described by Boccioni in the manifesto of futurist sculpture and is found inscribed in various known pictorial works such as “Development of a bottle in space” (Figure 2), produced in 1912 by Boccioni, or the painting “Speeding Vehicle” (Figure 3) by Balla in 1913.
According to Boccioni: “in sculpture, like in painting, one cannot renovate, without seeking the Style of the Movement, that is, making systematic and definite as a synthesis of what impressionism gave as fragmented, accidental and therefore analytical. And this systematisation of vibrations will produce the futurist sculpture, whose foundation will be architectural, not only as a construction of masses but in a way that the sculptural block might possess in itself the architectural elements of the sculptural environment it is subjected to (...) May we, then, overturn everything and proclaim the total and complete abolishment of the finished line and the closed statue. May we blow open the figure and close within it the environment…”

Unlike the investigative maturing of the fine arts, the designs of Sant'Elia, did not attain the proposed “architectural dynamism”. The drawing of Sant'Elia, except for the embodiment of architecture to environment (of the building with the city), did not represent the “style of the movement” of Boccioni or the “abolishment of the finished line” and Balla's suggestion of rhythm.

The lines, in the designs, are almost always restricted to their function as contour and textures. The “systematisation of vibrations” only occurs when the contour lines of the represented solids are extended beyond the edges, generating a notion of shape in construction. This characteristic can be observed with greater emphasis, in the more freely finished drawings, like the “Power Station” (Figure 4) and “Study for the factory” (Figure 5).
The manifest refusal of the "perpendicular and horizontal lines", as would the "Messagio", or the “finished lines” as would Boccioni, does not find deep agreement with the lines existent in the drawings. Concern with the slanted line, found in the “abutments” in the structures of the buildings, and the thematic sequence, found in the terrace story of the gradient houses.

The difficulties in Sant'Elia’s drawings, towards a futurist architecture, inasmuch as the figurative transference of the elements formulated by the fine arts, were, other than his short-lived involvement with the futurist movement due to his untimely death, according to Zevi: “He lacked time to translate the [futurist] ideology into a language and tune himself into the ‘plastic dynamism’ of Boccioni (...) But in architecture this could not be achieved other than in two ways: one extrinsic, with the elevator boxes, visible in the facades or with the ‘tapis roulants’ [rolling carpets] of Sant’Elia’s perspective, and another inherent to the expressive medium, in a symbolic key or physical-psychological empathy.” (Zevi, 1980)

**Figurative transfers**

In this sense, as Fiz (1986) called, it can be observed that Sant'Elia’s thematic was aligned with that dealt with by the futurist movement as a whole, but that the constituting elements of the perceptive-semiotic language of his drawings had not yet reached the same stature as his thematic-literary propositions.

Given that the figurative transfers between the futurist movement manifestations are not complete, the iconic investigation should seek out some linking aspects in Sant’Elia’s
background, such as the influence of elements derived from the Viennese “Art Noveau” and a few studies conducted in the Brera Academy. Such influences can be noted in one of his prior works in the drawings shown in the “Nuove Tendenze” exhibition: the Monza cemetery (1912) (Figure 6).

![Figure 6: Project for the Monza cemetery Arch. Antonio Sant'Elia, 1912](image)

Some of the compositional elements and elements of volumetric articulation present in this drawing were inspired by the Faccanoni Mausoleum (Figure 7), executed in 1907, by Giuseppe Sommaruga, another architect who studied at Brera and who also developed work very much sustained by the Viennese architecture. The figurative transfer can be noted in the use of symmetric towers that top, side and limit the distribution of the internal volumes of the construction. These towers are almost always present in the drawings by Sant'Elia, performing the same task, opposing the inner volumes.

![Figure 7: Photograph of the Faccanoni Mausoleum Arch. Giuseppe Sommaruga, 1907](image)

From the architectural point of view, Lampugnani, (1983) indicates a clear influence coming in from the works by Henri Sauvage and Charles Sarazin, specially on one of Sant'Elia's most revered conceptions – the building of gradient stories, whose dynamic nature was certainly reminiscent of those architects' work in Paris between 1909 and 1912 – project for an apartment building block (built in 1914).

The thematic of Sant'Elia was also built based on his personal experience. Throughout part of his life, he was industrious on work for the Milan Power Station competition, running during 1912. The shape of the spillers, the transmission towers and the electric cords and cables, characteristic of a power station, are frequently present in his drawings, used as semantic elements indicative of the machine age.

It should be added that the theme of the power station as a source of energy, machine life-giving energy, was also, in the literature, an object of numerous references by Marinetti.

The power station theme, the machine of all machines, is central to futurism. Associated to the idea of progress and development, this theme, after the war, was widely discussed on the part of modern architecture and revealed itself with great vigour in the development plans of the 1920s in the USSR and the North American Tennessee Valley Authority projects between 1933 and 1937.

It is true that Marinetti and the futurist group anticipated the praise to electric energy before 1914, but it in March of that year that it appears in "Geometric and mechanic splendor and the numeric sensibility – Futurist Manifesto" sounding like a profession of love:

"…Nothing is more beautiful than a large power station buzzing, holding the hydraulic pressure of a chain of mountains and the electric strength of a vast horizon, synthesized in the marble distribution grids, rows of taps, flashing switchboards."

In a simplified way, as symbolic configurations, it can be interpreted that "Power Station" is to futurism as the "Cathedral" is to expressionism.
Technique and medium

The illustrative aims of Sant'Elia’s drawings can be verified in an analysis of his graphic production. His drawings are almost always perspective, containing no explanations about the plans, the area planning or function distribution. The visualization of the external shape of the architecture predominates other any other design act, the image exposes but fails to explain itself as “a newly constructed structure on a rational plane, reaping all of technologies benefits.”

Due to the illustrative character of the drawings, the preference as to the projected surface falls on the use of the slanted picture, with the focal points on the asymmetric perpendicular lines, in relation to the observer. In choosing the “unbalanced”, Sant'Elia intended, as in Mendelsohn’s drawings, to emphasize certain dynamism of the architectural form even when his conception was plainly axial, as can be observed in the drawing “Study for factory” (Figure 5).

The observer’s position always tends to be low, normally on ground level. This positioning, also preferred by Mendelsohn, tends to ‘gigantisize’ architecture. Firstly, due to the nil height of the observer, these two structural choices indicate a difficulty in servicing, within the limits of the image, the programmatic presuppositions of the “futurist architecture”: the drawings of an architecture which intended to surpass “the sense of the monumental” and combat “the cubic and pyramid shapes which are static, grave and oppressive”, ended up presenting an architecture in monumental scale. Secondly, despite using a sloping surface as the representation plane for perspectives, this did not avoid the reading of multiple projects in the axial composition, a fact that contradicts the disposition of rejecting “all which is heavy, grotesque and unappealing (tradition, style, aesthetics, proportion).”

In terms of structure, that of the drawing “Stazione Aeroplani” (Figure 9) is different, placing the observer in an elevated position and the grid perpendicular to the axis of the building. It is safe to say that the reason for this choice comes down to the possibility it offers of showing the airplane landing field behind the central building – to achieve this, nothing bets placing the observer up high, in the position of one who prepares to land an aircraft.

This architectural proposition of the centre of the city found repercussion amongst the progressive architects: the landing field between the city towers in “Une Ville Contemporaine” (1921-22) (Figure 10) by Le Corbusier, repeats the solution of the multi-levelled traffic lanes and the surreal idea of landing airplanes between buildings.
Besides these structural features, in the drawings by Sant’Elia some meaning can be inferred from the elements selected for presentation.

The straightforward comparison of this drawing with that of Le Corbusier shows these characteristics – the near inexistence of objects other than architecture, in the representations of Sant’Elia. In “Une Ville Contemporaine”, Corbusier tries to inhabit the architecture with airplanes, vehicles, Figures and elements of vegetation. In the drawings of Sant’Elia, everything constantly disappears. The architecture of the machine, of movement, of the facades full of elevators, of the multi-levelled lanes, finds itself deserted.

The great architectural machine, empty, shows itself by itself. New materials are presented in solid blocks, frequently symmetric, developing upward, against the sky, and downward, in the subterranean lanes, in an arid, scenic landscape.

It seems fair to say that architecture, in its flattery of the machine, renounces not only history but geography as well.

Conclusions

In futurism, the place of the machine city is utopia itself.

It makes no sense to think of the futurist architectural drawings as containing no other figurative-semantic elements just because these were composed of briefly executed sketches, drawn without care for detail. A simple comparison may prove this: take the drawing for the “Stazione Aeroplani” (Figure 9), a sketch made in a summarized fashion which, no doubt served as a source for the more detailed perspective of the “Città Nuova” Central Station project (Figure 11). In the sketched image, the free-hand lines indicate volumes, lights, textures and the outline of architecture, but also suggest, in small strokes, the airplanes, the vehicles on the various levels, and in the small dots, the pedestrians. In the more detailed image, the single tool-built stroke, specifies and objectifies the architectural minutiae, stresses the technical proposal of material construction; however excluding, more so than in the other image, any trace of non-architectural figurative suggestion.
The emphasis of the drawings is on the new architecture. The demonstration of its domination over the architecture of the past is patent in the process of accent and exclusion proposed by the drawings: in the elaborated drawings, there is not a single reference to the past or the place, it all intends to be a *tabula rasa*. The drawings make the thesis explicit: “Architecture begins again, forcibly, from the beginning”. The “Milano L’Ano Due Mille” drawings blossom in an architectural desert: on it, there sprout “large buildings, railway stations, huge highways, colossal bays, covered markets, shiny domes, reconstruction areas and the salutary tear down of slums”.

The thematic approach was not solely responsible for the dissemination of the futurist architecture.

The drawings by Sant’Elia remain in architectural and product design practice not only because of their visionary qualities, but also due to the representational ability he employed in transmitting these.

The more free drawings are executed with a simplicity of means possessing the power to communicate, through intensity variation of the stroke signal, near abstract propositions of architectural form, as if mere didactic exercises. (Figure 12). When, more detailed drawings, these indicate, through their stroke intensity and density, the inherent characteristics of the materials employed.

This graphic brevity in the display of the architectural ideal, was taken up by many architects and designers as a syntactic possibility in representing their proposals.
It is plausible that the center of Brazil’s capital, Brasilia, as a big urban bus station, was conceived thus by the urban planner Lúcio Costa in the late 1950 influenced by his drawings.

Sant’Elia’s futurist architecture, composed of a handful of images, reveals the possibilities of drawing as a sign of architecture and of a movement. Largely due to his drawings, with their exaggerated use of vanishing lines, it was possible to conjure up graphic solutions to represent power and velocity. Raymond Loewy’s inauguration of the “streamline style” is very likely inspired by Sant’Elia’s work (Figure 13).

Many later projects absorbed his proposals, such as: the openings in steel trellises, the sloping walls, the semi-circular base vigorous towers, the vertical rhetoric, the multi-levelled circulation, stream-lined forms, and so on. All these “realities” were found suggested in the graphic quality of his drawings.

If the chance of a “futurist architecture” coming into being died with Sant’Elia in 1916, the development of his proposals were carried forth, to this day, having been objectified by his drawings.
References:


1 The discussion of the relevance of Sant’Elia to the futurist movement, as well as the comparative analyses of the “Messagio” text (written by Sant’Elia and Ugo Nebia) and the “Manifesto of Futurist Architecture” text re-elaborated by Marinetti, are all found in the book by BANHAM: 1975, p.181 à 212

2 Excerpt from the futurist painters manifesto - 1910 - apud BERNARDINI, Aurora F.: 1980, p.39

3 Excerpt from the literary manifesto of the Founding of Futurism apud BERNARDINI, Aurora F.: 1980, p.31 a 36

4 The “Manifesto on Futurist Architecture” is found under the title “A Arquitetura Futurista” in: BERNARDINI - Aurora F.: 1980, p.155 a 159

5 The “Messagio” excerpts were taken from the book by BANHAM: 1975.


7 MARINETTI,F. T. - “O esplendor geométrico e mecânico e a sensibilidade numérica - Manifesto Futurista” - apud BERNARDINI, Aurora F.: 1980, p.147 a 153

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