

## INTERACTIVE DESIGN IN SCENIC COMPOSITION. A MULTIDISCIPLINARY EVOLUTION

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**Abstract.** This study analyses scenic design and its expanded nature, placing the different areas of composition as a place of intertextual and interdisciplinary creation in the material space of representation, where the symbolic and the neo-iconic materialise in the symbiosis between *ars techné* and *ars poética*. The author of the article will check how these compositional, interactive strategies have been deployed throughout the history of theatre as transversal and correlational actions, from the original optical devices of classical theatre to the incorporation of new experimental visual orders assimilated by the scenic avant-garde of 20th century. These transformations, as a reading-interpretation procedure of the text, transferred and resignified to the scenic space, have evolved towards more interactive forms activating a complex network of significant operations within the scenographic categories of design in which they intervene: Scenography, lighting, performance, stage costumes, choreographic design, sound space, video scene, among other items. Relations of independence/interdependence will be verified through the geometric and semiological vectors, to arrive at a definition of the concept of Interactive Design.

**Keywords:** *Interactive design, scenic design, staging, scenography, semiological vector, geometric vector.*

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### 1. Introduction

In the twenty-first century, the *mise en scène* becomes immersive and interactive through scenographic design and technology, increasingly being introduced into hybrid creative territories. The metamorphosis of text into visual-sound images takes place in the optical-auditory field, which is a process of selection, abstraction, stylisation and design of an expanded character. Technical and expressive means transform space and scenic devices through the artistic use of light, architecture, colour movement, applied digital technology, perspective, and music among, other elements. The making up of the performative space perceptible to the public on the stage(s) or, also, the fragments of all the conceivable scenography (Pavis, 1998, p. 171). The scenographic space refers us to the material consistency of the text in the virtual, visual, acoustic and dynamic field of the scenic box, as part of the operations -or procedures- of the *mise-en-scène*.

This study addresses the need to interrelate several techniques and resources that come from painting, photography, design, architecture, technology, cinema or fashion. This interconnection can be noticed all along the aesthetic horizon of the twentieth and twenty-first centuries' scenographies. This dialectical approach was already current within the first proto-scenographic stagings of Classical theatre, later developed by the Baroque techno-scenic innovations. To this extent, the pictorial-scenographic tradition

by great masters of perspective and decoration must be added. The Scene Art pushed the art conductor into the spotlight as the fundamental axis of creation within the experimental framework of the late nineteenth and early twentieth centuries theatrical avant-gardes. New postulates, manifestos and techniques were materialised through design, seeking an interactive dynamic: it aspires to achieve the visual synthesis of dramaturgy. This is the projection of the illuminated linguistic text under the light desired by the set designer (Pavis, 1998, p. 120).

This study focuses on two fundamental points. On the one hand, to examine the historical evolution of Scenic design related to transversal relationships between painting and architecture; on the other, to define the concept of 'Interactive Design'. That is to evaluate the basic taxonomy of different layers and processes involved in the creation of the spectacle. These are expressed in two vector planes: a geometric one (the elements of the show, the spatial materialization of linguistic and non-linguistic signs in the design); and a semiotic one (the symbolic codification of the text's universe to be expressed through visible signs, their shaping and meaning).

This idea is already observed in the Artaudian avant-garde statement, as the resurrection of an integral spectacle that gives voice to space, feeding and furnishing it, like mines within a white wall, transformed into geysers and stone bouquets (Artaud, 1999, p. 206).

In the twentieth and twenty-first centuries, the problem of space is not the architectural conception of the buildings nor the optical planimetry of the stage. Space ceases to be background or context for the action; it is transformed into a 'language' or into an 'expression'. Space becomes an autonomous system of signs integrated with other signs that define the scenic composition (Bobes Naves, 2001, p. 503).

From a methodological perspective, we start from the historical itinerary of the theory of Scenographic art and its praxis, from the origins of Greek theater, to the emergence of the scenic avant-garde of the first half of the twentieth century, putting into context the relationships of scenic design with other artistic disciplines and visual languages, the evolution and significance of scenic technique and its interdisciplinary relationships.

On the other hand, we will trace a synchronous trajectory between design and its relationships of hybridisation and juxtaposition with other disciplines and assembly procedures, which will allow us to analyse harmonic or opposing connections, subordinated to the different theories of scenic design. They are tensions of a compositional nature (contradictions, visual shocks and interferences), which are expressed in the light of the theories of theatrical semiotics. We refer to the game of opacity and clarity as operations of determination and indeterminacy of the staging with respect to the text (Pavis, 1998, p. 365).

## **2. Historical evolution. Architecture, painting and machinery**

### ***Protoscenography. First interactive technological devices***

The relationship between *ars poética* and *ars techne* originates from Greek Theatre. It is found in the very essence of the art of representation; the text reproduces the world and the representation endows the text with its spatial construction to give it a productive-allocutive sense, thus demonstrating the biunivocal relationship between language and thought, between figuration and abstraction.

Throughout their historical evolution, visual arts' elements and theatrical resources converge -in a transversal way- mirroring the relationship between artistic theory and literature, within the scope of technological innovations that have taken place.

Aristotle in *Poetics* refers to the first ornamental compositions, the *Spectacle* being the sixth constitutive element of the tragedy together with the *Argument*, the *Characters*, the *Language*, the *Thought* and the *Music*.

Greek Theatre deploys the scenic machinery to provide the show with effects, rhythm and visual synthesis. To the optical and sound effects scenographic devices are added, such as the *periactos*, a rotating structures of three surfaces, painted with figurative illustrations of forest, sea or mountain, for scene changes.

The *ekkyklema* made the invisible visible through a mobile platform on wheels that advanced from the back to be shown at the front *skené*, origin of the modern scenario. The mechanism concealed the crimes and bloody deaths of tragic stories. These were violent or immoral events that had to be hidden from the spectator's eyes.

Each scenographic device met a certain function. For instance, there were swift changes of scene through frames and visual *trompe-l'oeil*; there were sound effects such as those aroused by the *brontéion* and the *keranoskopéion*, artisan instruments that generated effects imitating a thunderclap or a lightning flash. These actions were executed in a planned order, activating the fictional machinery of tragedy, interacting as functional systems and technical means that introduce the viewer to the real, supernatural and magical action of the show (D'Amico, 1971, p. 27).

The connection among these effects and illusionist devices with the text of the tragedy tells us about the very object of study of design as a compositional strategy, preamble to Scenographic Design. The subdivision of areas or spatial modules intended for the choir, musicians, dancers and actors establishes the first reciprocal games between plane and depth in relation to the observer/spectator' position. Although we cannot yet speak of theatrical perspective, spatial composition is expressed in symbolic territory, spatial composition is expressed in symbolic territory. In the original ceremony of theatre as an event of the word, the gesture, the music and the interaction of mechanical devices, were first steps towards the later interactive creation of Scenic Design.

The Renaissance and Baroque will revere beauty and ornamentation as an equation between life and image. The *ut pictura poesis* by Horatio (as is painting is poetry) would symbolise the union between literature (drama) and painting (scenography). The painted scene will overflow the two-dimensional plane of the scenic frame creating new spatial relationships.

### ***Perspective and visual effectiveness in the Renaissance and Baroque***

The studies on the construction of Roman theatres collected in the *Ten Books of Architecture*, Book V (20. A.B.) by the architect Marco Vitruvius Polyon were recovered and revalued in the treatises of Leon Battista Alberti (*De re aedificatoria*) and Sebastiano Serlio (*Seven Books of Architecture*). Later this precept, was adopted by Palladio and Scamozzi in the design of the Olympic Theatre of Vicenza (1580-84), the first covered theatre in modern history in which a pictorial plane in perspective allows the creation of games such as visual illusions following the norm of the basic interior structure of Roman theaters , among other spatial dogmas.

As for the studies of perspective in painting and decoration, the inventions and studies of Filippo Brunelleschi were collected by Alberti in his treatise *Della pittura* (1435) endowing the theory of perspective with scientificity. The architect and painter would later on treat the two-dimensional plane as an open frame or window onto the scene, explaining the mathematical bases of the reticulated grid to precisely place objects in a three-dimensional space (Albert, 1897, p. 215).

These laws, which were profusely developed together with other spatial theorisations in the implantation of scenarios and sets, fixed and mobile, in closed and open spaces, will be the essential contribution of the sixteenth and seventeenth centuries to the art of theatrical scenography. The professionalisation of the figure of the scenographer comes from the field of the Medici, being Florentine art a formative reference for artists interested in the art of the scene, integrated into the courtly field (Merino Peral & Blázquez Mateos, 2015, p. 116).

The Albertian window<sup>1</sup> would be an antecedent of the "theatricality of the Baroque" and will be present in the investigations on perspective and the "Euclidean point of view" developed by Torelli, Burnacini and the Bibiena family.

The painted curtains, the visual *trompe l'oeil*, the technical devices camouflaged in the decoration, are constructive and figurative procedures that create symmetrical relationships between the projective point and the plane of observation: homogeneous, parallel, interfering. Renaissance optics will endow the Baroque scene with a great poetic effectiveness giving rise to new symbolic possibilities.

In the second half of the seventeenth and first half the eighteenth centuries, the Bibiena, an Italian family of architects and decorators, experimented with the cross perspective, floor plans and cross section, the so-called *Scene ad angolo*. They specialised in the *quadrature* genre to create fictional architectures, scenographic and architectural "capriccios", illusory painted decorations that deceived the viewer's perception through curvatures, crossed lines, arches and columns of great monumentality, games of depth and height. These painted scenarios sought the maximum visual effectiveness to give illusion of reality on the stage combining painting and architecture.

Sebastiano Serlio's treatise was based on an earlier one by Vitruvius. In *Il secondo libro di prospettiva* he paints the perspectivist scene in three ornamental typologies as fixed theatrical backgrounds with their respective dramaturgical-decorative functions: *tragic scene*, *comic scene* and *satirical scene*.

Around 1652, Burnacini, an engineer and architect, designed complex scenographic mutations with great architectural details for the Viennese court. He integrated music and stage apparatus into the designs of masquerades, operas and ballets.

Alternatively, Giulio Parigi and Jacques Callot developed the iconography and allegory of landscape in their designs. Cosme Lotti made designs for Lope de Vega's and Calderon's comedies and was appointed as the 'Set designer' of the Spanish court of Philip IV. His landscape interventions, such as those carried out in Buen Retiro Palace, were living scenographies of great visual effectiveness to which complex stages were incorporated.

Giacomo Torelli -master of scenographic painting and illusionism in Italian opera and court ballets in Louis XIV's France- perfected the technique of the painted curtain

<sup>1</sup> Pythagorean order that regulates the visual planes from the framework that separates the real space from the imaginary. Idealized vision of nature in its symbolic perspective.

and the scenic stage with techno-scenic, decorative and spatial solutions that overflow the scenic picture with open and closed visual groups, generating new spatial dynamics.

The sum of these, and other contributions to the scientific knowledge of art and in particular to the art of the scene as "reality" and "reflection" of the advances in painting and architecture of the *Cinquecento* and *Seicento*, lay the foundations of the scenographic design that will abandon the figurative, the decorative and the machinery of illusionist effect without losing the keys of the spatial planimetry of the scenic box inherited from the Renaissance and the theatrical Baroque.

In sixteenth-century Italy, the architecture of closed theatres posed the relationship of frontality or "all'italiana" design with the creation of the embouchure, a dividing membrane between the virtual space and the real space, drawing an interactive, virtual relationship between the stage and the stalls, with their corresponding levels in boxes or upper balconies.

The proscenium arch or mouth, like the Albertian window, would fix the entrance door to the optical box; symbolic sense of the arch represented through a large imaginary access door, esoteric gate or Dionysian threshold. The mouth as an anatomical symbolism that expresses the first emanation, personified in the Egyptian hieroglyphic sign of the word as a creative verb, also, as a representation of Apollo, the sun god (Cirlot, 2011, p. 102).

The stage view, from the point of the mobile or static viewer, occurs from the first line of the proscenium to the last plane of the scenic forum, depending on the hierarchy of the geometric stroke or centerline axis, evaluating the games of balances resulting from the interaction of these visual orders, the sets and the scene movements.

This list of plans elevates the interior decoration in perspective and the painted scenographies. The games of lifting machines made elements of the scene appear and disappear: hatches, trapdoors, gadgets to animate and give mobility to the practicable elements, of great surprise and effect: navigation, tempest, fire, battles, aerial effects ..., mutations in the public eye.

In Spain, the Golden Age theatre would be developed in three representational areas: the religious theatre with the celebrations of *Corpus Christi* and *Autos de Fe* (Faith Acts); the Court theatre -performances at palaces and royal outer parades-, and the commercial and popular *Corral de Comedias* theatre. This last one was the Spanish golden milestone similar to that of the English Elizabethan scope. These playhouses were interior courtyards of rented houses or hospitals in which there was an open, fixed stage, elevated to the view of the spectators, and a scenic moat to hide the trapdoors and hatches where the acoustic and visual effects are generated (Oliva & Monreal, 2017, pp. 170-171).

The conception of the spectacle in the seventeenth century promoted the multidisciplinary integration of dances and music as expressive resources of the new comedy. But what happens on the optical plane is subordinated in this case to the strong iconisation implicit in the verse, which contributes to raising theatricalisation to its highest point.

The detail of the scenographic elements gave great importance to visual effect. In the maturity of the seventeenth century these details become progressively more ornated and rich in scenic attributes, inserted in the devices and scenes decorated for the cars on the feasts of the Blessed Sacrament. In *Memory of appearances* of the sacramental auto *The Divine Orpheus* (1663), the importance given by Calderón de la Barca (2000) to the

indications for the multifunctional design in his allegorical chariots is appreciated. What follows are the indications for the room of the chariots:

The fourth carriage is a crag divided into two halves by two cypresses, half stage and half costumes so that the actors can enter and exit. The rock will be populated by trees that crown the summit, and at the same time, on all sides and façade, various animals must appear. When opening the curtain of the dressing room we will see a sea in the background in whose waves some fish move, and on which live birds will be seen flying.

The allegory was constructed on a symbolic plane and it is the sum of the iconographic elements cited in the text, which came from the sculptural and pictorial tradition of the Baroque. The symbolic picture was integrated into the costumes, the ornamentation of the sets, the design of the practicable ones and the complex architecture of the car-stage in continuous movement.

Court theatre, ballet and court opera are the subject of complex stagings and visual effects. On the occasion of great festivals, funerals and masquerades, the great choreographic tableaux of the court theatre take over the city in the form of ephemeral living stage sets. Urban space and theatrical action were combined, such as, the entrance of Mariana of Austria (1649) to marry king Philip IV. A symbolic itinerary in which the monarchs celebrated their nuptials by turning the city of Madrid into a living stage. Text, painting and scenography form the narrative thread of the performance during the celebration.

The segmentation of the space and its complex ornamentation was inspired by thematic sources of mythological, epic and historical character. Colossal designs of Italian inspiration with a highly codified allegorical charge (Blázquez Mateos & Cid, p. 45).

In these macro representations, painting and scene posed new relationships of interconnection, interpolating images, choreography, music and movement with the contribution of musicians, choreographers, architects, sculptors, painters, actors, artisans, dancers, among other trades.

We can conclude that optics in the Renaissance and Baroque becomes dynamic, tracing new relationships between image and movement with respect to the centerline axis. The painted sets, distortions and optical games of the Baroque are subordinated to the study of the visual field, derived from the theories of the Renaissance painters who sublimate the canon of beauty. The Platonic idea, which exists objectively in the universal, thus arrives at extravagant mixtures (Schlosser, 1993, p. 377).

### ***From the decorative to the symbolic. Visual dramaturgy***

Romanticism, as a literary-dramatic movement of the first half of the nineteenth century, struggled to transform the neoclassical heritage that promoted the consolidation of bourgeois drama and the renewal of the actor's artistic technique. The possibilities of representation of the text were evaluated for the first time in its historical study. The author's point of view marked a renewed social and psychological perspective of theatre.

In this period of change and modernization of the theatrical craft, the modern notion of the stage director is based on the reforms of the Duke of Saxe-Meiningen and his company, between 1860 and 1914. Historical accuracy was imposed on the

costumes and sets, the supervision of the assembly and the designs was systematised, giving priority to the visual, technical and artistic ordering of the assembly under the same artistic criterion: historical precision in the sets, furniture according to the time of the text, stylistic coherence in the costumes (historical fashion and colour fidelity).

The guarantee and exhibition quality of the scenic materials printed "truthfulness" to the facts narrated in the drama. The stage was transformed into a verista painting for the scenography, integrating sections adjacent to the virtual box of the stage that had previously been sectioned by the decorative needs of the painted scenographies of the Renaissance and Baroque.

The painter status of the Duke of Meiningen, influenced by the perspective and laws of painting, allowed him to observe the stage box as a space of dynamic and multifunctional composition. For Shakespeare's *Julius Caesar*, for example, the designs of Roman togas were recovered from drawings and pictorial references of classical antiquity consulted in museum catalogues. The Duke's staging evaluated spatiality by assigning levels of significance to the geometric positions of the actors, to the composition of mass movements and their proxemic relationships (Braun, 1992, pp. 15-26).

In the second half of the nineteenth century, realist theatre and the naturalist movement, led by Antoine's Free Theater, seeks the expressive union of all the elements; the lighting will dominate the atmospheres and moods focusing on the movement of the figures and reliefs, diluting the pictorial effect of the scenography.

The chromatic incidence of lighting, the games of intensity, light and shadow, will make the space progressively more tectonic and the figure of the actor will gain prominence as a fundamental piece of the visual and acoustic framework of the representation. The figure of the stage director will prevail as a creative authority, responsible for the guidelines of the design and the stylized result of the show. Everything we do goes through the mastery of form. Everything is stylized (Brook, 2001, p.312).

Towards the end of the nineteenth century, the scenic innovations of Max Reinhardt, Adolphe Appia and Gordon Craig propose a new anti-realist poetics for the scene by desacralising the text, away from the photographic notion of realism and theatrical naturalism.

Entering the twentieth century, their theories and stage innovations radically transform stage design and avant-garde theatrical art. The design of theatrical staging is based on a meticulous experimental research work on the scenic grid and its optical-acoustic possibilities that contemplate the dissolution of the frame, the atmospheres suggested in the design through regulated lighting, spatial abstraction, clean lines and scenographic synthesis under the prism of a renewed literary-dramatic corpus that repositions the figure of the actor/performer as the axis of the scenic creation.

With the turn of the century and the entry of avant-garde artistic manifestos, a disruptive theatrical genetics were born, marked by the intentionality of the conductor and their political-aesthetic discourse. The structural renovation of the stage box, with the consequent changes and adaptations of the machinery to the needs of the show, will depend to a large extent on the styles and sceno-plastic movements that burst onto the avant-garde stage: Expressionism, Surrealism, Dadaism, Constructivism, Futurism, Political, Theatre, Document Theatre. Styles that propose new assembly strategies; a renewed relationship of materials and designs for a new production of meaning marked by experimentation (Cid, 2018, pp. 13-14).

Staging will reach the status of "total piece of art" as a place of co-participation of all the instances in the process of creation of the show, granting the stage director the first and last responsibility of the artistic object.

In this sense, Reinhardt, who perceives theatre as an evolutionary process, positions the director as a demiurge. The work is not completed until the Staging shapes the text through the scenic score that recovers the three-dimensionality of the actor, his creativity and spontaneity, far from the two-dimensionality that cuts his silhouette on the background.

Reinhardt advocates the disappearance of the curtain that divides the scenic frame and separates the stage from the audience by proposing a spatial continuum that gives unity to the performance, thus facilitating the interaction between both visual planes in the same architectural unity. The construction of the stage must rise as a fixed and compact unified whole, but at the same time allowing the flow of changes, rejecting the flat landscape with painted overlapping frames (Reinhardt, 1999, p. 227).

The Albertian window will be resignified by Appia as a "scenic painting" in the founding texts *The Music and staging of 1899* and in *The Living Work of Art of 1921*. In both texts, he breaks with the preceding theatrical illusionism and naturalism. The revelations of the Wagnerian work and its integrative conception of the work of Total Art (*Gesamtkunstwerk*), lead Appia to the study of the music theatre relationship, to contextualize the problems between expression and form: duration, rhythm, time, proportion, sequential and dynamic relationships, among other aspects applicable to movement.

Appia is the first to outline the concept of pictorial atmosphere through light in the inanimate scenic painting leaving aside the scenic illusion of the *trompe-l'oeil* and its decorative use. The use of programmed lighting, the light transition as a dramatic form and the abandonment of the subjectivity of colour will affect the actor. The semiotisation of the scenography, of architectural solidity and contrasting planes in height, gives an account of its double aesthetic function: the relationship between thought (work) and form (representation).

In Appia's artistic theory the sign is painted through light. In the second half of the twentieth century, Josef Svoboda takes up this idea through his designs, incorporating the handling of incidental light and refraction on layers of mirrors, as a projected image in motion (focus vs blur), creating a visual unity between the background and the floor of the stage. Appia connects the vertical and horizontal plane diluting the formal separation between floor and side walls of the scenic box.

The performer, the actor, as the main structure of space, is studied as a "living body", the human figure that evokes plastic beauty through movement, creating the necessary spatial tension between the body, the ground and objects. The staging includes light, form and colour as compositional processes. The light can be coloured by its quality or by the lenses used, which allows the projection of images, from the most indifferent degradation of the tones to their most precise evolutions (Appia, 2000, p.159).

In this sense, we must take into account the pre-existing advances in the perception of color driven by Newton and by Goethe's Theory of Colors (*Die Farbenlehre*, 1810) which refers to the polarity of light, cold-heat, darkness-day, the role of the image and its receptive experience, evaluating artistic and poetic aspects. Goethe studies the elements that affect the temperature filtered by a prism and its effects on mobile or static positions, a matter of chromatic proportions that Appia later deals



with in the symbolist space that dematerializes the traditional decoration in favor of synthesis. Appia, adds modulations of black-white, lights and shadows projected in juxtaposed planes as the living quality of the moving light in the integral design of the *mise en scène*.

Gordon Craig examines Appia's theory and gives autonomy to the creative decision of the director above the other instances of design. The unity of the stage work will conform to certain scenoplastic laws, investigations into partial tones, shadows of shadows and suggestion through the scenography that arrive at the Shakespearean tragedy. In *The Art of Theatre* of 1911, he presents his stage theory as a source of aesthetic innovation and as a collaborative act between the different visible artistic languages, expressing that each craft of the theatre has a direct impact on each of the other trades, and only by means of a systematic progression, and not by means of a punctual and unequal reform, an effective result will be achieved (Craig, 1999, p. 93). This idea shows the point of intersection of all creative areas in the integrative concept of design in staging.

The German model of Fuchs, around 1909, proposes the retheatricalization of the theatre connecting "subject" (the return to the encounter with the spectator) and "object" (the pure work of art through movement, its artistic value), anticipating the importance of the sender-receiver axis in the theoretical approaches of theatrical semiotics that will develop in the second half of the twentieth century. The German director projects the idea of pure art as a return to the social festival of theatre according to the Greek model, to its pure essence, stripped of any illusionist decorative artifice. The languages of the other arts such as architecture, music or painting can enrich the drama, but they must never lose their autonomy or their immanent principles (Fuchs, 1999, p. 215).

The irruption of the artistic avant-garde and its structural reforms facilitate the transformations of scenographic art in the first half of the twentieth century. Erwin Piscator takes the step towards the complete integration of scenic devices. With its innovations, the assembly becomes immersive and technology enters fully into the design of the scene. It installs cinematographic equipment and projection screens, among other architectural modifications, which modify the conventional floor of the theatre building to host large-format performances with monumental scenographic installations, mass movement and motorised and hydraulic machinery.

Cinema, the cinematographic language, enters fully into the montage and along with it, the turntables, projectors, complex mobile devices and structures that rely on the techniques of architecture and engineering. Piscator had his performers act on the fragments of a terrestrial hemisphere and, with the incorporation of the cinematographic screen, turned the background into an active element of the scene (Brecht, 1970a, p. 207).

The inclusion of cinema and other devices of visual impact and technological efficiency will be pioneering resources in the technological implementation. Piscator uses the film with a didactic objective. It enhances the dramatic effect by simultaneous projections and moving scenes with the use of cinematographic techniques. Its purpose is to modify the structure of the theatrical building and replace the decorative scenography with the constructivist scenography (Piscator, 1930, p. 138).

Bertolt Brecht's epic theatre will complete the evolutionary cycle born in the first half of the nineteenth century. Design in epic theatre rejected the mechanisation of the stage promoted by Piscator (Brecht, 1970b, p. 190). Scenography, music, costumes,

projections, choreography, scenic graphics, all the elements of the performance will be subordinated to the new dialectical relations of cause-effect.

The didactic function of theatre does not lose its attributes of truth and simplicity. Brecht introduces distancing effects (*verfremdungseffekt*) in order to make it more difficult for the audience to identify with the characters during their performance: lighting equipment placed in full view of the audience, a curtain that made it possible to see the changes, songs that interrupted the action, graphic titles of the scenes, projections and films, masks and extra-ordinary props, elements that would serve to interrupt the course of the performance (Rülicke-Weiler, 1982, pp. 104-105).

The interplay of all these dramaturgical and aesthetic effects of performance largely defined the theory and practice of scenic design in contemporary theatre in the second half of the twentieth century.

Under the name of postdramatic theater, a term coined by Lehmann (2017), theatrical forms in recent decades have taken artistic risks by blurring the boundaries between genres. Projects are created to bring together interdisciplinary teams from different fields altogether with sectorial directors/conductors, dancers, graphic designers, musicians and actors, architects..., new interrelations and combinations of ways of working (p. 49).

To this point, the comprehensive analysis and research of the field shed light onto this review: it allows us to highlight the most significant innovations and transformations throughout the history of scenic design. Thus, during the whole History of Scenography persistent dynamic relations between different aesthetic and performative categories can be observed. This interaction occurs in two vector planes: semiological and geometric. Based on these observations we propose a definition of interactive design, determining its function in the Staging.

### **3. Interactive design. Taxonomy of areas, interactivity and vectorisation**

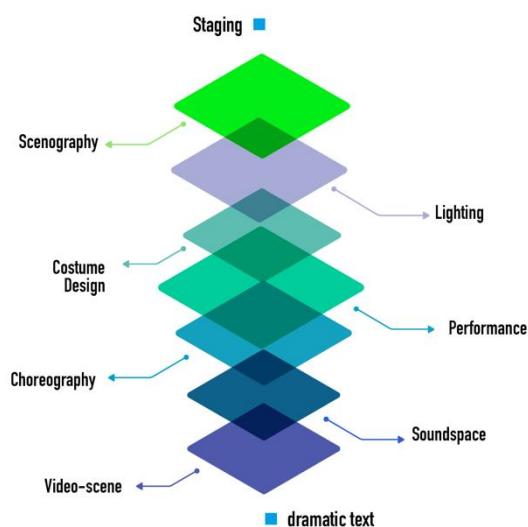
The categories of design, as significant and autonomous structures, are aligned towards the same scenic discourse that carries multi-significant messages through specific optical-visual codes, giving rise to the visual dramaturgy of the show. These structures are expressed as a "fabric" that runs through all the elements of a show. The visual transformation of written text into a space gives rise to a pattern of contemporary meanings that encompasses its entire statement (Helbo, 1989, p. 54).

Figure 1 shows the juxtaposed sections as part of the same creative itinerary. The synchronic processes structure the spectacular creation to achieve the unity of the aesthetic discourse through the correlations and interactions of the signs of the show. The areas systematise various technical and artistic processes in the design of staging. The optimisation of these signs of the spectacle depends on the theatrical tradition and its spatial conventions, artistic trends or material conditions for its production (Kowzan, 1997, p. 141). Each of these areas has its own specificity.

#### ***Taxonomy of the areas of interactive design and its main functions***

- Scenography: design and composition of the scenic space, scenic planimetry and control of central and vertical line axes. Architecture, models and functional devices, synthesis figurative, abstraction, stylization. Notion of time and place, relationships between dramatic space and scenic space. The semiological function of the scenery

makes it possible to situate the action in time. A semiological field as wide as the plastic arts: painting, sculpture, architecture, decorative arts (Kowzan, 1997, p. 141).



**Fig. 1.** Synchronous processes of interactive design based on the typology of the theatrical sign proposed by Kowzan (compiled by the author)

- **Lighting:** The aesthetic theories of Appia, the scenic revolution of the European historical avant-garde and the development of technology, introduce new terms in lighting design: light architecture, scenic painting, textured light, games between definition, abstraction, projected decoration, among other concepts. In the twentieth century lighting design becomes a refined technique, a dramatic resource for the construction of sense of in the *mise en scène*. If Appia experiments with atmospheres by making light a main element of its theatre, Brecht gives it a practical use only to illuminate the scene (Fischer-Lichte & Rojas, 1988, pp. 4-9).
- **Costume design:** clothing and characterisation symbol and metaphor, historicisation. The costume design is polysemic, it is linked to the process of building the character's sense. The colour in the costumes is a symbolic element encoded within the scenic picture, it can denote its social range and dramatic functioning (Ubersfeld, 1998, p.25).
- **Performance:** actor/dancer/singer/performer as the main structure of the compositional process. Technique and interpretative resources. kinesics and proxemics relationships. The kinesics experience of the actor is motion, the axis of gravitation of time-rhythm (Pavis, 2000, p. 161). Proxemics expresses the spatial relationships between bodies, each scenic aesthetic has its own aesthetic and cultural to define these relationships (Pavis, 1998, p. 360-361).
- **Coreography:** gestural notation, choreographic technique, architecture. Visual kinesics of the body. Dance can be considered as the poetry of bodily actions in space (Laban, 1987, p. 43).
- **Sound space:** acoustic channel. Diegetic and extradiegetic sound, music dramaturgy, acoustic channel, spoken voice, sung voice. Value of silence. Pavis (2000) defines the functions of music in Western staging as a sound event with a dramatic function. The atmospheres of music become acoustic scenery. Its integrating and disintegrating function in the spectacle (pp. 150-153).

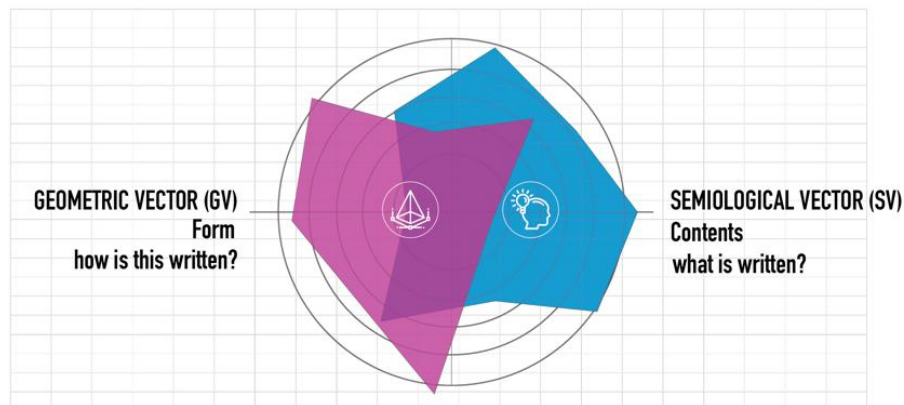
- Video-scene: virtual scenographic function, cinema and theatre, relations between the projected plane and the represented plane, disruptiveness, diegetic function, documentary function, visual narrative. The use of various multimedia techniques, films, projections, soundscapes, videos, supported by advanced computer technologies, has led to a type of high tech theatre that increasingly expands the limits of representation (Lehmann, 2017, p. 387).

### **Vectorisation**

As Dubatti (2011) indicates, the coordinate of symbolic relevance expresses the matter of which the show speaks (the what), the parameter of significance/interpretation associated with its thematic fields, theses, ideas, problems, conflicts or approaches. This symbolic relevance is related to the material part of the show, the poetic relevance or the plane of artifice, the formal aspects, the composition and construction, the procedures of the scenic technique. Symbolic and poetic relevance are the same unique and indivisible object (pp. 141-142).

Based on these considerations we propose in Figure 2 a semiological area/vector (SV), related to the content and significance of the signs of the show and a geometric area/vector (GV) as the materialisation / spatialization of the content.

Vectorisation in interactive design is the contractual relationship between "empty space" and "compositional space". Vectorisation makes it possible to examine the double composition factor in the design: the semiological vector (SV) and the geometric vector (GV). The dichotomy between content and form: what is written? and how do you write?



**Fig. 2.** Vectors of scenic design (compiled by the author)

The synchronous processes of Figure 1, as projective lines of action responsible for transporting the signs of the show, are expressed through the vectors of Figure 2: (SV) and (GV). Both vectors act as mediators between textual space and representational space, as reciprocal dialogue between content and form.

The geometric vector (VG), represents the graphic, optical, visible, acoustic The geometric vector (GV), represents the graphic, optical, visible, acoustic expression of the design, its execution. The composition or architecture of the space on the grid of the scenic plane. It incorporates all possible geometric relationships, proxemics (spatial relationships between bodies), kinesics as the physical score of the performer (choreographic composition, body mimicry), as well as other acoustic-sound fields (voice, sounds, directionality, equalization of sound ...).

The art of spectacle is, among all the arts, and perhaps among all the domains of human activity, the one where the sign manifests itself with more richness, variety and density (Kowzan, 1997, p. 126).

The semiological vector (SV) represents the iconographic and iconological content of the image, the focus/blur of the staging with respect to the text.

The different taxonomic areas of design represent independent semiotic units, systems of isolated codes that seek their unity in the poetics of the stage director through processes of coding, abstraction, stylisation, communication and transference. The utopia of the text, its diverse approaches, critical reading and interpretations, build the symbolic universe of representation. Theatre, as a place of semantic transformation of all the elements extracted from reality, transported to the stage, put "on stage", represents the dichotomy between the literary universe of the text and the theatrical universe of the scenic realisation (Bettetini, 1977, pp. 83-84).

#### 4. Conclusions

The transformations in the historical itinerary of scenic creation establish correlational links between theater, painting, sculpture, architecture, cinema and design among other disciplines and artistic manifestations, connecting the real and subjective plane, the visible and the underground, thought, language and artistic expression as a search for an author's poetics.

Scenic design is understood as the transformation and transmission of a poetic knowledge that resolves the conflicts inherited from the model that precedes it, assimilating the irruption of new aesthetic and technical methods, new collaborative methodologies that evolve towards a more advanced technological model.

In the light of the historical evolution of artistic theory and dramatic literature, new demands are posed that demand technical-artistic solutions to solve the latent dichotomy at the border of text (written image) and its representation (represented image).

The associations and correlations between poetics and scenic technique allow us to verify how the interaction of languages, discourses and materials favor new styles of representation, the transgression of the aesthetic and formal borders that give rise to the concept of interactive design, as a spatial, pictorial and semiological intertextual paradigm of the creation of the show.

Interactivity in design is confirmed as the necessary correlation of optical-sound languages of scenoplastic connotations in extremely diversified creation spaces, giving rise to the concept of Interactive Design as the processual and interdisciplinary technique that brings together the different areas of creation (interpretation, scenography, lighting, costume design, sound space, choreography, video scene). A vector network of significant operations through geometric and semiological vectors.

The importance of these relationships lies not only in the semantic content, but also in the systemic contribution, taking into account the artistic typology and the technical specificity of each of these languages as codes inserted in the show. These specific codes do not lose their identity by cooperating in juxtaposition with the text, the score or the choreographic notation, on the contrary, they contribute to the programmed semiosis of the staging as borderline, adjoining or transgressive layers.

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