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Review

Composing the Landscape: Analyzing Landscape Architecture as Design Formation

Konstantinos Moraitis

School of Architecture, National Technical University of Athens (N.T.U.A.), 8A Hadjikosta Str., 11521 Athens, Greece; mor@arsisarc.gr

Abstract: The article approaches 'landscape architecture', insisting on the term 'architecture' as describing landscape formations accepted as structured systems of composed, perceptual elements presenting organizational and aesthetic value. The central idea of this proposal refers to the key concept that design systems do not copy reality in its full complicated substance; they simply cannot manage to represent and work with the complex totality of the real surrounding world. They rather design abstract formational elements that 'schematize' reality and create composing syntactic systems, composing 'languages'. It was in this context that modern 20th-century garden designers insisted on the comparison of landscape design approaches with architectural abstract building plans or abstract early 20th century-paintings. However, analogous correlations may also be regarded in the opposite orientation. Thus, contemporary architectural projects are often described as 'landscape formations' in a period of environmental sensitivity combined with enlarged topological awareness; the latter presents earth bas-relief as a convincing metaphor of topological mathematical transformations in general, associated with computational 'animate' design. Nevertheless, the principal aim of the article is firstly to insist on the interchangeable approaches of hard-scape architectural design and green-scape design in terms of analogous abstract and schematized formations. Moreover, the present article intends to propose a possible didactic strategy of landscape design for architects or students in schools of architecture and for attendees already accustomed to building or hard-scape urban design. This design didactic strategy is principally founded on the concept that common abstract 'schematized' formations underlie all those practices: landscape design as well as building and urban design.

Keywords: landscape design; abstract schematizing forms; composing the landscape; green-scape compositional formations; didactics of landscape design; kindergarten pedagogy; folding forms and landscape design

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1. Introductory Remarks: The Objective of the Paper; Abstracting, Schematizing, and Composing the Landscape Formation

The author of the proposed paper is an architect possessing a rather poor knowledge of the physical qualities of plants. His academic interest in 'landscape architecture' rather refers to the second word of the previous term, 'architecture', to the approach of landscape formations as structured organized systems of composed or 'con-posed' perceptual elements presenting synthetic and aesthetic values.

What does the previous introductory sentence describe? It rather refers to the idea that no intervention with external reality may occur without its conceptual approach, its conceptual interpretation. We state that such an approach, such an interpretation, is always produced, even for the uneducated individual, through the 'schematization' and 'abstraction' of exhaustively complicated reality. This conceptual procedure may be described as a process that selects the most important characteristics of the real case or the real object in question, 'abstracting', at the same time, the less important among them. We thus attain a 'schematic' view of our real references that produces a conceptual

and perceptual 'structure', a 'structural formation', corresponding to the subject of our interrogation. Let us repeat the principal terms of the previous theoretical statement: abstraction, schematization, and structural formation. It is important for the presentation of our academic didactic or professional auto-didactic approach to insist on the four previous terms concerning the landscape and garden design; moreover, this concerns landscape and garden design in correlation with and comparison to other design practices such as those associated with 'hard-scape' building design or hard-scape urban design or even object design.

Summarizing the introductory part of our text, we insist on the didactic or auto-didactic objective of our proposal, associated with a postgraduate course's academic experience of twenty-five years in a school of architecture. It refers to the key concept that design systems do not copy reality in its full complicated substance; they simply cannot manage to represent and work with the complex totality of the real surrounding world. They rather design 'abstract' formational elements that 'schematize' reality and create a composing syntactic system, a composing 'language'. Based on the previous fundamental presumption, a didactic or auto-didactic method of landscape design was formed by the author of this article. It was extensively analyzed in a book of his, published in Greek under the title *Σχήματα Τοπίου–Ο Σχεδιασμός του Τοπίου ως ειδική περίπτωση Αρχιτεκτονικής Διδακτικής, Schemes of Landscape—Landscape Design as a Special Case of Architectural Didactics* [1]. It is presented in a summary, in a paradigmatic way, in the following pages, associated with the author's experience concerning the theory and history of landscape and garden art [2].

2. Methodological Approaches in Reference to Two Superimposed Thematic Levels: Methodology of the Article Presented, Plus the Methodology of a Didactic Approach for Architects or Students in Schools of Architecture

2.1. On the Distinction between the Terms 'Method' and 'Methodology'

The Hellenic etymology of the terms 'method' and 'methodology' is correlated with the combination of three additive Greek terms: to the word 'meta–after, in pursuit or quest of', to the word 'hodos–literary road, path', and to the word 'logos–reason'. The first two of them 'meta+hodos–in pursuit of a path, of a possible theoretical path', offer the compound term 'method'. Furthermore, the combination of all three previous terms, 'meta+hodos+logos', offer the three-bound term 'methodology', describing the theoretical assumptions that support the choice of the method, the succession of the arguments, and the foundation of the proof.

2.2. On the Methodology and Method of the Article

In our case, the theoretical basis of our presentation refers to the concepts of mental 'abstraction' and mental, cognitive 'schematism'. It refers to the mental activities that transform the complicated, unorganized perception of reality to organized abstract 'schemes' that may contribute to many possible applications of each schematized, abstract proposal. It is in this context that we may refer to the geometric schemes of a "circle' or a 'rectangle', produced through the mental abstraction of many circular or rectangular real perceptions and applied, subsequently, to many circular- or rectangular-shaping mental imaginative formations or material constructions of reality, to circular or rectangular compositional forms of gardens, to circular or rectangular plans of buildings, and to circular or rectangular plans of urban squares as well. These mental activities of abstraction and schematism or schematization could be considered as formative for the principal cognitive process of the human mind, indispensable for every possible creative outline imposed on the real world, for the creation of design formations in particular. They characterize human behavior in general, sciences, constructive practices, art representation, and even commonplace human behavior. Nevertheless, they appear more intensified in the context of the scientific domain and achieve precise representational value in the field of art and design expression. To use a more specific statement in association with our investigation, they acquire perceptible schematic force in the field of art and design expression.

Abstraction and schematization could surely be considered constitutive processes of human thinking across every known historical period. Nevertheless, European, and Western civilization intensified its correlative interest for abstraction and schematization during the previous two centuries, supporting this analogous tendency through philosophical approaches, scientific investigation, and extended experimentation in arts. Abstract art in general and modernistic abstraction, as applied in architecture, were developed in parallel to philosophical and scientific theorization and even associated with neoteric pedagogy, as proposed by Friedrich Froebel's kindergarten approach. We could thus define the methodology of our article, insisting on the theoretical concepts of abstraction and schematization, and attempt to support this methodological approach through a method that uses design paradigms of successive historic periods, focusing, nevertheless, principally on design approaches of the modern and contemporary era. Additional support for our theses is provided through exemplary applied landscape design projects.

2.3. On the Methodology and Method of Didactic Approaches, as Formed and Extensively Used by the Author of the Present Article

We have just described the methodology of the present article argumentation, its central theoretical proposal, and the method correlated to it. Furthermore, the same methodology and method could be used, rather, they have been extensively used, by the author for the formation of his didactic approaches, as introduced in graduate and post-graduate lessons in the School of Architecture of the National Technical University of Athens (N.T.U.A.).

Based on the previous assumptions, theory lessons are offered, under the title 'Theory and History of Landscape Design'. They offer, firstly, an introduction to the concepts of abstraction and schematization and to their association with design practices in general. Then, a historic sequence of landscape and garden art paradigms is presented in correlation with the schematized principles characteristic of each historical period. A critical comparison to analogous schematized architectural or urban design forms is also provided for each period as a comment on the possible extended cultural validity of the schematizing processes and the schematized formations in question. In parallel to the previous theoretical references, design lessons are provided by the academic curriculum of the School of Architecture of the N.T.U.A., concerning the design of open-air urban public spaces or the design of landscape formations in urban or peri-urban contexts. Analogous thematic approaches may be used as design subjects for the diploma theses of students at graduate and post-graduate levels as well.

Concluding this part of our presentation, it is important to mention that most of the images of our article were created and used by the author as didactic references in his theory or applied design lessons. ***It is in this context that the didactic method to be presented may be described as a research method by design, applicable to university students and professional architects as well.***

3. Exemplary Paradigms of a Trans-Disciplinary Design and Compositional Approach

James C. Rose, an American landscape architect, insisted, in his 1938 article 'Freedom in the Garden', on the possibility of a comparison between the landscape design approach with architectural 'abstract' building plans or with 'abstract' De Stijl paintings of the early 20th century. The initial publication of James C. Rose's article 'Freedom in the Garden' was presented in October 1938 in the American magazine *Pencil Points*, a magazine dedicated to architecture, design, and drafting [3,4]. However, the possibility of analogous correlations between architectural and garden or landscape design may also be regarded in the opposite orientation as well. Contemporary architectural projects are often described as 'landscape formations' [5] in a period where enlarged importance is placed on environmental sensitivity combined with equally enlarged topological awareness, the latter presenting earth bas-relief as the convincing metaphor of topological mathematical

transformation in general, associated with the contemporary application of topological mathematics in computational 'animate' design.

3.1. Comparing Garden and Landscape Schematized Approaches to Architectural Design and Painting

Going back to the previously mentioned article, we may explain in detail that Rose insisted on the comparison of the plan of the 'Brick House', designed in early 1930s by the famous German architect Mies Van der Rohe with a possible masterplan of a garden, and afterwards, he referred to the abstract modern painting 'Rhythm of Russian Dance' by the equally famous painter and architect of the Holland De Stijl avant-garde group, Theo Van Doesburg; both formal references are presented in Figure 1.

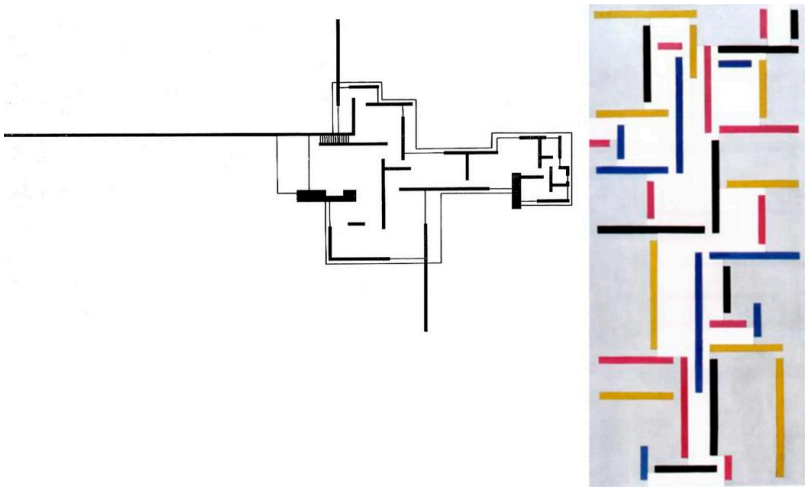

Figure 1. Van der Rohe's 'Brick House' (**left** image) and Van Doesburg's 'Rhythm of Russian Dance' (**right** image), both proposed by Rose as abstract compositional paradigms, important for garden design. Plan of the 'Brick House' redesigned by the author, https://www.wikiart.org/en/theo-van-doesburg/russian-dance-1918, Accessed on 14 April 2023.

In both formal approaches mentioned by Rose, the importance of abstraction seems to be crucial. In Van der Rohe's plan, linear forms could be regarded as references to 'hard' construction building elements or as lines of an abstract non-specific spatial composition. They may thus represent possible plantation elements, lines of trees or bushes that may also refer to three-dimensional volumes, or to the correlation of plantation elements with hard material structural elements such as walls or open-air furniture. In Van Doesburg's 'Rhythm of Russian Dance' painting, as well as in another of his paintings under the title 'The Cow', both analytically presented in Figure 2, the abstract result is depicted as a provocative expressive pictorial statement. The corporeal, material description of a cow is transformed to a structure of squares and orthogonal colored forms and, in an even more provocative way, in the 'Rhythm of Russian Dance', a Cossack, a Russian dancer, is transformed into a composition of colored lines that supposedly reproduce not solely the body of the dancer but the rhythm of his movement as well. Could we dare to insist on the provoking statement that we may transform these abstract formations into garden design proposals?

Trying to test the previous possibility, we used the 'Brick House' plan in order to create two alternative garden formations as presented in Figure 3. Afterwards, we forgot Rose's initial references and tried to transfer the experience of the initial Van der Rohe's stimuli. We thus created, in analogous formatting structural approaches, two other proposals as presented in the following Figure 4. The first objection could refer to the material substance of the composing vegetal elements of our compositional examples. Do we neglect their material vegetal identity? We answer, again and again, to this criticism in

our article. Nevertheless, we may comment, from the beginning of our presentation, that the same problem appears in every type of design activity and in building and object design as well. To this problem, we may answer through the dialectics of the design conceptualization, through our continuous movement from concrete reality to mental abstraction, then back to 'matter-reality' and back again to abstraction in a number of succeeding palindromic movements.

Figure 2. The second reference to Van Doesburg's 'Rhythm of Russian Dance': The upper row of images shows the final depiction (on the **left**) and three preparatory sketches as a sequence of abstraction proposals (on the **right**). In the middle, two preparatory sketches of Van Doesburg's 'Compostion VIII' or 'The Cow', presented in the left part of the lower row. Could it be correlated to his abstract 'Composition XIII' in the right part of the lower row? Image composed by 8 individual parts, all of them in Public Domain: https://www.wikiart.org/en/theo-van-doesburg/russian-dance-1918, Accessed on 14 April 2023. https://www.wikiart.org/en/theo-van-doesburg/study-for-rhythm-of-a-russian-dance-4, Accessed on 14 April 2023. https://www.wikiart.org/en/theo-van-doesburg/study-for-rhythm-of-a-russian-dance-2, Accessed on 14 April 2023. https://www.wikiart.org/en/theo-van-doesburg/study-for-rhythm-of-a-russian-dance-1, Accessed on 4 April 2023. https://www.wikiart.org/en/theo-van-doesburg/composition-the-cow, Accessed on 1 June 2023. https://www.wikiart.org/en/theo-van-doesburg/composition-the-cow-1, Accessed on 1 June 2023. https://nl.wikipedia.org/wiki/Compositie_VIII_(De_koe)#/media/Bestand:Theo_van_doesburg_de_+koe.jpg, Accessed on 31 May 2023. https://www.wikiart.org/en/theo-van-doesburg/composition-xiii-1918, Accessed on 1 June 2023.

Every design approach of every type or scale is thus correlated to a symbolic structural language, describing reality in abstract forms that 'symbolize' reality and create a semantic, syntactic expressive system. It is crucial to compare those symbolic design expressive systems to material external reality; however, it is also important to work on it, to 'cultivate', beside our landscape material vegetal substance, the formal structural syntactic systems that support our concepts and our expressive design approaches concerning reality. We cannot form the earth bas-relief, the plantation systematic approach, or landscape furnishing objects without a syntactic system, without a formatting 'language'. By comparison, we

cannot create a poem or a philosophical or scientific text outside spoken and written language, and it is crucial to understand and cultivate this language, expecting both its poetic or scientific or theoretical maturity. Landscape and garden art maturity presupposes the deep knowledge of the natural species and their 'cultural' dispositions; the term is used in a literal way in association with the cultivation of the land. It presupposes, nevertheless, the 'cultural' maturity of the composing design system as well, the term being used in a metaphoric way the second time, in association with the formation of human civilization.

It is rather easy to consider design morphemes as results of an expressive system, of a language. The post-modern period accepted and developed the analogy of design approaches to linguistic formations, being organized through structural activity, in our own terms, through abstracting and schematizing procedures [6–9]. Analogous theoretical suggestions, going on from Ferdinand de Saussure's initial semiotic theory to Jacques Derrida's deconstructive re-evaluation, were extensively infiltrated in every possible design application since the period of 1960s [10,11]. In particular, they critically implemented, the concept of continuous transformation as an expression of the successful coupling between folding architectural forms and landscape design, as in the cases of Peter Eisenmann, Zaha Hadid Architects, Foreign Office Architects, or Enric Miralles and Carme Pinós or Benedetta Tagliabue [12–15].

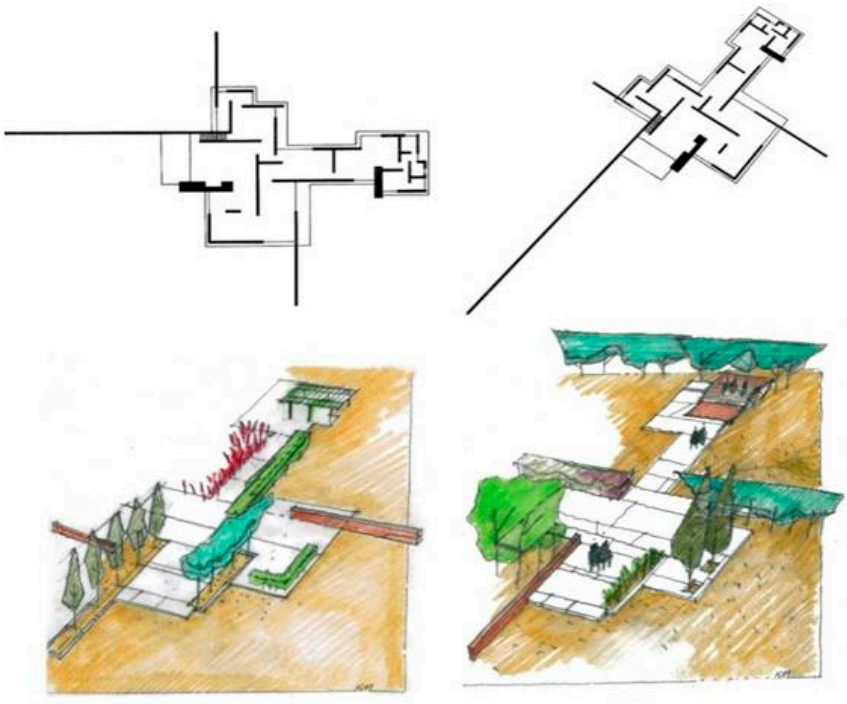

Figure 3. Upper row: two images of the plan of Van der Rohe's 'Brick House' that may be used as abstract compositional scheme for garden design proposals (**lower** row). The lines of the plan of the house have been regarded as abstract references for different material formations, of hard building materials or vegetal plantation elements.

It is wise, nevertheless, to go back to the history of garden and landscape art and pursue the time succession of the design paradigms. We may thus refer to the critical initial Renaissance effort for the creation of gardens, firstly in Tuscany, outside the city fortifications in correlation to Renaissance villas [16]. It is important to refer to the term used to describe the composing parts of such a garden, the Italian word 'stanza', meaning the self-sufficient part of a poem, or a hall, or in our case, a part of a building, a room, without roof, without a cover. We refer, in the case of Renaissance garden art, to a room-like space enclosing plantations, decorative fountains, statues, and other sculptural supplements, with plants covering its conventional hard material walls or its surrounding stone-built

parts cladding an excavation cavity in the earth bas-relief. The most characteristic example of such a formation is, nevertheless, a 'stanza' inscribed within vegetal walls, which reproduces the circumscribing feeling of conventional hard material walls. The feeling of the 'hortus conclusus', the enclosed urban garden of the medieval period, was thus reproduced outside the city in an open-air context.

What we have just described is the use of a building formatting prototype as an initial compositional reference for the design and construction of gardens. The same types of correlations could be described in the case of Baroque 17th-century gardens (in Versailles gardens, for example). It must be noted that the formation of the royal Versailles gardens was created as the first constructed part of a future development of the whole city of Paris. A common strict, formal, geometrical system could be applied in both cases as a garden formation approach and as a hard-scape urban approach as well. André Le Nôtre, the famous garden-maker of the 17th-century royal French Baroque era, the genius creator of the Vaux le Vicomte and Versailles gardens who worked in favor of King Louis XIV of France, did not produce landscape formations of minor historic importance in comparison to the nature-like landscape architecture of the next centuries. He just used another type of abstraction and schematization in his projects, different to those introduced by English landscape architects; regardless to say that to realize the embroidery-like forms in his 'jardins de broderie', he had to use excellent, skillful garden practitioners [17–19].

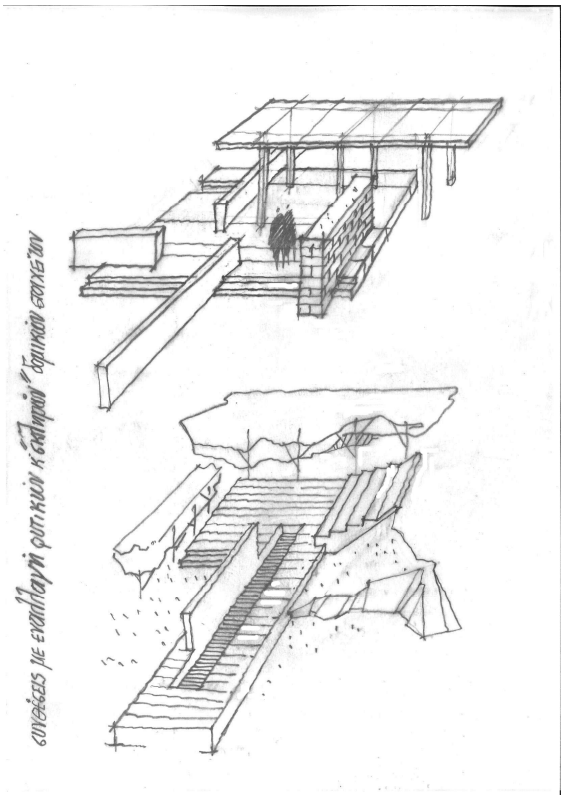

Figure 4. Two possible garden design proposals based on the abstraction and schematization methodology, previously introduced in Figure 3. The immediate reference to the 'Brick House' is no longer used; nevertheless, the same compositional approach was applied. All plans and sketches designed by the author. Sketches designed by the author.

3.2. Didactic Examples Concerning the Compositional Use of the Landscape Vegetation

Nevertheless, our own didactic approach rather refers to a conceptual orientation, correlated with landscape design freedom, initially produced in a context analogous to that of the English landscape architecture. It seems that this approach was largely created through the influence of the compositional expression of landscape painting or 'landschap'

painting [20–23] produced in Netherlands first during the 17th century and then imported to the British Isles [24], where it exerted an immediate influence on British painters and, afterwards, to the first British landscape architects who were exceptionally skilled in the use of similar representational techniques, especially watercolor depictions.

An analogous procedure to the previous representational procedure, as introduced by late 18th and the 19th-century landscape architects, could create pictorial presentations as viewed from the most important focal points of the field in question, of the place to be compositionally transformed. The plantation elements had to be composed in a way that aesthetic balance could be achieved in terms of vegetal volumes, correlated heights, and colors. Moreover, the feeling of depth had to be emphasized to better present the sense of landscape extension. Superimposed plantation layers could be indicated, creating successive view planes extending to the outmost background of the distant mountains, as presented, for example, in Figure 5.

Figure 5. Composing the plantation elements as principal elements of the landscape formation in terms of vegetal volume, correlated height, and color, organized in the context of successive view planes. Sketches designed by the author.

However, if this approach of composing landscapes is used, then, according to the pictorial compositional principles, the red bushes on the left side of our exemplary Figure 5 should be presented as planted in front of the two cypresses, not behind them, with the red color being a 'louder', protruding compositional element. We refer to a representation mistake, created by the author on purpose for didactic critical elucidation reasons. An analogous, more complicate example is presented in Figure 6. Here, the plantation proposals are correlated to other landscape elements, to the formation of an artificial natural-like water basin, or to the line of bushes, diagonally directed towards the back of the image, accentuating the feeling of depth and, moreover, the feeling of possible movement in the suggested landscape formation. The same suggestion of possible movement is also clearly indicated through the proposal of a visiting trail, directed towards the hills in the background of the image.

We may now return to J.G. Rose's article and to his suggestions for correlation with architectural and painting compositional design principals. Thus, the upper part of the Figure 7 presents an abstract compositional formation that could be applied as an abstract scheme for the design of a building elevation proposal or as a plantation compositional proposal, as depicted in the second row. Then, we could also add colors to the previous sketches and use them as a colored compositional proposal, as depicted in the two bottom rows of Figure 7.

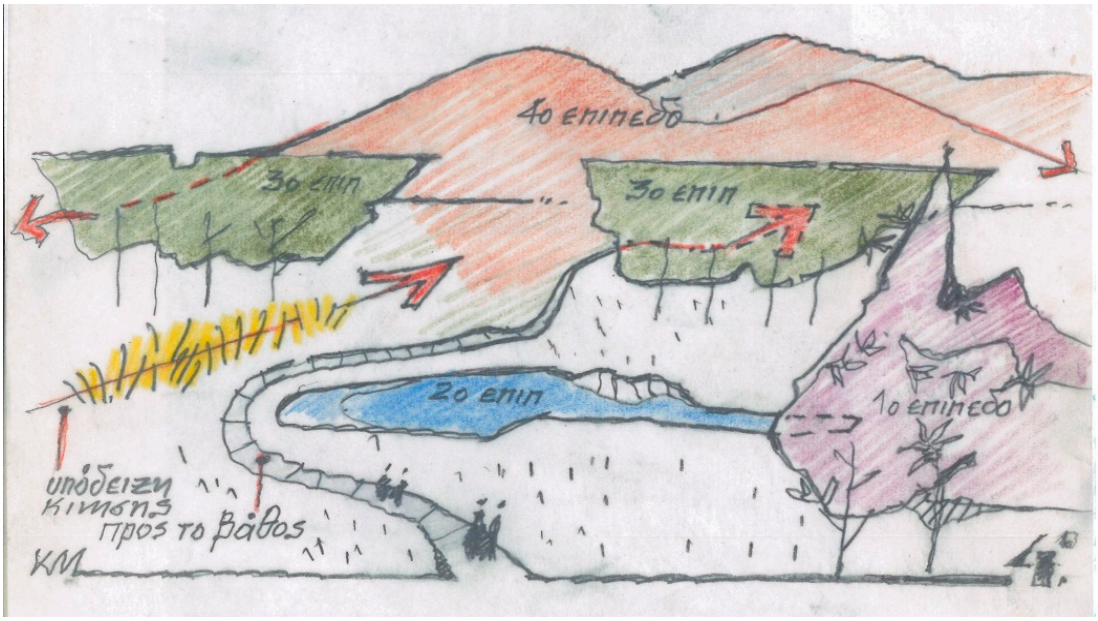

Figure 6. In our sketch plantation elements are correlated with additional landscape design elements, as the pathway, the small lake and the distant succession of the mountains. Moreover, it was added the indication of a possible movement directed diagonally, towards the background of the place in the proposed scenography. Sketches designed by the author.

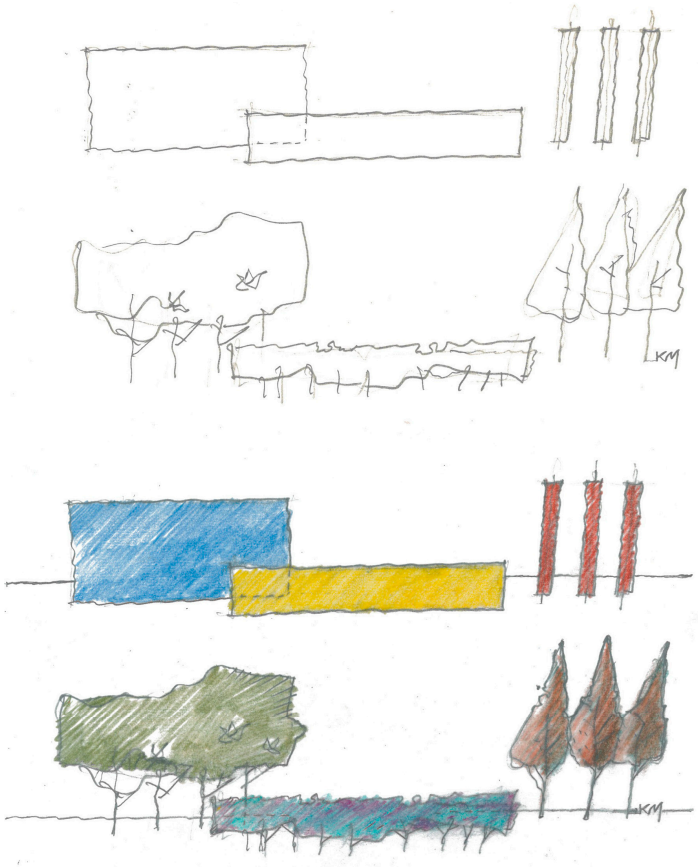

Figure 7. Abstract schemes of formal representational elements or colored representational elements that may serve as general compositional references and may also be applied in landscape and garden design. Sketches designed by the author.

3.3. Compositional Combination of Hard and 'Green' Structural Elements in Urban Landscape Formations

An even more interesting group of examples could refer to the use of plantation elements as parts of the urban landscape, as compositional elements in urban context. In Figure 8, a spiral concrete canopy was proposed as a shelter for an outdoor flea market. In order to augment the compositional value of the previous structural spiral scheme, the circumscribing form of the canopy was duplicated through the design of a parallel plantation structure. At the end of this continuous plantation form, a second shorter plantation structure, perpendicular to the previous one, was proposed to indicate the termination of the flea market functional area. In the image of the model presented, the two previous plantation formations are described with differentiated model materials to indicate differentiated vegetal species. In this context, distinguished compositional modalities are correlated to distinct schemes of abstraction. They are represented through antithetic abstract volumes in the model formation and describe the co-existence of two differentiated real tree formations, synthesized through their antithetic 'con-position' or composition.

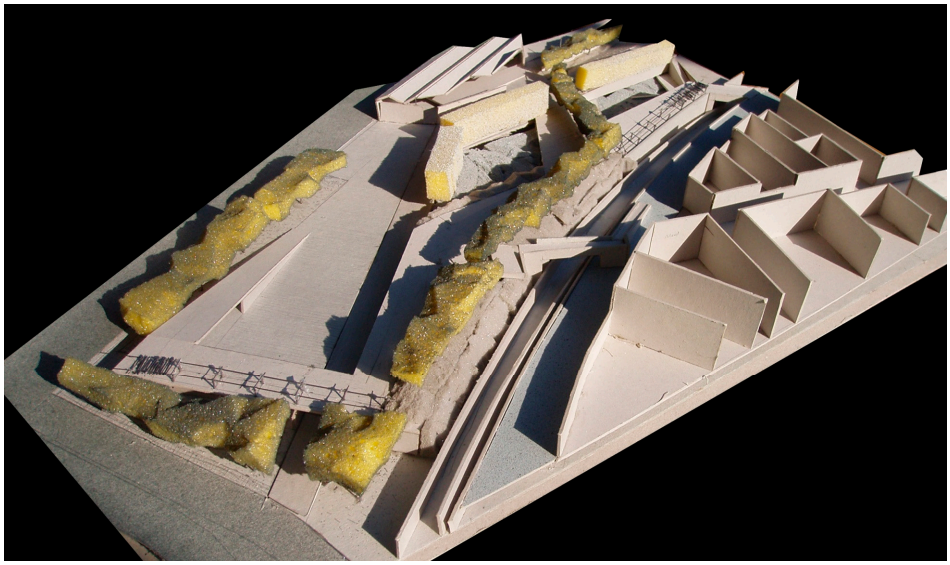

Figure 8. An urban landscape formation, proposed as an intervention in the vicinity of the territory of Kerameikos ancient cemetery. It was designed in the context of a university course, concerning landscape intervention proposals, in urban or peri-urban areas. Landscape intervention in the territory of Kerameikos ancient cemetery, in the city of Athens, Greece; undergraduate exercise project in the School of Architecture of the National Technical University of Athens—N.T.U.A. (students' team: N. Livathinos, M. Triantafyllou; didactic team: M. Mavridou, K. Moraitis, I. Mari-academic year 2009–2010). Photograph by the author.

The previous example, presented in Figure 8, was our first didactic attempt, in chronological terms, to use abstract volumetric schemes indicating vegetal schematization in architectural models. The example just presented proves that such an approach concerning 'green-scape' interventions, may present formal compositional qualities comparable to and many times more impressive in expressive terms than conventional 'hard-scape' architectural structures. The next example, as presented in Figure 9, insists on this concept of analogous and probably interchangeable expressive character of plantation and 'hard-scape' architectural structures in the context of landscape design proposals. The didactic example presented refers to the compositional formation of a two-square complex and their perceptual and functional unification, through the use of a schematic structure that could be realized in three different ways. The materiality of those formations may be approached through hard structural elements of canopies, plantation elements, or through a possible

combination of the previous elements. Nevertheless, the abstract conceptual scheme under all three proposals appears to be the same.

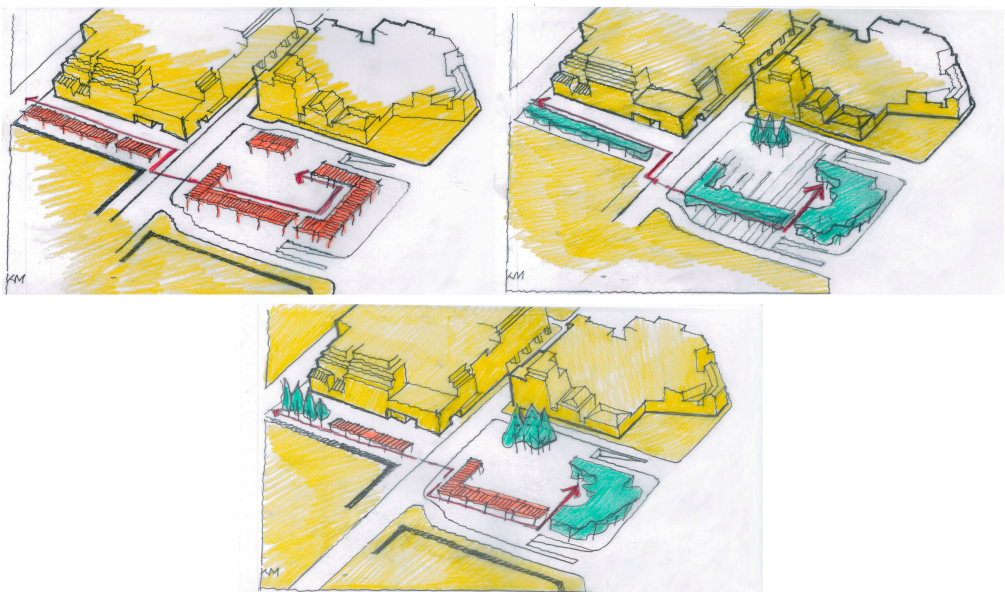

Figure 9. Different alternative compositional proposals for the formation of an urban square. Material substance may change; nevertheless, abstract schematization of the proposals remains the same. Explanatory sketches presented by the author to the students the School of Architecture of the National Technical University of Athens—N.T.U.A.—in the context of the eighth-semester undergraduate course 'Outdoor Public Architecture in Physical and Urban Landscape'—academic year 2019–2020. The subject of the proposed design exercise referred to the landscape intervention in two adjacent squares, Adamantiou Korai Square and Klafthmonos Square, in the central area of Athens, the capital city of Greece. Sketch designed by the author.

4. Three Different Expressive Paradigms of Landscape Design in the Previous Historic Periods Plus One More Concerning Contemporary Design Approaches

It is in the above context of the systematic organization of the landscape design, and moreover of its transformations through history that we may describe, in summary, three different important expressive paradigms of the Renaissance and post-Renaissance Western landscape history. We may firstly describe the formal approaches of the Renaissance and Baroque periods, using strict Euclidean forms to compose garden formations: the 'stanza' Renaissance garden and the geometrically extended Baroque garden. Then, we may discuss the design principles of 18th- and 19th-century British landscape architecture. Firstly, the experience of 17th-century Netherlandish landscape painting described by the Dutch term 'landschap' was transferred to the British Isles, and formed in analogy the British landscape painting. Then it was transformed to the British landscape architecture approaches. Nowadays, we may refer to topology-oriented 'animate' design [25,26], largely developed through a computational approach and applied in landscape proposals as well as in building or hard-scape urban formations. This is the third paradigmatic reference, discussing contemporary folding forms as correlated with a feeling of earth bas-relief under motion, using it as the central expressive metaphor of the landscape imagery, a metaphor that intensively influenced contemporary design forms in general, in landscape design, building design, urban design and even object design, in many scales simultaneously. It is described, together with the two previous paradigms in Figure 10.

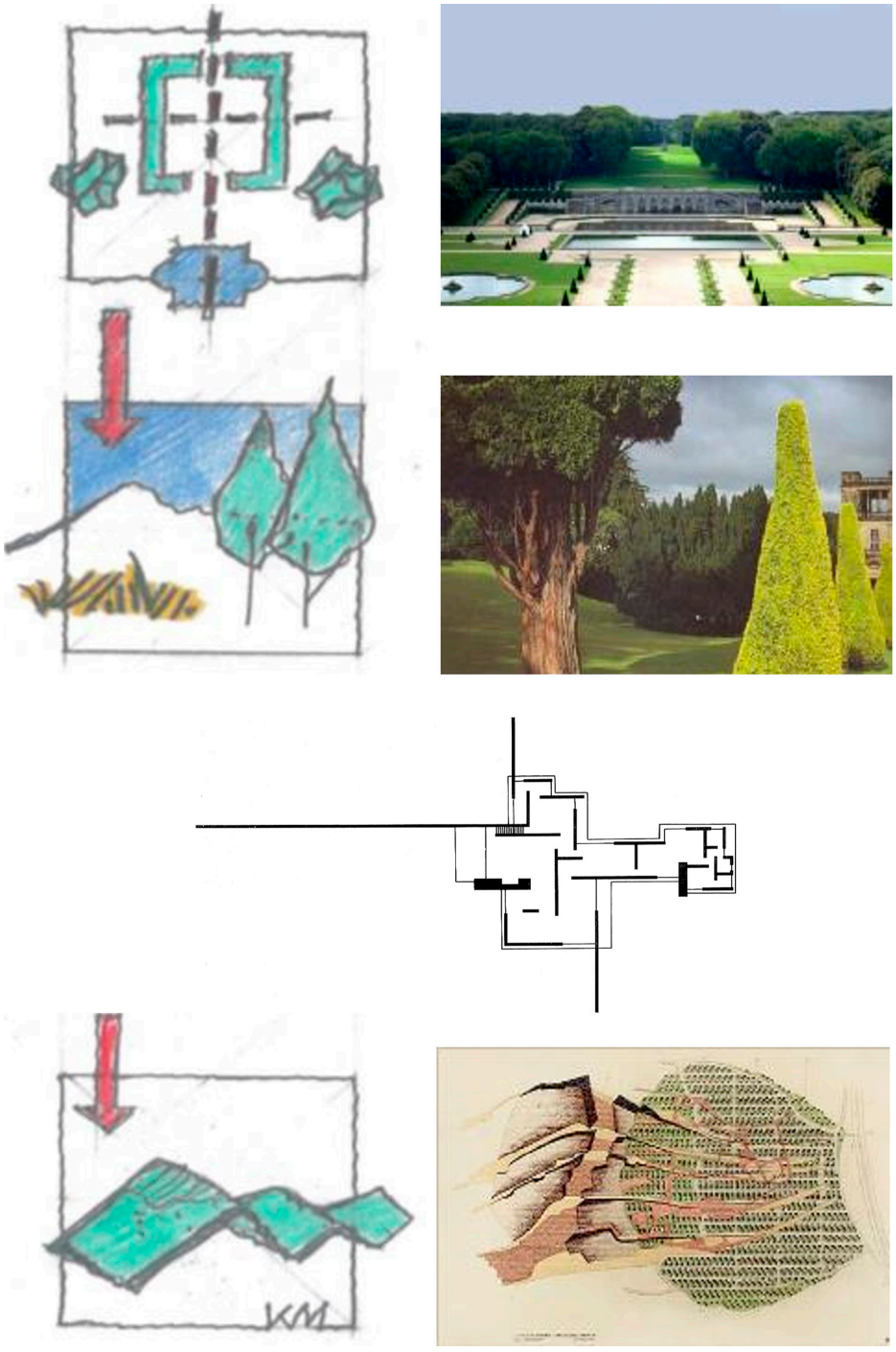

Figure 10. A comparative presentation of historically differentiated compositional landscape and garden art approaches. Upper row, formal gardens of Renaissance and Baroque era. Second row, nature-like approaches such as those proposed by late 18th- and 19th-century landscape architecture. Last row 'folding' landscape proposals infiltrated not solely landscape design but also building design compared to 'landscape formations.' In between, in the third row, Glen Rose's design proposal for a 'modernistic', antisymmetric but rationally organized garden approach (to be compared to previous Images 1, 3, and 4). We may thus refer to different historic schematizing approaches [27]. Image composed by 7 individual parts sketched or photographed by the author.

In between the two previous paradigms, at the beginning of the modernistic era during late 19th and early 20th century, a nature-based turn of Western history introduced many expressions of culture simultaneously, the conscious interest and general social extolment of nature-oriented paradigms, usually correlated with Romanticism. It was in this general cultural milieu that the first interest for active 'landscape urbanism' appeared, strongly expressed through what is described as 'park movement'. Compositional principles invaded every possible design subject and scale, extending, in the fields of arts, the importance of the natural sciences and biology that had already exported the concept of continuous change in social and political sciences. The schematizing landscape prospects acquired again an urban-scale dimension, being then expressed through the idea of landscape parks and moreover through landscape urban networks. Glen Rose's minor scale proposal previously cited may be considered to be a result of this historic period. Its interest in nature and time-centered natural change did not only enforce the desire for landscape formations, but it also destabilized 'rational' design proposals, introducing time as a central factor of existence and cultural expression in space conception and spatial schematic approaches.

5. Important Theoretical Proposals Correlating Mental Conceptual Process to Abstraction and Schematization

It is also important to mention that the concepts of abstraction and schematization are not theoretical proposals arbitrarily selected and introduced by the author. They rather refer to the formation of neoteric gnoseology, to the key philosophical approach formed by Immanuel Kant in his *Critique of Pure Reason* [28], and to the development of genetic, cognitive, and epistemological psychology advanced by the important early 20th-century theorist Jean Piaget.

According to Kant, the cognitive process of schematism, or 'Schematismus' using his own term, and abstraction refer to 'transcendental' innate abstract schemes that govern unaltered human conception. Piaget replaced 'schematism' with the term 'schématisation-schematization', explaining that abstract schemes may change; their semantic importance in human history may change in accordance with the succession of historic periods. Moreover, cognitive schemes do not only refer to the abstraction of external perception. They may also be created by an auto-reflexive abstraction process, 'abstraction auto-réfléchissante' [29,30], which tries to internally organize an expressive system, in this case, the design expressive 'language' of the designer.

5.1. Landscape and Garden Schematization Examples of Non-Western Cultures

We have already presented our own didactic and compositional methodology concerning garden and landscape design. We have presented, moreover, the crucial association of our key concepts, 'abstraction' and 'schematization', with important theoretical proposals of the neoteric period such as those concerning gnoseologic assumptions by Kant or Piaget's epistemological proposals concerning 'schématisation-schematization', a continuously schematizing mental process. It is in this context that landscape or garden perceptional and compositional schematization could be regarded not solely as an approach of professional interest or even an artistically centered approach but, moreover, as a possible pedagogical expression in correlation to Western and human culture in general. Arabic carpets and Hispano-Arabic gardens present analogous examples, Chinese paintings of periods before 12th century P.C. present analogous schematized paradigms, and Japanese Zen gardens may be described, as well, as exemplary cases of intense symbolic schematization, presenting the human need for cultural correlations with environmental and place substrata [31–33]. We refer to all those cultural examples in Figure 11.

Figure 11. A landscape ink-washed Chinese depiction by Ma Lin on a hanging scroll of the 13th century (on the **left**). In Zuiho-in Zen Garden (**upper right**), some of the rocks are said to form a cross. The garden was built by the daimyo Ōtomo Sōrin in 16th century and (**bottom right**) Patio de la Acequia, in Generalife, Granada, Spain. Schematization of different historic periods and cultural landscape forms presents the constant need of human societies for perceptional, structural, and symbolic control of their environment and place substratum. https://en.wikipedia.org/wiki/Chinese_painting#/media/File:Ma_Lin_010.jpg, Accessed on 3 June 2023. https://en.wikipedia.org/wiki/Japanese_dry_garden#/media/File:Daitokuji-Zuihoin-M1836.jpg, Accessed on 3 June 2023. https://en.wikipedia.org/wiki/Generalife, Accessed on 3 June 2023.

5.2. Educating Children in the Context of a 'Schematized' Garden Pedagogy

All previous paradigmatic cases may be regarded as highly pedagogical; landscape design could be clearly considered a strong reference to our volition for place control and even as an extremely convincing metaphor for our demand to control the universe, the 'cosmos', the cosmic extension, and additionally human conceptual processes. It is in this context that the most important and well-known neoteric proposal for children pedagogy was presented as a children's garden or, under its German initial denomination, 'Kindergarten'. It is also strongly significant that this German term proposed by the German pedagogue and Kindergarten's initiator Friedrich Froebel was introduced, accepted, and installed in the English vocabulary as well. Let us now present the central methodological position of this pedagogical approach.

Froebel's reference to a pedagogical correlation with nature seems to be extremely important. Nevertheless, what seems even more important in Froebel's kindergarten pedagogy was the correlation of the didactic approach with intense geometric schematization, promoted through a strictly organized sequence of exercises, having to do with elemental forms of three- or two-dimensional identity [34]. At the beginning, a number of didactic game-like objects were given to them, three-dimensional forms described under the name 'Froebelgaben' or 'Froebel's Gifts', those presented in Figure 12. The younger children had to play with them, organizing geometrical formations, teaching them schematizing processes that were gradually more and more complicated. At an older age, children were mature enough to work with even more intense abstract formations, of two dimensions instead of their previous three-dimensional creations. They had to work on collages of base colors, which may be compared with De Stijl depictions, such as those, for exam-

ple, presented by Piet Mondrian. In an astonishingly eloquent way, neoteric pedagogy associated landscape references to schematization and abstract perception exercises. Even more impressive could be the comment that a number of outstanding artists and architects of the modern era were correlated with Froebel's kindergarten didactic system. We may thus refer to famous modern architects, such as Charles-Édouard Jeanerette (Le Corbusier) and Frank Lloyd Wright, and to famous painters such as Wassily Kandinsky. De Stijl prominent members, painter Piet Mondrian and Johannes Itten, the initiator of Bauhaus 'Vorkurs', preparatory lessons for the instruction of first-year architecture students, were also correlated to Froebel's kindergartens as members of their didactic personnel [35].

Figure 12. A complete kit of Froebel's exercise 'Froebelgaben', 'Froebel's Gifts', gradually introducing children from their very young infant state till their sixth year, regarding schematized abstract forms and their probable combination. Older children were introduced to higher abstraction exercises of two-dimensional geometrical collages of base colors. https://en.wikipedia.org/wiki/Froebel_gifts#/media/File:Friedrich_Fröbel-_Construction_kit-_1782-1852-_SINA_Facsimil-dhub.jpg, Accessed on 4 June 2023.

Could we dare to compare Froebel's didactic approach, an emblematic approach for neoteric and modern pedagogy, to our own didactic and applied design proposals?

6. Mature Implementation Examples of Our Design Methodology

In the next part of the text, two projects are presented, exemplifying our design methodology in the context of real professional activity. In both projects, the proposed plantation is used as a constitutive compositional element, equal in importance to the formation of the earth bas-relief and hard-scape structures, canopies or small building constructions.

6.1. A landscape Intervention in the Vicinity of the Central Harbor of Piraeus in Greece

The first project is a professional landscape intervention proposal for the creation of an urban park in a vacant area at the periphery of the portal zone of the central harbor of Piraeus in Greece. In the images presented, the following 3D visual and the photographs of the working architectural models of the project, it is obvious that the proposed plantation structures are of crucial compositional importance, organizing the limits of the park towards the residential area, describing the centrality of important parts of the park, or creating vertical landmarks using adjoining cypresses, as presented in Figures 13 and 14.

An analogous use of the plantation elements could be extremely important for the conceptualization of the masterplan of the project; nevertheless, what could be even more significant is the importance of plantations as constitutive approach of the three-

dimensional feeling of scale as a regulative instrument of the comparative feeling of height in place formation. Such a compositional use may be explained through the comparison of the height of trees creating the upper limit of the park in comparison to the scale of nearby buildings of the city. The line of the proposed trees does not merely separate the park from the nearby densely built neighborhood; it also diminishes the overwhelming suffocating sensation of the hard-scape vicinity.

It was in this compositional context that plantation elements were used in a schematized way, as explained in the images presented. A continuous treatment was applied to their design approach, correlating their abstract schematized compositional qualities with their precise botanic identity, as specified through the continuous collaboration with a botanist.

Figure 13. A design proposal for an urban park at the periphery of the portal zone of the central harbor of Piraeus. Models are extremely important for the study of the project, offering the exact feeling of the earth bas relief—plantation was used as a structural, compositional element, equivalent in design importance to the hard structures. On the **left**, a 3D aerial view of the proposal. On the **right**, in the upper part, a detail photograph of the working model of the project. The compositional decisions are explained in the schematic diagram in the middle and then through the combination of the diagram with the photograph of the model. **Bottom right**: red lines refer to plantation compositional elements, while azure lines refer to hard structures of proposed canopies. Drawings and photographs owned by the author or offered to him.

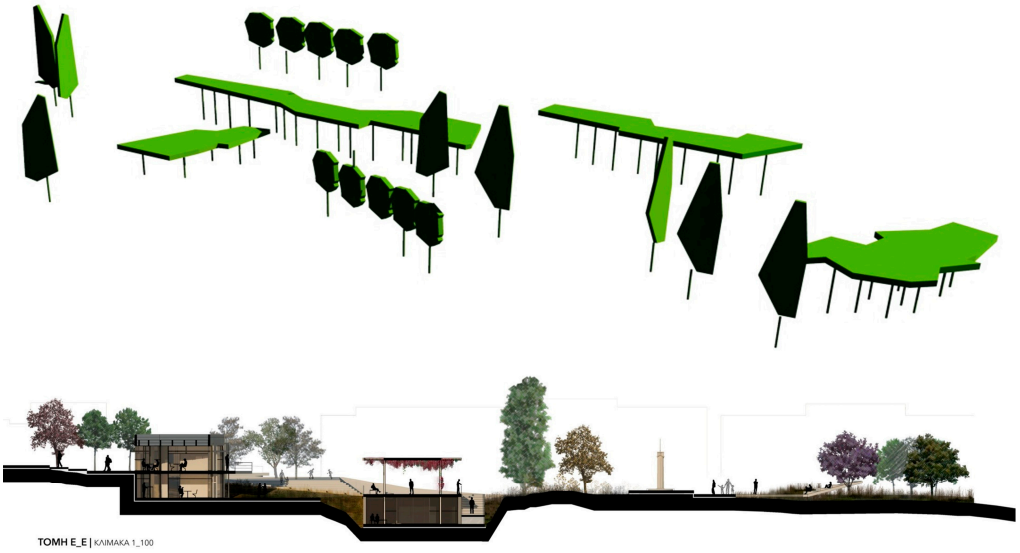

Figure 14. Proposal for an urban park at the periphery of the portal zone of the central harbor of Piraeus. In the upper part of the image, the schematized compositional sequence of the proposed plantation elements, organizing the limits of the park towards the residential area, describing the centrality of important parts of the park, and creating vertical landmarks using adjoining cypresses or other trees of analogous height. In the lower part, the detailed proposal of the plantation, explaining the scale correlation among the different plantation elements and the 'hard' construction proposed structures. In the lower part of the image, additional information is given in correlation with the possible feeling of color of the proposed plantation. Drawings and photographs owned by the author or offered to him.

6.2. A Landscape Proposal for the Two Central Squares of the City of Trikala in Thessaly, Greece

This second professional project is an awarded proposal in a Hellenic architectural competition, elected by the municipality of the city for implementation; it is now under construction.

The two squares, a rectangular one and a triangular one, as explained in the diagrammatic sketches of Figure 15, are situated next to the river Lytheus, and are, moreover, correlated to a third circular square [36]. The central idea of the proposal has to do with the organization of two urban itineraries, correlating the three previous nodal open-air public places. The first of them, illustrated in the diagrammatic sketches with black and yellow angular lines, correlates all the three of them, passing over the existing bridges of the river. The second one, described with a red zig-zagged 'restless' line, correlates the two more important ones, the rectangular one and the triangular one. It is named the 'Path of History' as it bears on it metallic signs narrating important incidents associated with the history of the city and the surrounding territory of Thessaly.

The structural formation of the hard surface of squares and the urban bas-relief are important for the compositional proposal; nevertheless, the crucial compositional part of the project is associated with the formation of the proposed plantation, as presented in the 3D description of Figure 15, and analytically explained in the corresponding diagram of the same image. A more detailed analogous explanation is also presented in Figure 16 in reference to the rectangular square.

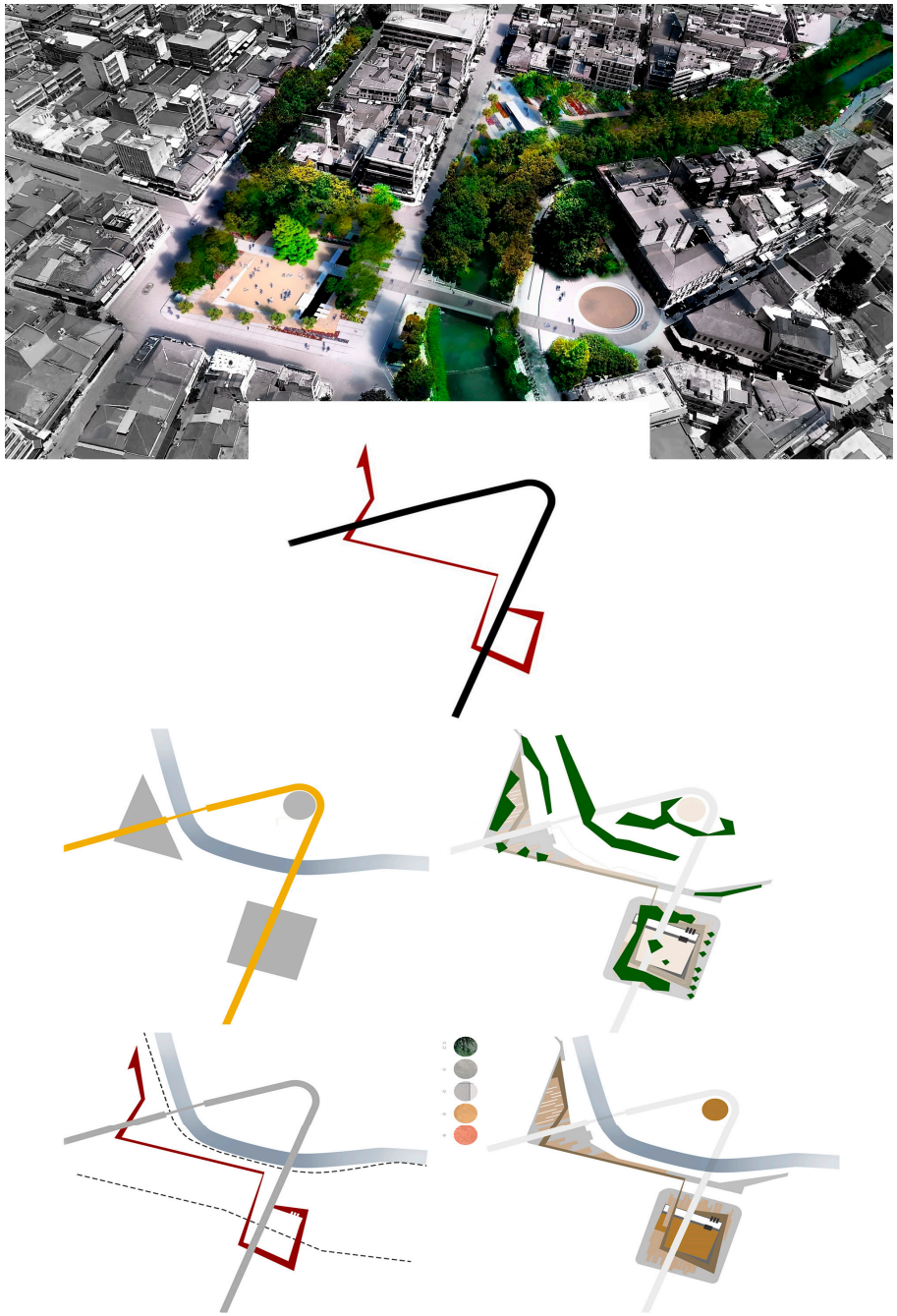

Figure 15. Landscape proposal for the two central squares of the city of Trikala. In the upper part of the image, a 3D description of the proposal is presented. In the five diagrams that follow, we describe, the two urban itineraries proposed (first, second, and fourth diagram), correlating either all three squares, the rectangular, the triangular one and the circular one, or just the first two of them. The third diagram describes the compositional use of the plantation elements proposed in the project, and the fifth one describes the differentiation of the materials used for the surface formation of the urban area in question. Drawings and photographs owned by the author or offered to him.

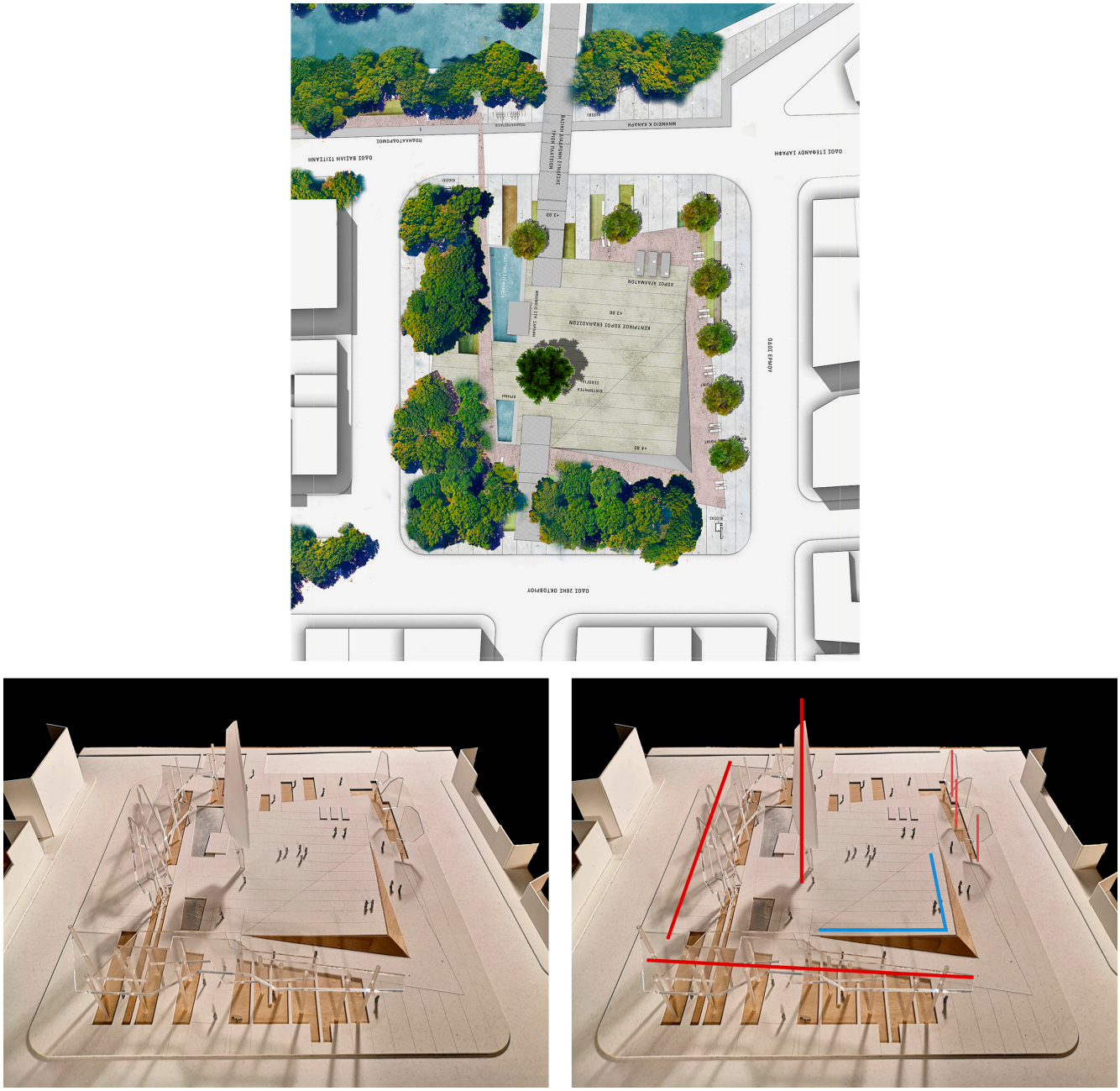

Figure 16. A landscape design proposal for the two central squares of the city of Trikala; the intervention in the rectangular square dedicated to the 'Heroes of the Polytechnic School of Athens'. In the upper part of the image, the masterplan of the square, presenting the constitutive compositional role of the plantation proposed. In the lower part of the image, a model of the square is presented on the left, while on the right, an explanation of the compositional decisions is depicted. Red lines refer to the compositional usage of the plantation elements, whereas the azure lines refer to the compositional usage of a bas-relief formation of the surface of the square. Drawings and photographs owned by the author or offered to him.

7. Comments on the 'Broadly Understood Role' of Vegetation in the Landscape: Vegetation as Natural Condition Plus Vegetation as Conceptual, Compositional Formation

In our proposal, vegetation is principally treated in abstract reference as a constitutive condition of spatial formations, having to do with the feeling of place enclosure, of volumetric and scale perception, or of formations creating vegetal, canopy-like, natural structures.

In all previous cases, a compositional idea may refer, from the beginning of the design approach, to exact vegetal species. Nevertheless, the compositional initial design rendered may also be associated with premature abstract schematized approaches, a cognitive tendency that must not be considered necessarily negative. On the contrary, the abstraction and schematization of the compositional idea, as presented in the sketch of Figure 17 and the computer presentation of Figure 18, may be helpful for the expressive strength of the proposal, which afterward must surely be enriched and finalized with the exact vegetal knowledge that could be offered by a horticulturist, by a specialist whose contribution must be regarded as indispensable for every landscape proposal designed by architects, experienced in open-air public or private places.

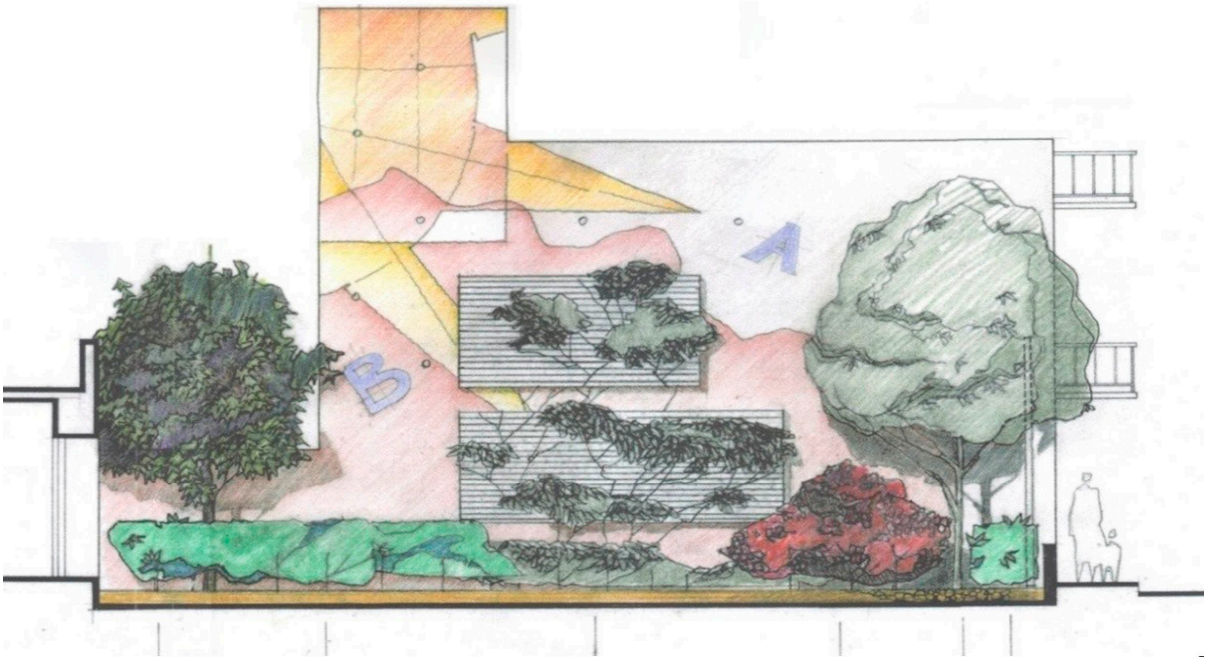

Figure 17. Design of a garden proposal for an elementary school in Athens, Greece: The vegetal species, outlined in the above drawing, were proposed by the architect in collaboration with an experienced horticulturist. Nevertheless, the species proposed were selected because of their aesthetic, 'compositional' value as well, in terms of visual properties of volume and color, and, moreover, because of the additional compositional, aesthetic properties of their tactile and olfaction qualities. It is in the previous overall compositional context that the vegetal formation was associated, in addition, with a piece of wall graffiti proposed as the background of the vegetal garden formation [37]. Drawings and photographs owned by the author or offered to him.

The 18th century extolled the cultural importance of parks, and the late 19th century insisted on the fact that urban plantations, urban parks, and 'emerald necklaces' of parks and green urban corridors had to be regarded, according to Frederick Law Olmsted [38,39], as a democratic right of neoteric societies. However, the late 18th century also produced, besides horticultural knowledge of vegetal species, a concise compositional aesthetic ability correlated with watercolor painting and architectural design expertise; the latter was revealed in the compound description of the term 'landscape architecture'. Contemporary ecosophical orientation surely ought to insist on the environmental validity of landscape vegetation [40]. Yet, at any scale of intervention, no formative proposal could deny a conscious or unconscious compositional perception. It is in this context that we prefer to organize a conscious didactic study of landscape compositional perception.

Figure 18. Landscape design proposal applied to the territory of the river Acheron sources in the territory of Epirus, Greece; Acheron is a legendary river connecting the upper world with the underworld of the dead. The project tried to revitalize 18th-century British watercolor landscape pictorial studies through the use of computer design. It is in this context that in the above image, the depiction is not only trying to compose vegetation volumes and colors but render the feeling of the landscape's depth as well. The vegetation depicted refers to real vegetal species, selected with the help of a horticulturist. The project, being a graduation diploma thesis in the School of Architecture NTUA, was awarded the first prize in a pan-European competition for student landscape design projects [41]. Drawings and photographs owned by the author or offered to him.

8. First Conclusive Remarks: What about a 'Wild Garden'?

The term 'Wild Garden' in the title of the concluding part of our text refers to ideas formulated by William Robinson. Robinson was an Irish practical gardener and journalist of the late 19th and early 20th century, whose ideas about wild gardening spurred the movement that led to the popularizing of the English cottage garden, favoring the 'honest simplicity' of the garden formation [42]. Would our proposals be aesthetically disturbing for the garden art orientation described by the famous Irish practical gardener William Robinson or for any other 'wild garden' devotee? Would such a proposal for a schematized landscape approach result in the visual control of our landscape sensations, introducing human dominance in natural environments?

All previous critical questions may be considered acceptable comments, neglecting, however, that design schematization may be considered as the intellectually developed approach of an innate mental tendency common to all humans; this regards their effort to correlate their own perception of the surrounding world with what we call 'reality' in general. Reality presents an extremely complicated multi-factorial context, and thus perception must face it through an immediate organizational reaction in order to 'under'-stand it, to comprehend it, and finally, to control it. This statement means that our didactic approach attempts to organize, culturally, our immediate, spontaneous, and impulsive reaction towards exterior stimuli, putting them together, 'con'-posing them, and composing them in a more purpose-built structured way. Certainly, a writer, a poet, an artist, an architect, a philosopher, a theoretician in general, and a scientist may propose extremely important specific schematizing approaches of our world, different 'visions', or conceptual approaches. Nevertheless, a sheepherder and ever more obviously a farmer cannot but have schematized perceptions of their landscapes of reference; otherwise, they could not accomplish their everyday activities. They could not decipher, in the case of the sheepherder, the 'Holzwege', the semi-perceptible trails in the wilderness of the woods, and they could not organize and program, in the case of the farmer, their agricultural prospects. 'Holzwege' is reference to the initial German title of Martin Heidegger's first post-war homonymous book that contains some of the major expositions of his later philosophy. The title is

a metaphor of his own philosophical desire, of the philosophical effort in general, to investigate new, many times controversial, 'uncharted' theoretical approaches: according to the preface of the English translation of the book, 'in entitling his work Holzwege, literally, 'Timber Tracks,' or 'Forest Paths,' Heidegger chose a term that carefully balances positive and negative implications' [43]. Nevertheless, the title of the book may also be considered a genuine reference to the romantic and post-romantic correlation of German thought with the vision of 'sublime' wild nature.

A 'wild garden' may reject the conspicuous formations of geometrically intensive landscape and garden art. Nevertheless, garden makers, landscape architects, or even practical gardeners, such as Robinson, do possess all of the schematized approaches, even if the latter are not clearly promoted through their professional discourse or become conscious through their immediate practical activity.

9. Final Conclusive Remarks: Landscape Design as a Paradigm of Cognitive Formative Activity in General

A more ambitious approach to our subject of interest could further insist that landscape design, the cultural demand for environmental control, may be presented as a key paradigm of the human need for the organization of cultural formations in general. As René Descartes described, in his *Discours de la Méthode-Discourse on the Method*, a principal proof of our rational identity has to do with the need for the control of nature. Our technical skills must make us, according to his statement, 'maîtres et possesseurs de la nature–masters and possessors of nature' [44].

We have surely transformed, at least partly, this cartesian conquering attitude to a post-romantic ecosophic approach. Nevertheless, we still need our formative, structural, schematizing activity, presenting our design architectural skills as paradigmatic for our conceptual capacity in general. It is in this context that our didactic proposals on landscape design in comparison to architectural design could be used as a description of the formation of our cognitive and expressive formation in general [45,46], as described by Kantian gnoseology and then further elucidated by Jean Piaget, as already presented in subchapter 5 of our paper.

Surely, no consistent contemporary landscape architecture project or theoretical reference could abstain from the requirements of sustainable development. However, the present paper principally refers to the 'requirements of any possible conceptual formation' regarding spatial design and intervention.

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by the students' team consisting of A. Kafantaris, V. Koliaki, and D. Sagonas in the context of their graduation diploma thesis at the National Technical Univ. of Athens—NTUA—under the didactic guidance of M. Tzitzas and the author of the text.

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