# Tell a Story of Space: A Narrative-Based Case Study through Abstracted Materials

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**ABSTRACT**

In the present study, by means of spatial narrative, it is aimed to investigate dimensional relation of spatial perception through abstract sequences, employed in basic-design education. Scrutinizing a space through its two and three-dimensional relations are carried out by different methods in architectural education. Moreover, surface and volumetric contents of fragments, completed contextual shell, are discussed by diverse methods ranging from linear composition to three-dimensional relations. During education process, first-year architectural students are taught spatial representation, spatial content as well as spatial dimensions as architectural language. Therefore, in the present study, fundamental sequences of spatial narrative notion are conceived by transmission of spatial coincidences in two and three-dimensional axes. From this point of view, a notional-case study investigation as spatial narrative is brought together as an experimental method in the content of Introduction to Architectural Culture-I, taught in winter period of 2016-2017 educational terms in the Department of Architecture of Faculty of Architecture at Cumhuriyet University. Thus, spatial representation techniques, taught in basic-design studio, are embodied by a case-study related with spatial and architectonic sequences. This application is entirely grounded on individual experiences that are both gained by basic-design practices and achieved by personal abilities and because of being a case-study, it is preferred that awareness of first-year students on spatial perception can be fostered by this application. In terms of referring to this idea, this experimental investigation is composed by dominant typological examples because content of spatial imagination takes an important place in order to increase selectiveness of perception and differentiate spatial grasping. For this reason, it is due primary importance to employ building typologies, which have both dominant identity and visual content as historical traces in Sivas. The main aims of the present paper are ability to

make a space legible and investigate it through different building typologies. It is hoped that first-year architectural students can conduct a narrative-based case study through abstraction logic, gained in basic-design studio and transform historical buildings in Sivas into perceptional judgements by models, depending on iterative materials. Method used in this case-study is comprised of abstraction and representation thus, first-year students, though have not reached the sufficient level in the analysis of expressive techniques based on drawing (planning, cross-section, facade drawing etc.) regarding the spatial narrative topic, are grouped in terms of abstraction logic such as main space, determination spatial highness on the vertical axis, relation of compactness-emptiness and spatial equipment. In-field explorations, sketching and grasping the buildings for narration are led students to explore individual perceptions and capability of modelling with restricted material: cardboard, wood and metal. This is the most essential phase in which different materials and distinct plan typologies within the practice of abstract thought should be employed to narrate a space with its spatial and architectonic relations. In order to evaluate the data obtained from the experimental study, questionnaires were employed which enabled us to analyze which tools are used by first-year students and how they narrate a space although they cannot adequately read a plan, section or elevation as linear representation. Consequently, this experimental case study, based on spatial narration, enabled students to obtain abilities, gained by both basic-design practices and individual experiences, fostering the process of generating multiple cognitive and intuitive way of perception and to represent spatial components.

**Keywords:** Spatial Legibility, Spatial Abstraction, Spatial Narrative, Architecture Students.

**PREFACE**
Architectural narrative is a task that involves sophisticated inputs-outputs and comprises of various narration methods on space. One of them is abstraction, which contributes to the spatial perception in terms of legibility. Practice of thought on abstraction, on the other hand, varies with regard to both materials and methods. This study primarily aims to concentrate on that issue. Employing abstraction logic and systematization in a narrative-based case study leads us to explore different figurative language of space and to think that spatial perception in a cognitive and intuitive way is subject to capability of seeing, feeling and intimate touching. As stated by Akalın and Sezal (2009), this ability comprises of capturing images, saving them in the brain and using them to form proposals (Akalın and Sezal, 2009: 15). Analyzing this approach on space requires the examination of validity of a narration method through abstraction. According to the narration method, investigated in this text, main tools for abstraction are architecture

students and historical buildings, and main theme for narration method is using different kinds of materials and abstraction logics in presentation of spatial narrative. Not only two-dimensional but also three-dimensional spatial organizations contribute to abstraction logic and by doing so spatial narration should be perceived as a conclusion achieved by different relationships. In addition to this systematization, because of their insufficient drawing architecture students were required to define which abstraction logic of the models are employed in narrative output in order to grasp of how different materials can be represented and participated the narration. Moreover, perceptions of plan and construction shell are not presented by drawings but by using various materials (cardboard, wood and metal). After this brief introduction, we will provide details of this case study.

Firstly, it should be mentioned that first-year architecture students, who have not achieved sufficient drawing abilities yet as a tool for architectural representation, are the main actors and, historical buildings in Sivas are the main models for abstraction. Fundamental parameters for actors are whether or not living in Sivas since he/she was born and, having a basic design background for several weeks. In the method employed in the present study, the familiarity with the city is a significant factor as a differentiator. This is because, the perception modes of the selected model buildings and the changeable factors in their representation are due importance for the study; this is because perception and familiarity with local buildings might be result in a more emotional involvement in the formation of a narration which based on abstraction logic.

This means that abstraction process can be affected by recognition and reception. Another reason why the students are the taking class on basic-design studio is that it relies on merely how to think three-dimensional way and to practice it with models. It is suggested that basic-design studio contributes students to obtain ability of setting coordination between the eye-mind-hand in order to visualize any image and to gain capacity of understanding and perception (Pazarlıoğlu Bingöl, 2016: 343). This has due importance to make accurate assumptions, which posit basic-design activity in the first year, for achieving capability of three-dimensional thinking and gained different ways of architectural narration. First-year students in basic-design studio had been practicing on horizontal-vertical partitions such as earth-surface-cover, and structural shell, and volumetric relations, and spatial levels etc. "As a place of creative 'doings' (Mewburn, 2010: 377)" design studio is a medium where occurred collaborative activity between teacher and student in terms of discussing and imagining for design choices (Mewburn, 2010: 364). In this regard, it is essential that experiences gained by basic-design practices are transferred to spatial narration on legibility by using methods of

abstraction. This also involves a kind of comparison between the familiarity and being educated. Because design studio can be identified as a place where acquisition of a behavioral ability related to how designing is achieved and, this medium gives students a sort of thinking habit in order to find behavioral path of this aim (Arıdağ and Aslan, 2012: 50-51). On the other hand, historical buildings in Sivas are the other tools for abstraction. Sivas is one of the most notable historic cities in Turkey. From Byzantine period to Republican period it has various historical stratifications and its legacies are some part of the current city. Thus, architecture students can readily establish interaction between themselves and historical buildings according to their familiarity, as mentioned above. In conclusion, it is investigated how a narrative-based case study of space on legibility can be achieved by different materials and distinct plan typologies within the practice of abstract thought. It should also be stated that form of reading buildings, acquired in due time, involves an experimental context.

## METHOD AND SYSTEMATIZATION ON CASE STUDY
### Abstraction Thought in terms of Approach

Abstracting a space with its tectonic and spatial components is the main issue of our case study. Abstraction with regards to this narrative based-case study means the shape of spatial identification and definition. It refers to a kind of simplification and classification. Search for usage also implies an extensive comprehension. Actually, such an approach leads first-year students, though insufficient in drawing training, to acquire design knowledge. As Uluoğlu (1988) stated, design is not merely emerged by objects, facts and relations between them and, all known notions are needed to be practiced by generating a solution in the context of chosen matter or problem (Uluoğlu, 1988: 21). This is the only way to learn design and its knowledge. Abstraction approach, as cited above, is directly related to obtain design knowledge and it desires to reveal thought practice. Thus, design and the creation of knowledge is subject to designer's activity – mind and the world. As it is suggested, "designers are concerned not only with what is, but with what should be (Heylighen et al., 2009: 98)". Instead of proceeding directly to solution, it is asserted that periphery of a solution space should be conceived as a place where constituted less coherence but more ambiguity as well as implicit meanings and loose ends (Goldschmidt, 1989: 207). It may be stated that design path cuts loose from bounded areas and transforms to more proliferous knowledge and practices. Confrontation with a plenty of issues reveals a variety of implicit or explicit clues and give way to countless design tasks. This sight is strengthened by the acceptance that "the knowledge created usually is a by-product of an activity with another aim (Heylighen et al., 2009: 98)". According to Goldschmidt (1989), designing comprises of problem setting and its formulation is a fluid and open-ended process in which preliminary framings can

be changed and be replaced entirely (Goldschmidt, 1989: 206). Namely, it should be mentioned that design and its knowledge can be generated by several variables and paths to solutions can be diversified in terms of problem formulation. This is the key factor of our approach on abstraction thought.

On the other hand, according to Arnheim (2009), abstraction deactivates more particular features of specific exemplars and reaches superior notions, which are poorer in terms of content but more extensive with regards to scope (Arnheim, 2009: 24). This means that scope is generalized while content is excluded. However, choosing several elements from an object in order to generalize does not correspond to abstraction. Its nature conflicts with being a sign or symbol, although one detaches it from somewhere. Abstraction as a mental construction relies on perception and experience. It is suggested that human mind is capable of building a coherent conception of external reality and constructing further conceptions of memory and imagination (Akalın and Sezal, 2009: 15). Namely, it is required process of recognition and reception in order to grasp a space before abstraction. Also, recognition and reception vary from person to person, in addition to the differentiation of each observation, done by the same individual. Because as it is suggested by Merleau-Ponty (2014), objects can evoke and symbolize a particular attitude for observer (Merleau-Ponty, 2014: 30). Thus, obtaining an opinion on a space reveals perceptual judgements and subjective thought methods entail a variety of observations due to the individual experiences. To make sense, contact and record of external world are consisted of experience thus, students engage design as bodily and this exploratory process becomes an indigenous way, controlled by students themselves (Arıdağ and Aslan, 2012: 51). From the perspective of this case study, being a native or not constitutes one of the most important individual experiences. In addition to this, on the spot observation, based on intellectual accumulation regardless of being native, enables us to evaluate the other individual experiences. Because of infinite observations, according to Merleau-Ponty (2014), it can be thought more complete or more perfect observation than at any given time (Merleau-Ponty, 2014:15). On the other hand, process of recognition and reception leads perception directly to abstraction logic. From the viewpoint of this case study, abstraction logic is directly related to basic-design studio where architectural students have acquired the ability to think three-dimensional way and to analyze notion of space through models. Such kind of practice transforms seeing way of students into multiple cognitive and intuitive ways of perception, thus thoughts about objects are exposed to deconstruction. As long as seeing way is experienced by more spatial practice, abstraction logic of students can be fostered and enhanced by more three-dimensional thinking way. This signifies that systematization of three-dimensional thinking is renewed, transformed and thus, gained new abilities and

accomplishments by making models, which facilitate comprehension of the space. Instead of drawing tools, here is the main issue that abstraction logic is used by the first-year architecture students in order to read a building or a plan. Abstraction logic can be composed of such tools as reduction, derogation, insertion, combination, integration, and separation and, by using them one can create infinite analyses on visual images of environment.

At that point, it must be mentioned that environmental features cannot be determined by merely elements of it (Yürekli, 1977: 14). This insight is parallel with the fact that whole form of a building is consisted by form components, forms, amalgamations of form and figures that gradually articulate each other (Fischer, 2015: 61). Namely, abstraction logic as a perceptual task transforms a space into its tectonic and spatial pieces and furthermore when process of perception works like that, tools of abstraction logic, as mentioned above, becomes consciously or unconsciously a part of comprehension of a space. This contribution is derived from relationships of pieces and thus, established a meaningful fiction, which is shaped according to the perception process. As Yürekli (1977) suggests, contributions of relations between the elements and, connections between the whole and elements one by one should be evaluated (Yürekli, 1977: 14). Because Fischer (2015) suggests that meanings and effects of elements one by one are determined and even undergone change by context and milieu in which they are accommodated and perceived (Fischer, 2015: 14). Thus, it is the main aim that abstraction logic should reveal both relations between the elements and connections between the whole and elements one by one. Employing such tools as reduction, derogation, insertion, combination, integration, and separation gives hints about not only abstraction logic but also relations of element-whole and between the elements. In conclusion, integration shape of pieces and perceptual judgements regarding personal experiences reveal new seeing ways and, method of learning how these are perceived, which is the structural model in terms of this case study.

**Narrative-Based Case Study through Abstraction Materials**
In the first step, a presentation on practice of abstract thought in architecture and samples of abstraction were shown to the participants as slides. Also, various slide shows on morphological grammar related epistemology of space were shown and some examples on spatial language of horizontal-vertical extension were shared with participants. As a second step, they were asked to choose five or six different kinds of plan typology from the historical buildings in Sivas. When first-year students made decisions on choice of building types, they were entirely free. They could choose a madrasa, a mosque, a tomb or a bath etc. The question here was whether being native

played a role in student's choices or not. Also, it was questioned that whether or not location of historical buildings in urban scale was comprehended by students. And in the third phase, abstraction materials were given. First-year students were restricted to use the materials: cardboard, wood and metal were the only materials that were allowed to be used in abstraction. Also, they had other limits on presentation model. For example, they had to use a 50x70 cm base plate for model and same plan needed to be modelled by both cardboard and wood and metal. Aim of that approach was to understand to what extent abstraction practices gained by basic-design studio were beneficial, how student's ability on legibility and abstraction was differentiated by distinct materials and building typologies. It was assumed that an experience on spatial legibility was transferred through materials with a reductive manner of spatial sequences.

After students made decision on choices of plan typologies, the essential phase was on the spot observations of the buildings. It can be asserted that making sketches by observing was a helpful way to grasp building and, on the spot reconnaissance was another beneficial approach to generate multiple seeing and thinking way. Working in situ corresponds to case study for this context and case-based studies are suggested as a "research paradigm that uses design cases for solving a new problem (Chiu, 2003: 1)". It is suggested that case studies connect students to real life experience and existential situations although they cannot tell what decisions should be made thus, students can sharpen their thinking and inform decision-making (Breslin and Buchanan, 2008: 37). This transition between theory and practice manipulates the way, which leads to solution. Design situations and proposals on solution have a reflective and interactive process and according to Chiu (2003) this is also a kind of learning process, which constituted a dialogue (Chiu, 2003: 2-3). As Breslin and Buchanan (2008) stated, nature of case studies enables us to identify a phenomenon and place it in the literature in order to pursuit other researches (Breslin and Buchanan, 2008: 38). On the other hand, making sketches is ascribed as a good medium for reflective conversation by Suwa and Tversky (Suwa and Tversky, 1997: 386). According to them, external representations derive from both external existence and interaction between the representation and cognitive process (Suwa and Tversky, 1997: 386).

In this regard, the participants received the plans of buildings according to their choices and observed the buildings in situ and made sketches. This process led them to perceive building components and explore spatial sequences, spatial depth and structural organizations and, search for how they could narrate these relationships through abstraction logic and materials. According to Ertürk and Aslan (2005), there are two main aims for visualization of image in architectural design: one has explanatory virtue that

conveys spatial notions to others and, the second is exploratory virtue that constitutes and enhances spatial notions (Ertürk and Aslan, 2005: 18). In addition to these, it is asserted that design studio is not a medium where taught architectural notions but unfold these in student's individual comprehension and make them personal (Onat et al., 2000: 90). More clearly, notions, constituted by students themselves, during the individual experience process are built simultaneously with the outcomes, which designed in studio (Onat et al., 2000: 89). This was the key figure of the case study in terms of creativeness. At that point, basic-design background and research on narrative method are brought together by abstraction methods. More clearly, it is hoped that student's creativeness derives from both working in situ as case study and making sketches as reflective medium and basic-design background as three-dimensional mentality and model as outcome of narration. According to Akalın and Sezal (2009), models enable us to test hypotheses and its possibilities can be identified as a key piece in order to stimulate thinking and imagination of students (Akalın and Sezal, 2009: 22). Model for this narrative-based case study is an outcome and it is suggested that creativity of outcomes is affected by cognitive behaviors such as problem identification, planning and resolution (Lu, 2015: 59). Problem identification, planning and resolution overlap design process and its outcome. Design process for narration method is here paralleled with all cognitive behaviors. It is suggested that none of outcome's conceptual modelling is belong to physical dimensions of space but temporal, cognitive and intuitive (Onat et al., 2000: 93). This means that visualization of spatial cognition is embodied. A new question for first-year students, thus, emerged: how can a building be grasped by abstraction without having required drawing method and how can space be transformed into a narrative model with its two and three-dimensional spatial tectonics. These are challenging quests for a narrative-based study on spatial legibility.

Subsequently, in addition to all the issues mentioned above, questionnaires aiming to reveal analyses are among the significant components of the present study. Abstraction logic and case-based studies generated by the participant were evaluated by means of such questionnaires. Questionnaire involves three main segments. Individual experience is one of the parts and comprises of being native or foreign, preference of buildings and criterion of choices. Also, elements of building intelligibleness, increased by plan, section and elevation, and, investigation of similarities and discrepancies of structural and spatial components and, spatial and structural constituents, contributed to legibleness of similarities and discrepancies, are included in this segment of questionnaire. All these can be gained by basic-design studio activities, which fosters individual experiences. Second part of the questionnaire is entirely questioning abstraction logic. It questions how spatial connection and coherence are transformed into a spatial narrative by using relations such

as compactness-emptiness, volumetric situations, spatial equipment, texture and surface. Other questions for this segment are that whether or not basic-design studio activities contribute to their narration and to what extent design tools for three-dimensional thinking is included their practice. In this segment, it is also questioned how techniques of abstraction such as reduction, derogation, insertion, combination, integration, separation are classified by giving a significance level. As a third segment, material usage is questioned. Representation technique is primarily challenge task so as to clearly reveal spatial and structural sequences. This is because, cardboard, wood and metal, employed for modelling, have distinct nature and lead student's ability to use in accordance with material nature. This displays a restricted area where design choices for narration and abstraction logic are manipulated as well as student's achievement, gained in the basic-design studio.

While modelling accompanying abstraction logic provides diversified narratives on space, it discloses the use of tools of abstraction logic such as reduction, derogation, insertion, combination, integration, and separation. In fact, modelling means that abstraction is continued and first-year students confront with new quest that implies how they can display their abstraction logic via perception and to what extent it can be represented by the model. Discovering a space with its tectonic and spatial pieces is the challenging task for this paper thus, in subsequent title, we will discuss the investigations.

**FINDINGS OF NARRATIVE-BASED CASE STUDY**

During this section, we will discuss the ways of narration on a space, regarding the issues mentioned above. Plans and photos of buildings, selected by first-year architectural students for the task of abstraction are given below. Madrasas are in table1 and, mosques are in table 2 and, hans and school are in table 3 and, baths are in table 4 and, tombs are in table 5. These images as historical legacies have important place for the architecture students for comprehension of Sivas' imaginary identity. In sum, nineteen buildings in Sivas are included and approximately sixty first-year students are participated in this study. However, sixteen models are evaluated in terms of results and four groups are constituted.

Table 1. Madrasas in Sivas, chosen by first-year students, source of plans: Sözen, 1970 and source of photos: author.
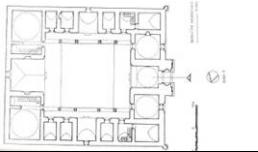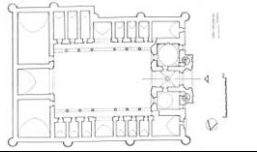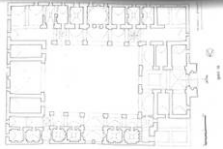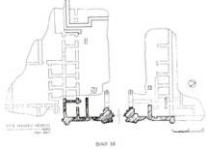
| Buruciye Madrasa | | Gök Madrasa | |
|---|---|---|---|
|  |  |  |  |
| Şifaiye Madrasa | | Çifte Minare Madrasa | |
|  |  |  |  |

Table 2. Mosques in Sivas, employed for abstraction typology by first-year students, source of plans: Ünsal, 2006 :253, 272; Kuban, 2008: 120, 126 and source of photos: author.
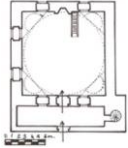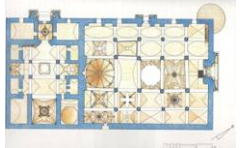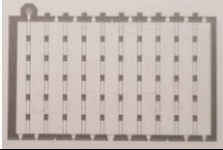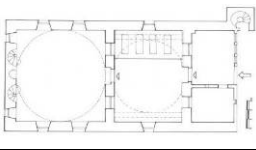
| Kale Mosque | | Divriği Great Mosque | |
|---|---|---|---|
|  |  |  |  |
| Sivas Great Mosque | | Ali Baba Mosque | |
|  |  |  |  |
| Paşa Mosque | | | |
|  | | | |

Table 3. Hans and School in Sivas, source of plan: Semiz, 2007; Taşhan; Subaşı; Bulut, 2006 and source of photos: author.
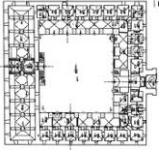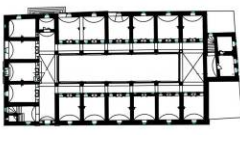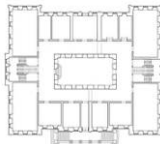
| Behrampaşa Han | | Taş Han | |
|---|---|---|---|
|  |  |  |  |
| Subaşı Han | | Kongre Building | |
|  |  |  |  |

Table 4. Baths in Sivas, used in case study, source of plans: Semiz, 2007: 152; and source of photos: author.
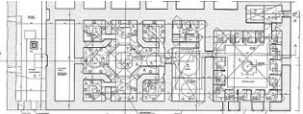
| Kurşunlu Bath | | Meydan Bath | |
|---|---|---|---|
|  |  |  |  |

Table 5. Tombs in Sivas, sources of photos: author.
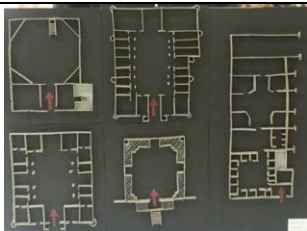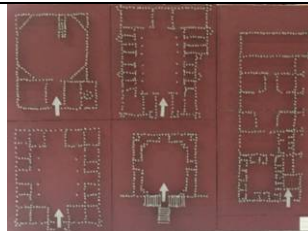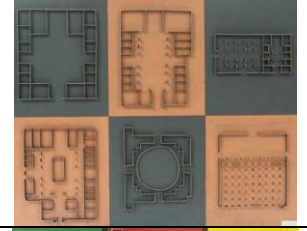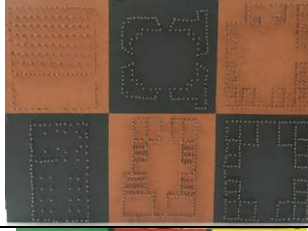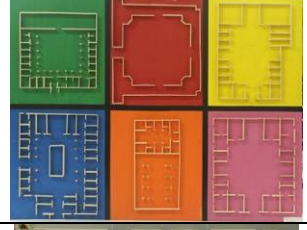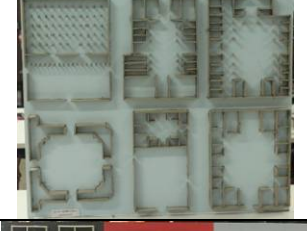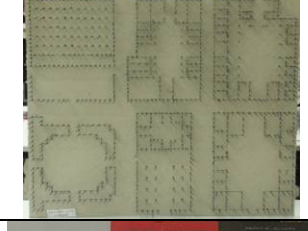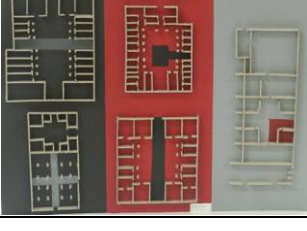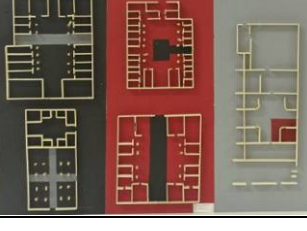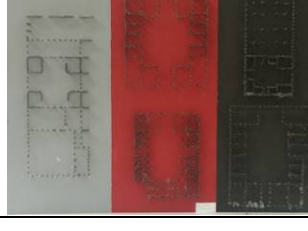
| Abdulvahabi Gazi Tomb | Güdük Minare Tomb | Akbaş Baba Tomb | Şemseddin Sivasi Tomb |
|---|---|---|---|
|  |  |  |  |

In terms of identifying systematization, models will be, primarily, classified and then, responses to the questionnaire items will be evaluated simultaneously. Classification of models are involved by abstraction on the basis of main space, determination spatial highness on the vertical axis, relation of compactness-emptiness and spatial equipment.

As shown in Table 6, first example of groups on abstraction on the basis of main space belongs to a native student. According to her responds in the questionnaire, she selected Buruciye Madrasa, Gök Madrasa, Kale Mosque, Güdük Minare Tomb and Kurşunlu Bath and apparently, she is highly aware of condition of spatial components. For example, while location of rooms is likened to each other, specific parts such as iwan or courtyard, constituted big blanks, are foregrounded. Furthermore, porchs, highlighted courtyard, plays an important role in order for the abstraction of the buildings. In the second line of Table 6, Buruciye Madrasa, Şifaiye Madrasa, Gök Madrasa, Güdük Minare Tomb, Divriği Great Mosque and Sivas Great Mosque are included. It is suggested that openings in interior space are supplemented by other enclosures and thus functional divisions are created. Third example in Table 6, Buruciye Madrasa, Divriği Great Mosque, Güdük Minare Tomb, Şifaiye Madrasa, Behrampaşa Han and Gök Madrasa are included. This is an interesting choice; although Behrampaşa Han is out of the historical center, it is chosen by a foreign student. According to the questionnaire, this preference might stem from criterion of dimensional relations. All selected buildings in third example have considerable size, except Güdük Minare Tomb. This might result from attraction of numbers of columns and window openings according to the questionnaire. Because it is clear that number of spatial components are solidified by mind during the recognition and reception process in the abstraction logic. In the fourth example, on the other hand,

approach used derives from not blanks but closures. Gök Madrasa, Güdük Minare Tomb, Buruciye Madrasa, Şifaiye Madrasa, Divriği Great Mosque and Sivas Great Mosque are used as abstraction models. Questionnaire of fourth example reveals that portals are the most indicative element although they aren't included in the abstraction logic. Instead of portals, walls are become fundamental tool for abstraction logic. In the fifth example, it is emphasized differentiation of openings with regards to aim of spatial usage. While Kurşunlu Bath, Buruciye Madrasa, Şifaiye Madrasa, Gök Madrasa and Divriği Great Mosque are employed, all of which are classified in terms of relation between main spaces and openings.

Table 6. Examples of abstraction on the basis of main space of historical buildings.

| | cardboard | wood | metal |
|---|---|---|---|
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

Second sample group consists of determination spatial highness on the vertical axis. As shown in table 7, all examples indicate either minarets or cover shapes. Taş Han, Kongre Building, Meydan Bath, Sivas Great Mosque and Buruciye Madrasa are used in the first example. It is directly stated that cover shapes such as dome, vault are employed as main abstraction tool according to the questionnaire. Aim of this is to emphasize three-dimensional relations. In the second example, Buruciye Madrasa, Gök Madrasa, Behrampaşa Han, Meydan Bath and Subaşı Han are employed and seemingly, vertical elements of them are consciously chosen. While minarets and cover shapes are foregrounded, other components of buildings such as walls are exposed to a kind of deconstruction. Such an interpretation is derived from vault shapes of porches and chambers. In the third example in table 7, we encounter a kind of deconstruction again. All spatial elements and construction shells are regenerated on the basis of basic-design principles such as holistic relation and repetition. Thus, verticality of Buruciye Madrasa, Divriği Great Mosque, Gök Madrasa, Çifte Minare Madrasa and Şeyh Hasan Tomb (Güdük Minare Tomb) is revealed through domes, vaults, portals and minarets. Fourth example deals with Buruciye Madrasa, Şifaiye Madrasa, Behrampaşa Han, Divriği Great Mosque, Gök Madrasa and Güdük Minare Tomb. While it is accepted that rooms and courtyards define same horizontal relations, portals and columns indicate verticality.

Table 7. Examples of abstraction on determination spatial highness on the vertical axis.
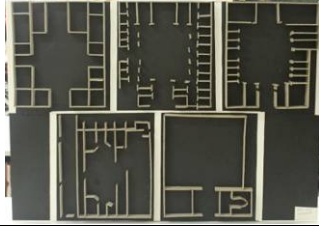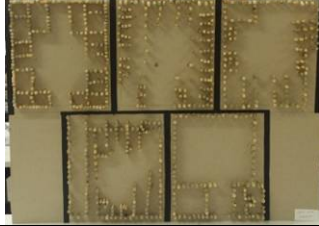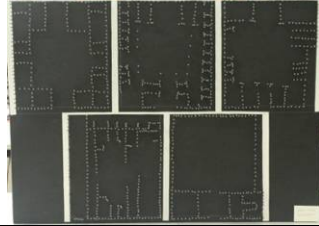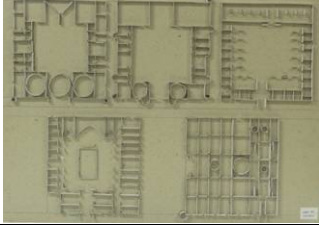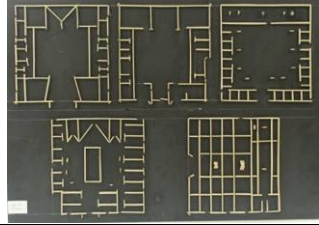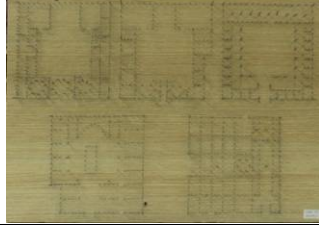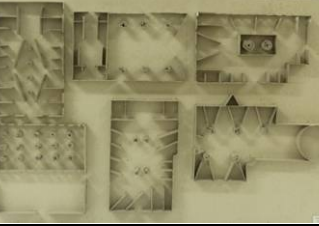
| | cardboard | wood | metal |
|---|---|---|---|
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  | |
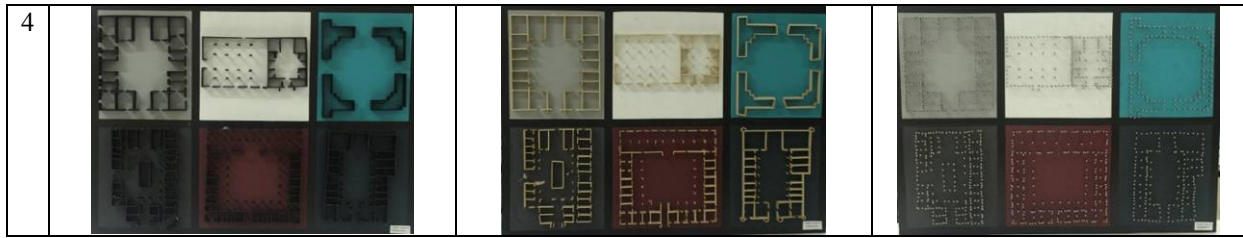
Third group is the one that considers relation of compactness-emptiness. As shown in table 8, expression of compactness-emptiness relation varies in terms of abstraction logic. For example, first line of the table focuses on combined strategies according to chosen buildings. The compactness of Güdük Minare Tomb is emphasized by its drum and dome as well as its wall surface. After its base line is designated, wall surface is reflected as compactness, integrated with dome. Çifte Minareli Madrasa's portal is elevated and all walls and columns are symbolized. Abdulvahabi Gazi Tomb, Paşa Mosque and Ali Baba Mosque, on the other hand, are employed such a simple logic which remarked only window-door openings. Second example f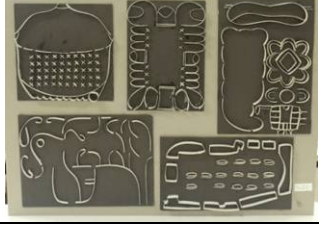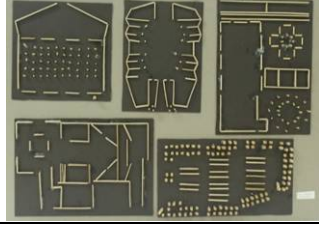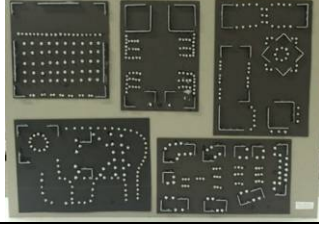or this group is strictly fitted spatial boundaries and firmly applied compactness-emptiness relation. It is stated that Kurşunlu Bath, Kale Mosque, Buruciye Madrasa, Şifaiye Madrasa and Gök Madrasa are abstracted by using their sections; and according to the questionnaire, it can be inferred that this strict application might result from being a foreign student. In the third example, there is another firm practice although this work belongs to a native student. Abstraction logic, here, operates by facades and plans as well as construction shell. While Gök Madrasa, Buruciye Madrasa, Divriği Great Mosque, Şifaiye Madrasa and Behrampaşa Han are used, their walls, which separate interior from exterior, are tendered a permanent right-angled linearity as mentioned in its questionnaire. While walls are repeatedly designated spatial divisions of indoor space, covers such as arches, cross-vaults, barrel vaults, domes or columns are integrated with abstraction method. In the fourth example of table 8, Buruciye Madrasa, Şifaiye Madrasa, Gök Madrasa, Sivas Great Mosque, Divriği Great Mosque and Çifte Minareli Madrasa are employed and columns are used in each abstraction material in a different way. Apart from this, walls powerfully separate exterior space although interior space and columns are associated with abstraction logic, comprised of insertion, integration and separation. Last example of table 8 is practiced by a kind of deconstruction in addition to reduction and integration, derived from abstraction logic. Sivas Great Mosque, Gök Madrasa, Kurşunlu Bath, Meydan Bath and Şemseddin Sivasi Tomb are employed and all components of samples are reinterpreted. While courtyards remain the same, elements of interior space such as columns, rooms, iwans and cover shape are transformed into a figurative language of space as well as boundaries which separate interior from exterior. It can be suggested that this kind of abstraction logic relies not only on imaginary fiction of mind but also on

ornamentation of portals, which can be inferred from the questionnaire. This is one of the two samples, which indicates that ornamentation is a complementary constituent for spatial elements of plan.
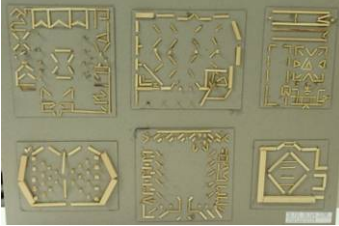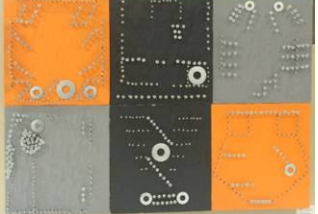
Table 8. Examples of abstraction on relation of compactness-emptiness.

| | cardboard | wood | metal |
|---|---|---|---|
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

Final group comprises of spatial equipment. As shown in table 9, both examples directly indicate that interior space is defined by usage. In the first example, Şifaiye Madrasa, Behrampaşa Han, Kurşunlu Bath, Sivas Great Mosque, Meydan Mosque and Akbaş Baba Tomb are employed and all of them are abstracted in accordance with purpose of space. Different kinds of openings and distinct cover shapes are among the fundamental abstraction tool. While basic-design background such as rhythm, contrast or volume are used, spatial elements are exposed to reduction, derogation and separation. This also

means that the confines between interior and exterior are partially undergone to be a vague line and spatial usage as well as exterior is foregrounded by compactness-emptiness relation. In addition to such kind of reduction, this sample is another example for ornamentation in terms of complementarity. It is stated that ornamentation evokes volume and compactness. Thus, ornamentations of domes were expressed bulkier and longer while this narrative-based case study was conducted. Second example is entirely based on deconstruction technique. According to the questionnaire, spatial equipment is inserted into relations of texture and surface. Confines of compactness and emptiness and interior-exterior space are explicitly degenerated by abstraction logic. Spatial usage and boundaries become vague, and equipment is also symbolized.
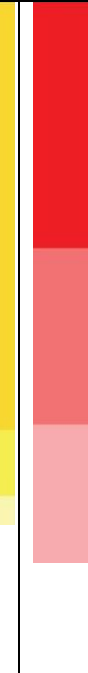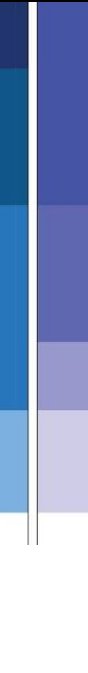
Table 9. Examples of abstraction on spatial equipment.



| | cardboard | wood | metal |
|---|---|---|---|
| 1 | | | |
| 2 | | | |

## EVALUATION OF NARRATIVE-BASED CASE STUDY

This narrative-based case study aims to reveal that how materials and methods on practice of abstraction logic can be varied with regard to spatial legibility. Different figurative languages of space are, in this context, investigated by not only perceptual judgements according to the abstraction logic but also representing a space with its tectonic and spatial pieces by means of model. First-year student's creativeness, gained in the basic-design studio, is the key factor of abstraction logic and modeling is the main tool for three-dimensional thinking way. As a holistic view, responses in the questionnaires are presented in the table below. According to table 10, responses are concentrated on the darkest color and lightened towards white.

Table 10. Graphical presentation of responses, achieved by questionnaires.

| Parameter of chosen building typology | | | Significance degree of spatial relations | | | | Best representation material for model | | | Most employed abstraction tool, enhanced by basic-design studio. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location relations | Dimensional relations | Historical relations | Texture relations | Spatial relations | Volumetric relations | Compactness-emptiness | Cardboard | Wood | Metal | Insertion | Separation | Integration | Derogation | Reduction |



First group of narration method is comprised of thoughts on the basis of main space of historical buildings, abstracted by first-year students. Only one of the first group students is native and this situation contributes to her narration in perceiving relation between the entrance and main space although others highlight merely main spaces such as courtyard, chamber or prayer place. Abstraction logic, employed by this group, composed by reduction primarily, derogation secondarily and insertion thirdly. Separation, on the other hand, is the least encountered method, employed by groups of thoughts on the basis of main space while combination or integration is not used. Using such an approach for abstraction, the study aimed to investigate how tectonic and spatial elements of buildings can contribute to comprehend legibility of similarities and discrepancies. For example, among the spatial elements, courtyards and rooms and, among the tectonic elements, walls, arches and columns are the most indicative pieces of building that help to comprehend similarities and discrepancies. Also, native student acknowledges that iwan and porch have the same impact as courtyard in order to grasp space. Thus, it is clear that abstraction thoughts on the basis of main space are derived from mostly spatial depth. Namely, the reception and recognition process of the first group reveals

that the more the spatial depth increased, the more directed the comprehension towards main space.

Second narration method determined the group's thoughts consist of spatial highness on the vertical axis. This means that horizontal and vertical relations of historic buildings are accepted as the most outstanding features in terms of spatial narration. Differentiation and selection are the key figures of reception and recognition process that works regardless of being native or not. This is because, it is clear that second group of narration method comes into prominence by coordination between their selections and models; for example, the attention is drawn to the point that all of their choices involve vertical architectonic elements such as minarets as well as horizontal elements. This verticality deliberately reflected on their models is understood easily by three-dimensional effect. This horizontal-vertical contrast manifests itself influentially by model organization after abstraction process is done. Abstraction logic, here, allows using reduction and derogation technique primarily while other abstraction tools are subordinated. Elements that are exposed to reduction and derogation focused especially on structural shell such as cover shape or type, and minaret which emphases vertical axis and in by doing so, basic-design background plays an important role according to the second group. It is stated in questionnaires that learning outcomes of basic-design studio are employed and benefitted from tools such as repetition, symmetry, holistic sight, convenience on context, linearity, portraying through pieces, shaping three-dimensional appearance by linear elements etc. Namely, method of determination of the spatial highness on the vertical axis is closely associated with basic-design background. In attaining this kind of abstraction logic, tectonic and spatial elements of buildings contribute to the seeing way and to the recognition of similarities and discrepancies more acutely. For example, portals, symmetry, dome, location of courtyard and rooms strengthen similarities while minarets, usage aim, dimension between the spatial elements and entrances of buildings increase the differences according to the answers on the questionnaire.

Third narration method, on the other hand, depends on relation of compactness-emptiness. This means that two-dimensional seeing way on plan is the most notable approach for this group while third-dimensional of plan is perceived as a contribution to distinguish empty surfaces and compact or solid components. For example, walls and columns separating interior from exterior as well as operating as structural elements constitute compactness. Courtyards, iwans and porches indicate empty spatial character according to narration method of compactness-emptiness relation. Also, openings on three-dimensional axis, which elevates two-dimensional components, are identified

through cover coat and by doing so, relations, created by dome or vault, are acknowledged as compactness-emptiness. According to this group, items that increases similarities are iwan, courtyard and dome as relation of emptiness, and relations of volumetric, texture and surface increases discrepancies with regard to perception process. The most useful abstraction tool is primarily reduction, while derogation, insertion and integration are employed equally. This kind of seeing way directly entails abstract solid-void elements on both two and three-dimensional axes. In order to comprehend buildings and conceive mentally, only one of this group students thinks that section helps to identify structural language and increases legibility of design, on the other hand, plans and sections and elevations according to the others have equal importance. This means that relation of compactness-emptiness in the third narration method, entirely, excludes functional or dimensional concerns and is conceived by constructive and structural shell, reflected on plans and sections.

In the fourth narration method, spatial equipment is employed as the main abstraction thought. This method correlates with functional usage and, spatial and structural components, which contribute to the legibility of similarities and discrepancies, are simply featured as stable so that tectonic and constructive elements subordinate according to the abstraction thought on spatial equipment. It is investigated that all textures and surfaces are interpreted mentally in accordance with human and its usage in space after compactness-emptiness relation is established. Thus, volumetric relations between the tectonic and spatial shells are determined by experience. For example, madrasas, functioning as cafes or cultural center today, have different equipment such as chairs, tables or stands, and the key figure of this narration method is how these are used by people. In other words, openings on two-dimensional axis are perceived not only as room, courtyard or iwan but also gathering, meeting or roaming places. Reduction, derogation and separation are the most prominent features of abstraction logic, employed based on spatial equipment thoughts.

In addition to these kinds of abstraction logics, there is another challenging task for this case study. How was student's ability on legibility and abstraction differentiated by distinct materials and building typologies? In the questionnaires, it can be seen that as long as materials are diversified, representation of same building plan with same abstraction logic becomes difficult and thus, abstraction logic, employed once, can be altered little changes when material is changed. In group of spatial equipment, for example, while metal is the most important device for first sample of table 9, another one asserts that wood and cardboard are easier than metal. According to the group of compactness-emptiness relation, three of students mentioned that cardboard is the most

important device of technique, and the other two asserts that cardboard, wood and metal are equal. Abstraction logic, conducted by the group in determination of spatial highness on the vertical axis, is more sensitive in terms of material changes. Half of them asserts that wood, cardboard and metal have equal significance in order to represent a typology, while others mentioned that metal and cardboard are the most important materials. That group asserts that relation between cardboard-wood and metal-wood is equal in terms of modelling. Group, consisted of abstraction on the basis of main space of historical buildings, is differentiated by responses. Only two of them suggest that all materials have equal importance and according to the others, wood is the most significant material for abstraction. Cardboard has always an intermediate significance for them and approach to metal as a material has been changed.

**CONCLUSION**

This paper focuses on abstraction logic, practiced by various materials and individual methods. This approach is employed through the present case study based on spatial narrative. In order to depict a space in a narrative-based case study, visual memory is transformed into a reductive abstraction. In this reduction phase, perception plays an important role due to the relation between knowledge source and impulse source. Visual perception in the creation of spatial impact, according to Aydınlı (1986), is subject to the consequence that visual variants such as color, form, texture which constituted space, perceive as a whole in accordance with principles of aggregation and, these variants affect the perception way as dimensional, thermal, visual and aural (Aydınlı, 1986: 79). In this present study, the questioned is how perception of space in two and three dimensional such as divisions, surface relations can be described by using plan, section and several materials without drawing but model.

In order to conduct this investigation, the study followed some significant steps. After overall frames of the study were introduced to first-year students, they began to research the importance of historical buildings in architectural level, apparent determining imaginary identity of urban scale. As another step, first-year students were asked to scrutinize spatial description or content of a building by using method of spatial narrative. Thus, an investigation on spatial sequence was done and secondly, linear representation or drawing was excluded as external device; and they were asked to narrate the spaces in three dimensions by a reductive method of abstraction. How the dimensional relations of space (depth, height) were purified from volumetric surface was analyzed. Four narration methods comprised of thoughts on the basis of main space of historical buildings were spatial highness on the vertical axis, relation of compactness-emptiness and spatial equipment. These representation levels enabled first-year students

to learn characteristic components of a space in the context of volumetric and tectonic relations. While dimensional relations (depth, height) were investigated, the way in which elements forming space could be narrated in a certain scale was achieved. How spatial sequences of iterative spaces and distinct spatial components could be read especially in plan level with regards to spatial legibility was explored. In addition to this exploration, a questionnaire was applied in order to understand students' abstraction thought. According to questionnaires, first-year students, not reaching the sufficient level in the analysis of expressive techniques based on drawing (planning, cross-section, facade drawing etc.) regarding the spatial narrative topic, investigated plan elements such as main space, dispersive space, aggregator space and circulations in two and three-dimensional way. Through the abstraction application this ability was enhanced. In conclusion, it can be asserted that abilities, gained by both basic-design practices and individual experiences, led first-year students to foster to generate multiple cognitive and intuitive way of perception and to represent spatial components.

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