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Sustainability as a Design Strategy: a Case Study of Three Public Buildings

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1. Introduction

Production and consumption phenomena refer to the creation of an integrated system, which essentially contains opposites and interactions. When this system with its aforementioned nature is considered as a balanced whole, every production-oriented process has to consider the phenomenon of consumption. In this sense, architectural practice as a form of intervention in the natural environment takes place in a dominant and important position when we consider the resources and the amount of energy consumed in the processes of producing and using the built environment. It is a known fact that natural environmental values and energy resources have suffered / are suffering a great deal as a result of the consumer attitude which has been introduced, disregarding environmental awareness through the forms of construction / production which, especially, accelerated in the aftermath of the Industrial Revolution. In the face of this reality, it is seen that architectural practice is struggling to transform itself by questioning the ongoing built-in attitude within the action field, which is that of design and construction oriented by nature and by rediscussing its position within the long-existing concept of 'sustainability'. In this sense, the concept of sustainability has become one of the most frequently seen concepts on the agenda in recent years. According to McDonough, within the general framework (1992), the concept is expressed as meeting the current needs without harming future generations' opportunities to meet their own needs [1]. Sustainability is conceptually new, but it has been a lasting approach since ancient times especially in the context of using climatic data in design and observing local data [2]. When the definitions of the concept's relation to design and architecture are examined; according to Yeang (2001), the main feature of sustainable design is the harmonization of construction systems with life cycles; construction systems are able to create the least destructive effect and the most positive effect on natural systems [3]. Taking a similar approach, Foster (2001) emphasizes the importance of passive design decisions which reduce the use of energy resources rather than mechanical system-dependent

approaches, while defining sustainable design as achieving the most with the least and expressing that the quality of sustainable architecture is much more about the quality of a design idea than the materials used [4]. Sev (2009), on the other hand, defines sustainable architecture as all the activities aimed at creating structures that give priority to the use of renewable energy resources, are environmentally conscious, use energy, water, material and space in an efficient manner, and protect people's health and comfort whilst also taking into consideration future generations, in all conditions of their existence and every period of their existence [5]. Ekim (2004) states that making the concept of sustainability visible in architecture can be evaluated based on the two basic approaches of space and technology. Place has a phenomenological meaning in the context of the continuity of local culture and identity for a sustainable society, while it has an ecological meaning in the context of the continuity of local resources. When understood in this form, place has an importance in the context of cultural and climatic values, along with topography and the use of landscape. Technology on the other hand, emphasizes the universal, which transcends the boundaries of the Earth and therefore works towards the continuity of the whole world ecosystem [6].

For today's developing engineering technologies, the importance that the construction industry gives to ecology and recycling, as well as the sensitivity that the public has in this regard, includes sustainability solutions that have met certain standards for the structures to be built, especially in terms of public resources. What needs to be addressed through a design should be how the sustainability criteria will be translated into architecture through space by way of the material, detail, and engineering solutions suggestions. Therefore, the identification of the location of a structure, the creation of the requirements program and the identification of the areas and functions are parts of this process. At this point, the way in which the concept of sustainability is addressed is of great importance. Many parameters such as the program parts that a structure contains and the way in which these program parts come together, tectonics, the relationship with the environment and the context are the basis of the sustainability concept.

This study covers the design frameworks examined in the context of sustainability [7], which won the first prize in architectural project competitions of the Kayseri Chamber of Commerce, Bornova Municipality Service Building, Caferağa Sports Hall and Cultural Centre that opened in 2012, 2015 and 2016. The design idea framework of these three buildings which have been constructed in three different geographical areas with different climatic and environmental data in Turkey, such as the Central Anatolia region, the Aegean Region and

the Marmara Region, along with the contextualization of this framework on sustainable terms, will be evaluated with a focus on the design process and the final product.

2. Three Geographies, Three Structures, Three Programs

The main project subjects of the designs which are located in three regions of Turkey that have differences in climatic and environmental data are the Chamber of Commerce, the Municipal Service Building and the Sports Hall. The common factors directly affecting the design in the three examples are the functions which we can expect to be expressed in detail in the specification. These will then be reflected in the requirement program and will serve to strengthen publicity. When the specifications, the jury's expectations and the requirements of the programs of each example are analyzed, the main features that shape the design shall emerge.

Here the targets are: the architectural ideas of the Kayseri Chamber of Commerce (KTO) 's service building, which is thought to be constructed in an area whose boundaries are set in 1/5000 and 1/1000 zoning layouts; the research of the economic and modern solutions that are appropriate to today's architecture; engineering; city planning; and the encouragement of fine arts. In this context, functionality, flexibility (to accommodate the solution potentials that enable the development / diversification of requirements within the lifecycle), feasibility, affordability, persistency, valuing the environment, compatibility with the natural environment (showing an approach that is sensitive to local climate, local ecology and local social life), openness to the public / invitation / participation, transparency, disabled access (access in universal principles in open, semi-open and closed spaces), sustainability (the assessment of the sensitivity that the structure shows to location, climate and context rather than the technological equipment within the structure as the design input) are the most important criteria in the KTO's service building project competition. [8] The prominent topics in the building requirement program are the service departments of the Chamber of Commerce, the administrative departments, service departments and a commonly used council hall, a meeting room and a restaurant.

The basic expectation in the design competition of the Bornova Municipality Building and its surroundings, which will be situated in an approximately 21 720 m^2 area in the Bornova province of Izmir, is not limited to the acquisition of a qualified local government building but to the creation

of characterized common living areas that urbanites need more and more to enrich the everyday life of the city. Therefore, economic, genuine and qualified architectural approaches which will have a place in the city's collective memory and will serve as a model for the future work towards achieving a better quality environment in Bornova, functional and innovative solutions; approaches that are respectful of nature; are sustainable; and reveal a contemporary environment and architectural understanding are expected. At this point, it is important that the new municipal service building of Bornova defines an environment which is part of the urban area, easy to reach, and used in an adapted way and where there is sustainability within contemporary urban life and the city. The architectural language of the newly created surroundings and structures should determine the strength of the relationship established between the city culture and contemporary architecture and the artistic environment. One of the significant topics of the competition is that of introducing open space into city life, to transforming it into a social space and integrating it with the municipality building. In the framework of green, sustainable and smart building (a feature which is related not only to automation systems but also to architectural design, natural lighting, heating-cooling, acoustics, interior comfort etc.) concept in design, criteria such as the use of alternative clean energy sources, the maximum efficiency from the ground floor usage, the setup of a transparent, flexible and open office system, the spatial configurations that the municipality employees may use and socialize within (floor gardens, terraces, etc.), the differentiated and good analysis of the circulation (document circulation between archives and units, protocol, parliament halls, differentiation of exhibition halls and citizen entrances, freight elevators required for services, etc.) and the suitability for the disabled are prominent [9]. The most prominent topics in the building requirements program are municipal service building units, underground parking and open space arrangements.

The area in which the Caferağa Sports Hall and Cultural Centre will be built, in other words central Kadıköy, has recently become a busy entertainment centre due to some functional shifts resulting from developments in the metropolis and some new transportation possibilities. At this point, the Caferağa Sports and Cultural Centre is expected to become an attractive socialization centre that brings together different age groups in the framework of culture and sport as an alternative to an eating, drinking and entertainment-oriented socialization, whose dynamics are mostly created by the younger population. In designs, the setup of open / semi-open public spaces with flexible usage that

are able to directly relate to the "street" at all the possible levels but primarily on the ground, beyond the stated program items, is considered important. Designs in which the transitions of the public areas to one other is provided, the elevations are used fluently and the usages associated with the city square are emphasized, are expected. In the requirements program for the newly proposed building, it is anticipated that the capacities of all functions in both existing centres (Caferağa Sports Centre and Baris Manco Cultural Centre) should be protected as much as possible, increased and diversified in a moderate manner, and that the spatial qualities and equipment should be improved. The Caferağa Sports Hall and Cultural Centre should be interpreted as a centre that strengthens social communication, where residents of all ages would like to be for more than one reason, ascribe different meanings and use the functions in the building in an effective way. The consideration of the structural density in the environment and the sensitivity to mass and height issues are other criteria put forward by the jury. [10] The most prominent topics in the building requirements program are the gymnasium, cultural centre, swimming pool and parking lot.

3. Design Setup in the Context of Sustainability

The design process involves a creative acquisition which is dependent on natural surroundings, towns, neighbourhoods and regions and which emerges through the handling of different parameters for each building. In this frame, the way the structure program is handled and interpreted determines the situation in which the building can be compatible with the area. A good and powerful design carries a setup that has managed to belong to the place where it is and holds contextually strong expressions. From this point of view, we can define setups that stand out in the design process through specific titles. These titles can be counted as; tectonic/formation/form setup that describes the formation of building envelope; open space setup in which publicity and public area concept come into existence; planimetric setup in the context of functional integrity and correct solutions; section setup expressing the development of the predicted life on the vertical axis; selected material setup, including the predictions regarding the construction process of the building; and climatic setup that leads to the handling of the building in the context of the geographical region in which it is located. The fact that the design decisions and the strategies that are carried out in accordance with them are correctly put forward means that they also embody the sustainability principles of the building. The correct formation of the setups,

which are addressed in the design process and determine the design, will create the context of the sustainability concept which exists with the design itself.

KAYSERİ CHAMBER OF COMMERCE

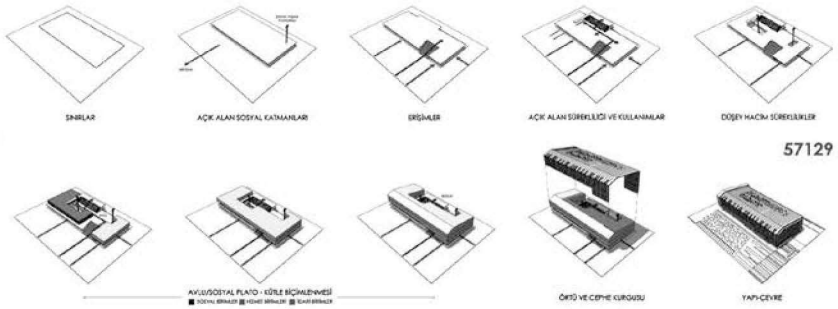
Fig. 1: The main approach perception of Kayseri Chamber of Commerce



Tectonic / Formation / Form Setup *Urban context / City / Texture / Environment*

As the general urban texture of the city of Kayseri is examined, it becomes evident that it contains a fragmented texture preserved as a single mass on the basis of a traditional texture. At this point, the location of the Kayseri Commerce Chamber building is an area that is unrelated to the urban texture and is withdrawn by creating a wide gap over the main boulevard. The area of construction is in a discrete position off the surrounding texture and creates an area that is deprived of urban references within the gap, and this has led to the structural tectonic formation being directed to an inwardly focused scheme. At this point, the form setup was created through a courtyard typology that has a place in the urban memory within the traditional texture of Kayseri. This typological approach was strengthened in the third dimension and a layered, vertical courtyard setup was established. Among the prominent components in structural tectonics, the perception of the building from the main transport artery and its exhibition of an identity that reflects the Chamber of Commerce's institutional identity and prestige have been given a lot of importance. In this direction, a strong reception for public activities around the courtyard has been set up vertically and the gap created in the north-western front, together with this reception, has created the social living courtyard structure tectonics.

Fig. 2: The mass formation logic of Kayseri Chamber of Commerce



Open Space Setup *Publicity*

Chambers of Commerce buildings generally have an inward-oriented function when their usage is reviewed. This inward-oriented state of being embodies exteriorisation potentials with social and cultural actions such as clubs, exhibition halls, etc. However, it is thought that the aforementioned public relations are insufficient due to the irrelevance of the internal-external field and the visibility and accessibility problems of the social strata. With these thoughts, design has been handled by regarding the open-closed area relations created by the interpretation of traditional courtyard typology and their continuity. In this setup, which integrates the service units of the Chamber of Commerce and the social spaces included in that program, both inward and outward-oriented, multi-layered social spaces have been created, vertical-horizontal modes of handling and functional and vital continuities have been enabled among these spaces. In the formation of forms of public usage, easy access is taken into account and new grounds are created by increasing the ground floor usage on the vertical axis. In this direction, the areas that are heavily stepped on and intensively used are located on the ground floor and on the upper ground floor.

Planimetric Setup

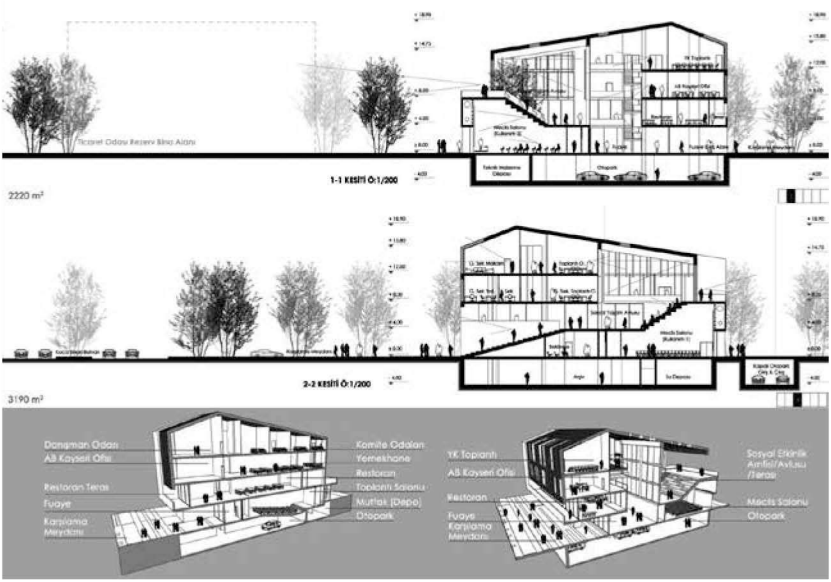
The planimetric setup of the design is designed in such a way that the ground floor planes are increased, along with the space created on the upper ground floor. The public activity areas are organized and the chamber of commerce units can produce visual, physical, sensory relations with public spaces from each levels of elevation. The assembly hall, meeting room, foyer and exhibition halls are acces-

sible from the square (+ – 0.00) elevation of the building, and these units can be opened to the square elevation by enabling the use of the outside area. Furthermore, the service units of the Chamber of Commerce are reached from the square (+ – 0.00) elevation. Restaurants and intensively used service units can be accessed from the social courtyard created at an elevation level of +4. The reception square in front of the building and the "social life courtyard" created on the +4 elevation provide common use for service units and social units, taking into account an accessible unity from open and closed spaces. In addition, these social open spaces are continuous, through the activity-show amphitheatre, up to the level of +8. Service units continue at +8 elevation, and from this level, the other layer of the social life courtyard can be accessed from the refectory. Administrative units are located at +12 elevation.

Section Setup

Spatialisation of the gap in the courtyard typology, which continues on the vertical, has created the section setup of the design. The highlighted sub-floor and top-floor relationship for public use has evolved into a gap surrounding use, and this use has enabled both visual and physical access between the floors.

Fig. 3: Sections of Kayseri Chamber of Commerce



Apart from today's solutions and the social life courtyard created in the design, it has also been made possible to make a vital and visual communication with the Chamber of Commerce Reservation area located right next to the building site. This setup can be described as an interpretation of the different layers of social use, which have been fastened onto the gap, in the vertical continuity of the traditional courtyard structure typology.

Material Setup

The material selection of the building is made up of materials that are easily accessible and comply with the conditions of the existing geographical area. The wrapping of the white reinforced concrete surface with the wooden shell elements describing the units of the Chamber of Commerce is a reference to the main colour tone of the material setup in the Central Anatolian climate.

Fig. 4: The social life courtyard of Kayseri Chamber of Commerce



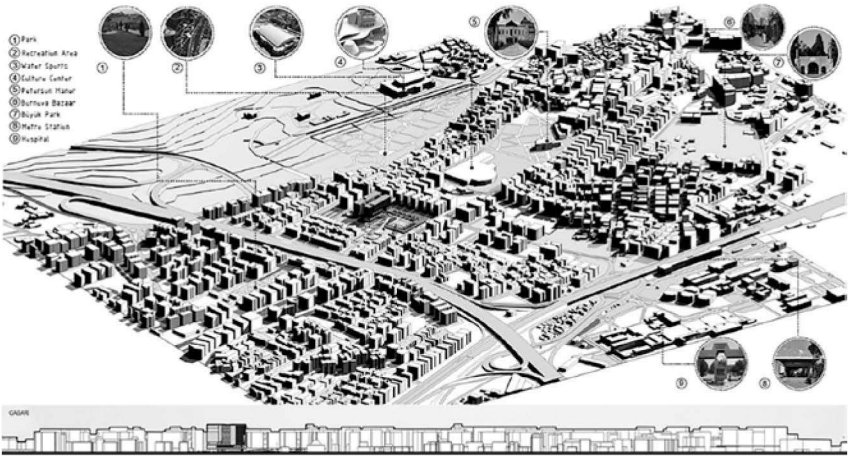
Climatic Setup *Direction / Sun / Wind / Northern front*

An inclined mass action is a way to form an emphasis on the roof in this region, where the terrestrial climate is intense and heavy snowfall is dominant in winter. In terms of the mass formation of the structure, it is a more filled formation; instead of an intense use of glass on the façades, it is a layout plan which surrounds the courtyard and is weatherproof during summer, and where winter use is preferred. Service units and administrative units are placed in the south-eastern and north-eastern façades of the social life courtyard and natural light-heat values are provided for the working units through the gap created in the north-western façade of the courtyard and from this point, a formation has been created in which climatic data are adapted. In particular the massive modelling that forms the structural tectonics of the northern façade has been set up with the service spaces and in this way, both mass movement and functional settlement have been supported.

BORNOVA MUNICIPALITY SERVICE BUILDING AND ITS SURROUNDINGS

A series of research questions, which are related to the structural formations to be added to the urban environment in the light of the construction plan data, constitutes the main approach to the design. How the Municipal Service building and the public open space in front of it will be connected, the relation of the municipal building that will create a dense settlement due to its interaction with its surroundings, that the public open space due to the large size of the area will have a new square scale and its relation with the scale of Bornova, the potential of the public open space to be transformed into an active recreation area and its use at night, along with the relation of the streets surrounding the area with the settlement are the most prominent of these research questions. Apart from these problems, the qualification of the possibility of interfering with the situation, caused by the addition of the space which is formed due to a large inward-oriented space on the scale of a stadium becoming outward-oriented, is suggested to be an important problem. As a result, the new situation that the possibilities of this solution create on an architectural scale will create in the urbanite a perception which has begun to turn into a number of architectural decisions and suggestions for solutions that lead design.

Fig. 5: Bornova Municipal Services Building and its location in the city

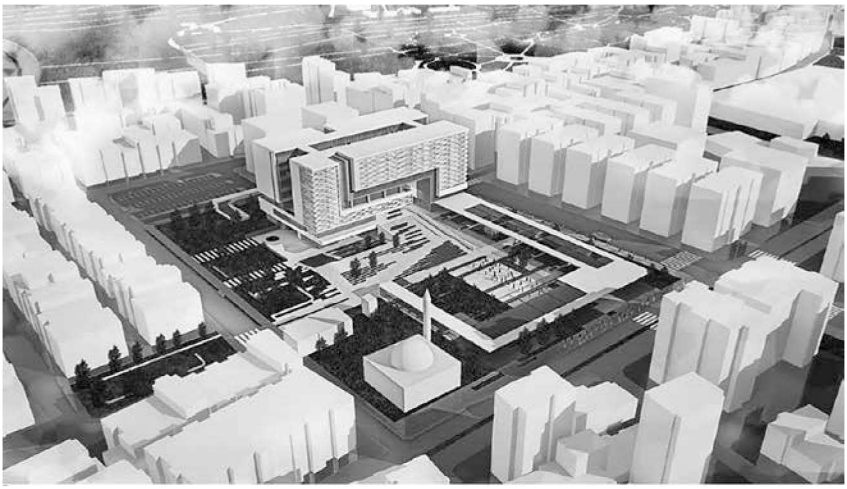


Tectonics / Formation / Form Setup *Urban Context / City / Texture / Surroundings*

The tectonic setup of the building has been arranged in order to create an intermediate space in the municipal service building.

The massive formation of the municipal building, which occurred as a result of the division of its intensive program into two along the 555th street axis, extending from the area that includes the historical bazaar and the Bornova square on the ground and upper floors, is defined with the vaulted space composed of the surrounding area of the canopy, and defining the main street and the park in front of the building. The intensively-used public functions of the building are set up in this vaulted space in an inviting formation that will welcome the urbanites. Although the transportation from the area where Bornova Square and the historic bazaar are located is provided via Mustafa Kemal Street, the 555th street appears as a pedestrian axis that leads directly to the Municipal Service Building. The revitalization with the necessary equipment and the part-pedestrianization of this axis present a significant decision which will connect the municipal building to the St. Peterson mansion and the Bornova Cultural Centre, from the historical Bornova Bazaar. As mentioned at the beginning, the division of the Municipal Building's intensive program into two along the 555th street axis on the ground and upper floors causes the axis, which continues as an inner street, to end up with a forum area enriched with cultural functions. The surfaces obtained by the articulation of the mass composition brought by the formation setup aim to create elements that will increase spatial and vital richness. Floor gardens, terraces and balconies created in this direction are designed with an approach which questions the concept of public space with open and semi-open space uses, embracing the city and the urbanites and providing opportunities for vital richness, rather than the effect of administrative buildings which strengthen managerial positions, and are strict, monumental, with general characteristics that do not include the traces of public life.

Fig. 6: Bornova Municipal Services Building and the general perception of its surroundings



Open Space Setup *Publicity*

The way the area in which the building takes place is handled has been embodied with an urban entablature work which will provide solutions to the many problems included in the construction parcel. The formation of a number of small commercial units (bookstores, boutiques, stores, etc.) under the canopy which have a strong relationship with the municipality, as well as open pedestrian spaces, is handled in a way to boost the active usage of the area during the day and at night in Bornova, where the open public space and its surroundings are structured with a low level of commercial understanding. The idea that the historical Bornova Bazaar might merge here with a new bazaar, and that one end of the 555th street reaching the historical bazaar might have developed the proposal of an overhanging road from central Bornova to the municipal square. Another solution provided by the urban canopy was the contribution in terms of softening the scale of the gap that was revealed at the beginning. It is possible that people will have a relationship here with a gap that they never see, thanks to this entablature. The canopy, which can be defined as a threshold, is, in fact, a permeable border that protects the square from climatic conditions, contains car parks underground and kiosks.

Planimetric Setup

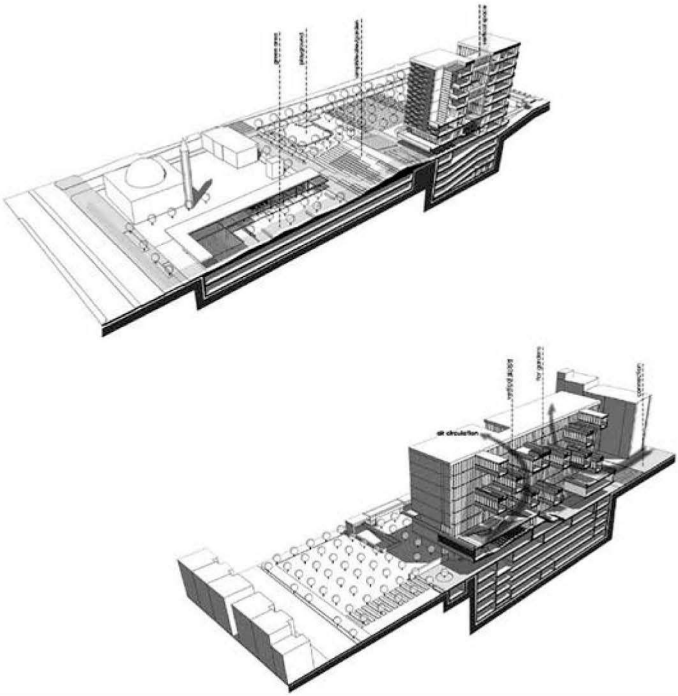
Undoubtedly, ground floors are the most intensively used places of public buildings and require higher sensitivity in the relation with their surroundings. At this point, getting maximum efficiency from ground floor use is a very important point for a municipal service building. The ground floor of the Municipal Service Building should be of a quality that absorbs pedestrian movements around it, feeds its entrances from these spaces and guides its users with the intermediate spaces created. In this sense, the axis coming from the 555th street on the ground floor and the axis coming from the open activity area have been taken into an intermediate space with a cultural street, and the main entrance, exhibition hall, multipurpose hall, and cafeteria entrances are provided from this place. Access to the financial services' pay desks, which is the busiest unit of the municipality, is also provided in a detached fashion from here, and waiting areas on the street are envisioned. A second ground was built at + 4.50 elevation. Access to the Assembly Hall is provided with the help of amphitheatres and ramps that face the activity area. This solution provides an advantage for municipal councils where public participation is very intense, and encourages the design of parliament halls as city councils. The differentiation of circulation and a good analysis which depends on the intense usage of the public and the municipal staff in the structure (the document circulation between archives and units, protocol, parliament hall, the differentiation of exhibition hall and citizen entrances, the freight elevator required for services, etc.) are the important points in the planimetric setup of the structure. Designing a structure suitable for disabled use is also one of the essential topics.

Section Setup

Sections of the structure compose the design character which describes the structure best. The section setup of the structure is based on the intensity of the public use of the program parts and climatic data. At this point, the gap created by the axis coming from the 555th street is designed to allow the program parts to be spread accross the floors, according to their usage intensity and, in the approach from the main square, the vaulted space and the public usage areas such as the assembly hall, the multipurpose hall and the amphitheatre which are connected to this vaulted space. Products of this section design include the street formation which is set up in the continuation of the pedestrian axis starting from the historical Bornova Bazaar, the formation movement of the canopy surrounding

the urban green area which gives the scale of the main road and forms the building mass with continuity, amphitheatres which describe the use of public space, the social equipment and the city council that has the characteristics of an urban parliament. When the sections of the design are examined, we can see how fully empty mass formations are organized in the light of urban continuity; and clues are given that a structure can be set up not only by occupancy but also by the design of space.

Fig. 7: The section setup of Bornova Municipal Services Building



Material Setup

Economical and easily accessible materials were prioritized and climatic data were taken into the account in the selection of material. The right choice of material to be used in a building is of great importance in terms of cost, future heating, cooling, ventilation, etc., based on the continuity of construction in the building. The selection of materials in the Bornova Municipal Service building design consists of a reinforced concrete skeleton system, which is easily obtained

and practiced in the Turkish construction sector, and ready-mixed concrete covering materials. The canopy, which describes the public space setup of the design, is set up together with a steel conveyor system, ready-mixed concrete and wooden elements.

Fig. 8: The open space setup of Bornova Municipal Services Building



***Climatic Setup** Direction / Sun / Wind / Northern Façade*

The main decisions relating to the building are handling the structural mass, which is the main point of the design and is divided into two from edge to edge in a way that enables air circulation instead of it being a closed volume, as the parts are connected to each other by green-roofed steel bridges, saving up in terms of the climatization of this intermediate space instead of a seven-floor- high gallery. The more major handling of the northern façade depends on its orientation; the preference for horizontal sun refractors on the southern façade and the setup of the shaded sub-spaces created by the vaulted space and street have strengthened the ecological decisions of the building. Façade design forms the most prominent and most effective point in the perceptual context and gives identity to the structure in the structural design. When each façade's solar radiation values are considered to be different, the settlement of the structure in terms of north-south orientation which are the two opposite directions in the context of where the climatic data such as the wind, the light, etc. that the structure receives leads to, determines important criteria in façade decisions. The fact that the southern direction receives continuous sunlight, whereas the northern direction is exposed to the wind effect and does not re-

ceive direct light, has had an influence in the differentiation of the southern and northern façades of the structure. But when it is considered that this difference will be reflected in the general plastic mass of the structure, an arrangement with the design decisions has been made. According to this, there have been attempts to bring into being the creation of a refractive design located on the southern façade and relieving the interior with different refractions of light; the establishment of a barrier against the northern winds which addresses the refractive design used on the southern façade vertically on the northern façade; and the differentiation of the southern and northern façades of the structure within the same design unity and in the light of climatic data.. Because of the fact that the eastern and western façades receive very little sunlight in winter and a lot of sunlight in summer, The permeable and transparent façade logic, which emphasizes thepublicness of the ground elevations of the structure, has created an inviting groundwork for the structure and the aim is especially that the big frame, which leads people in and directs them towards the street level, gathers people with the influence of a vaulted space. The proposed canopy design for the urban open space surrounds the green space that offers a breath of fresh air to the city with its shaded areas, framing it, and captures the large urban green space that the structure faces. This architectural formation setup, which is used to increase the intensity of public use, also allows data such as the natural weather, light and wind, in the light of the climatic data of the design, to become a part of the design. [11]

CAFERAĞA SPORTS HALL AND CULTURE CENTER

The design area, which offers a different identity and life on the Anatolian side of Istanbul, located in an intensively structured area in the centre of the town of Kadıköy, is on a corner parcel created by the pedestrianized paths in a central location. The gymnasium and the cultural centre, which exist in the design area, have not been able to establish efficient relations with these pedestrian paths and the slope of the land. The competition program not only expects to enhance these relations but also to lead to a more intensive building program on the construction site. The functions to be analyzed are the functions that people use in a massively intensive way (sports halls, cultural centres) and also are indoor-oriented (swimming pools). Apart from the relationships of these function groups with each other being a design problem, their relationship with outdoor and public open space is discussed as a fundamentally problematic issue.

Fig. 9: The perception of Caferağa Sports Hall and Culture Centre from the main approach



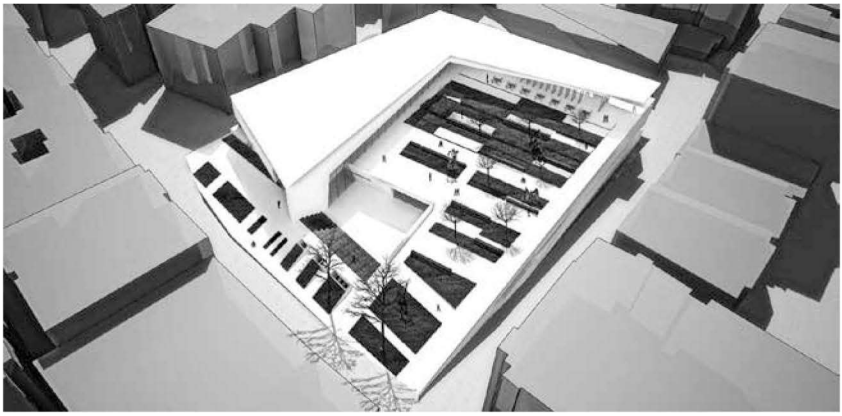
Tectonic / Formation / Form Setup *Urban context / City / Texture / Environment*

Taking into account the structural intensity of the environment, a design which is sensitive to height and mass has been set up; for that purpose, the gym and swimming pool functions were resolved under an inclined shell set up in the direction of Chios Street. Leaving Caferağa Sports Hall's tribunes as single tribunes, which is the most important datum in the name of urban use, and handling the area in a way that will give it reference to the park before its construction as a sports hall, are the data considered in the design in the name of urban memory.

Open Space Setup *Publicity*

This design, through which public outdoor spaces are interlinked, in which elevations are used fluently and the usages as a city square are emphasized, brings itself into existence through maximum use of public open space. This design has transformed the Chios Street elevation to a 6% sloping platform in an effort to bring a refreshing new square to the city and has created an inner street that invites people from other pedestrian arteries. This inner street also serves as a common foyer for cultural and sporting activities as anticipated in the program. This level amphitheatre connected to the open foyer creates new spaces for the use of cultural concerts, shows, etc. and also hosts informal artistic events. The setup of open / semi-open public spaces with a flexible usage that are able to directly relate to the "street" at all the possible elevations, but primarily on the ground, is the aim of this inner street.

Fig. 10: The location of Caferağa Sports Hall and Culture centre in the environmental texture



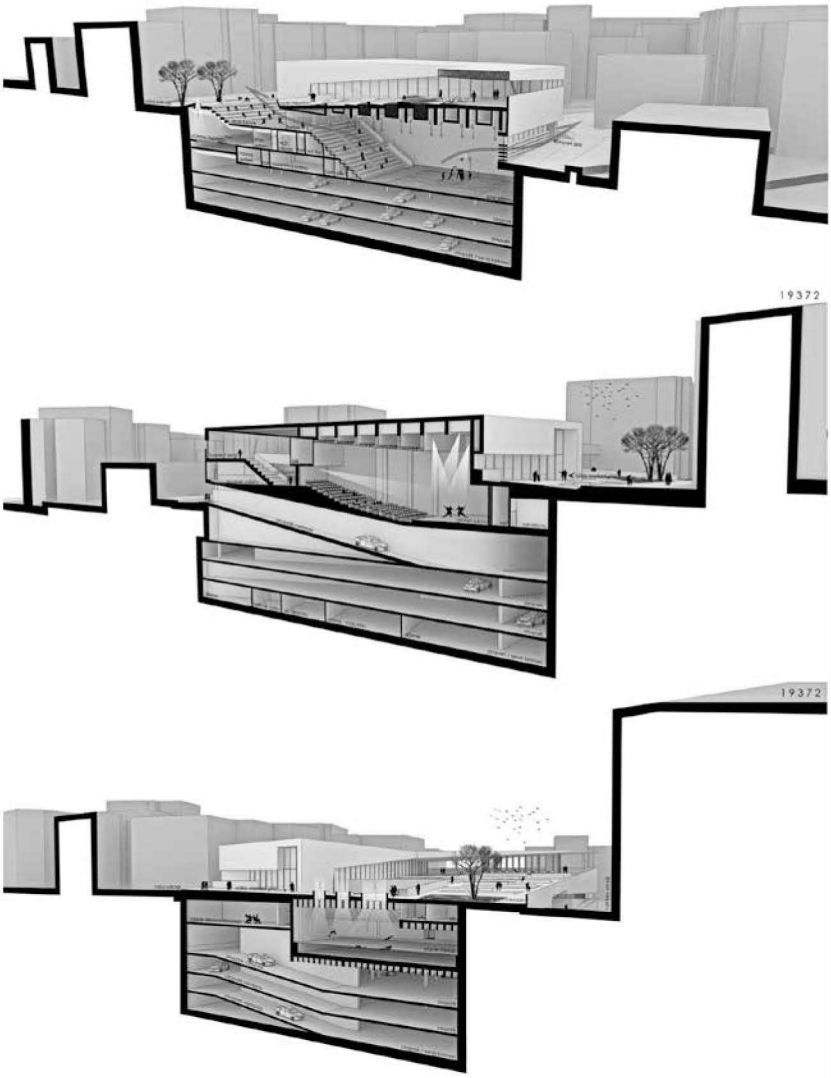
Planimetric Setup

The planimetric setup of the structure is about feeding the building programs from the different open spaces created. In this direction, while the centre of culture takes its main approach over the street of Chios, it stands out with its foyer connections from different elevations and forms new focal points with the amphitheatre that connects the upper foyer elevation with the lower foyer elevation. The platform connected to the street of Chios ends with a cafeteria, and entrances to the cultural centre from this elevation are anticipated. While the sports hall and the swimming pool spectators' entrances are provided from the open foyer on the inner street, sportsmen entrances and outdoor and indoor parking entrances are enabled from the intensively structured area, through the vehicle road.

Section Setup

The point of origin of the design is related to the section setup. The fragmentation of the urban shell, which is formed by raising a 6% slope from the main street, to form open and semi-open spaces, and the existence of the program parts together with these gaps both constitute the language of the building and bring the sectional life into existence through the urban context.

Fig. 11: The section setups of Caferağa Sports Hall and Culture Centre



Material Setup

The material setup of the design consists of the elements that will represent the building tectonics and create simple surfaces that will not ruin its sculptural attitude. In this direction, the structure handled with a reinforced concrete system is set up with a dry concrete system which will represent the whole appearance instead of fragmented façade elements, and there has been an attempt to reduce the effect of concrete with thermal wooden elements in places. The green roof setup that forms the landscape of the new public space which has been brought to Kadıköy and the wooden elements that are articulated within this setup intend to create an alternative to the concrete surfaces in the area.

Climatic Setup *Direction / Sun / Wind / Northern Façade*

The structure that is based on the need for urban open spaces in Istanbul, which are constantly restructured, defines the urban space created by itself with its green roof. The determinants of the climatic setup are: increasing the surface of green spaces by using the structure of the roof; the attitude that the shell movement adopts towards the heat movements of the sports hall with this formation; the unification of structural tectonics with characters such as orientation; and natural light taken in a controlled manner to the sports field.

3. Conclusion

The concept of sustainability is regarded as a holistic phenomenon that needs to be understood in an environmental, social, cultural and economic sense. It is clear that this holistic approach must be fundamental to the disciplines of architecture and design. When the approaches towards a concept and the differentiation of the disciplines in which the concept is discussed are taken into account, especially in the field of architecture, the concept of place and the entirety of the relations established between place and design gain importance. In this sense, it is possible to say that sustainability can start in the form of an approach that minds, senses and evaluates environmental values in the design phase. In this sense, harmony with topography, integrating design with the consideration of local values, protection from basic environmental factors such as solar radiation and wind movements according to climatic characteristics or providing the utmost benefit from these data become important as the forms of existence of the notion in the design process. Therefore; **in order to achieve a green, sustainable and smart building, it is necessary to acquire this quality, not only through automation systems but also through architectural design**. A good design provides an opportunity

for the use of alternative clean energy sources by comprehending the urban area with the main decisions it makes within the framework of sustainable building concepts such as settlement, building envelope opacity/permeability, natural lighting, heating/cooling, acoustic and interior comfort. The relationships established with the environmental values and the space reduce the consumption values in the building use process by also providing sustainability in the economic sense. Another point that is ignored when the consumption values are taken as a basis is the functional setup of the structure. The resolution of the pedestrian circulation intensity of the structure on the ground and first floors, by handling these with the right operations, and providing as little circulation as possible on the upper floors gain value in terms of the usage criteria of building automation systems. Also, the flexible usages of spaces and the fact that building cores provide criteria such as all wet areas, warehouses, archives, etc., can lead the spaces to be transformed with minimum intervention and can increase the life of the building. This flexibility and transformability enables natural and sustainable resource utilization of the structure. On the other hand, sustainability of the structure is also assessed in terms of social and cultural values. Especially the usage possibilities of public buildings through public open/closed areas and the links established with the cultural and social values of the building environment gain importance in this respect. Criteria such as developing and maintaining the spatial characteristics of an existing usage habit, presenting new usage possibilities, accessibility and ease of use are all values that should be taken into account when considering sustainability as a whole. The main ideas to be expressed when the projects presented in the scope of the study are evaluated in the concept of sustainability are: **the coexistence of the notions of design and sustainability and the emphasis on the relationship between the structure and the environment, or "place", in which it is located.** Moreover, the potential of the factors and main ideas that shape the design of each project is to be directly related to the notion of sustainability. While the environmental values and climatic data determine the mass setup and settlement decisions in the Kayseri Chamber of Commerce and Bornova Municipality Service Building, topography, the use of open spaces in the closely-spaced city centre, the social-cultural values and the features of "space" determine the design of the Caferağa Sports and Culture Centre.

Notes

1. W. McDONOUGH: *The Hannover Principles: Design for Sustainability. William McDonough Architects, New York,* (1992).
2. D. OKTAY: *Sürdürülebilirlik Bağlamında Planlama ve Tasarım: Kuzey Kıbrıs'ta Yöresel Mimarinin Geleneklerinden Çağdaş ve Duyarlı Çevrelere. Mimarist Dergisi,* (6), 67–71 (2002).
3. K. YEANG: *Kean Yeang, Green Architecture. Architectural Design,* 71 (4), 60 (2001).
4. N. FOSTER: *Lord Foster of Thames Bank, Green Architecture. Architectural Design,* 71 (4), 32 (2001).
5. A. SEV: *Sürdürülebilir Mimarlık. Yapı-Endüstri Merkezi, Yem Yayın, (2009).*
6. D. EKİM*: Sürdürülebilirlik Kavramı ve Mimari Form Üzerindeki Etkisi. İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü Yüksek Lisans Tezi* (2004).
7. *Deniz Dokgöz, Ferhat Hacıalibeyoğlu ve Orhan Ersan'a ait olan tasarımlardan Bornova Belediye Hizmet Binası ve Caferağa Spor ve Kültür Merkezi 1. Ödül, Kayseri Ticaret Odası eşdeğer ödül kazanmıştır.*
8. *Kayseri Ticaret Odası Hizmet Binası Ulusal Mimari Fikir Yarışması Şartnamesi*
9. *Bornova Belediye Binası ve Çevresi Mimari Proje Yarışması Şartnamesi*
10 . *Caferağa Spor ve Kültür Merkezi Mimari Proje Yarışması Şartnamesi*
11. F.HACIALİBEYOĞLU, D. DOKGÖZ, O.ERSAN: *Investigation of Some Design Decisions on Energy Efficiency: A Case Study of Bornova Municipality Service Building. SBE16 ISTANBUL, International Conference on Sustainable Built Environment,* 117–126 (2016).