Article

Creation of a New Vernacular Architecture and the Attainment of Sustainability: The Case of Akyaka Town Development

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Abstract: This study problematizes a case where the interpretation of local architectural types by a designer forms a new vernacular architecture that shapes the sphere of a newly developing small town towards one that became sustainable. The house built by Nail Cakirhan for himself in Akyaka (Turkey) opens up a new future in front of the small village of then, towards becoming a touristic center with a specific architectural language of its own. Cakirhan designs his house by interpreting the traditional houses of his hometown, Ula, which is only a few kilometers away from the village of Akyaka. The design of the house initiates the formation of a unique architectural language for Akyaka, which gradually evolves into a new vernacular architecture. Since then, this invented architectural tradition has both transformed the village into a popular touristic town and also initiated a sustainable approach due to its sensitivity for the cultural and natural assets of the context. This architectural language is protected by the master development plan now, and the town is declared as a 'slow-city' due to its culturally and environmentally sensitive character. In order to portray this development, this study will first examine Cakirhan's house in relation to its referential and actual contexts, then it will observe the development of the town of Akyaka by means of looking at Cakirhan architecture in Akyaka, the master development plan of Akyaka that protects the architectural language, and the development of the town as a sustainable, slow-city. The portrayal of the architectural development of Akyaka could demonstrate how a fairly recent architectural practice can today result in the development of a sustainable and harmonious architectural environment.

Keywords: vernacular architecture; sustainability; town development; Nail Cakirhan; Akyaka

1. Introduction

Vernacular architecture is a contextualized architecture that is specific to a region [1,2]. It is built by the materials and the people of that region, and it is the direct reflection of the culture of the people who produced it [1,3]. Being specific to the particularities of the context, vernacular architecture is built for the climate, topography or geography of that context; it uses local building materials and local techniques of construction; it respects the natural and cultural environment of the context; it is fit for the wellbeing of the people it was produced for; and it maintains cultural continuity and architectural identity therein [3–7]. As accepted by ICOMOS through the Charter on the Built Vernacular Heritage, vernacular architecture is "the traditional and natural way by which communities house themselves" [8]. Since it cooperates with nature and tries to fit in to its cultural and natural setting, vernacular architecture is culturally and environmentally friendly [5,9,10]. It is seen as one of the highest forms of sustainable architecture in this sense, as it uses local, widely available resources, materials and technologies, conserves energy, and opts for the wellbeing of its inhabitants [4,10,11].

Recent studies on vernacular architecture examine and emphasize the sustainability and environmental efficacy of vernacular architecture [3–5,9–13]. By the effect of climate change and the pressing need for sustainable practices in architecture, vernacular architecture has been approached with concerns to learn from its bioclimatic and energy conscious

responses to natural conditions [4,5,10,14,15]. The studies search for ways to adapt vernacular architecture principles to contemporary architecture to create a sustainable built environment [10,16]. Being concerned mostly on the environmental sustainability of vernacular architecture, studies show that vernacular architecture is climate-responsive, has energy optimization, maximizes occupant comfort with minimum cost and energy, and is in harmony with nature and people [3–5,10,12,14–16]. The majority of studies investigate the energy-efficient techniques used in vernacular buildings [10,12,16], the climate resilience of vernacular architecture [3,4], the contemporary adaptation and refurbishment of vernacular buildings [5,13], and occupant energy-saving behavior in vernacular houses [9,15,17].

However, there are fewer studies that take into consideration the sociocultural and socioeconomic dimensions of sustainability with regards to vernacular architecture [9,13,17,18]. Sustainability and sustainable development, which was first defined in 1987 by the Brundtland Report [19] as a development that tries to adjust the use of natural resources for present and future generations, have four interdependent dimensions, which are: environmental sustainability (that includes eco-system integrity, carrying capacity and bio-diversity); economic sustainability (that includes growth, development, productivity, trickling down); social sustainability (that includes equity, empowerment, accessibility, participation/sharing, cultural identity, and institutional stability); and cultural sustainability (that includes the preservation of cultural values, practices, and artefacts) [20–22].

While environmental sustainability in architecture broadly refers to the use of means that reduce the environmental impact of buildings in terms of their resource usage and pollution emission [23], sociocultural and socioeconomic sustainability as related to architecture refers mainly to the protection and maintenance of the cultural landscape, and the promotion of local production and materials [18]. In relation to these requirements, the protection and understanding of vernacular architecture appears to be significant for all the four dimensions of sustainable development. As parallel to that, the sustainable development goals (SDGs), as specified by the United Nations in 2015, also include the safeguarding of cultural and natural heritage under its 11th goal, which is 'sustainable cities and communities' [24,25].

One significant study that examines the sustainability of vernacular architecture from all its dimensions is the project "VerSus: Lessons from Vernacular Heritage in Sustainable Architecture", which analyses vernacular architecture in terms of its environmental, sociocultural, and socioeconomic sustainability [13,18]. It provides a valuable guideline that is based on 15 parameters (five parameters for each of the three dimensions) for the analysis of the sustainability of vernacular architecture, and for the design of new buildings in light of vernacular principles.

For environmental sustainability in vernacular architecture, the VerSus project lists the parameters of: (1) respecting nature (by being in harmony with the environmental context and landscape); (2) benefiting from natural and climatic resources (by being appropriately situated); (3) reducing pollution and waste materials; (4) ensuring human comfort (and health quality); and (5) mitigating the effects of natural hazards [18,26]. For socio-cultural sustainability in vernacular architecture, it lists the parameters of: (1) the protection of the cultural landscape; (2) the transfer of construction cultures; (3) the enhancement of innovative and creative solutions; (4) the recognition of intangible values; and (5) encouraging social cohesion [18,27]. For socio-economic sustainability in vernacular architecture, it lists the parameters of: (1) supporting autonomy (by being a self-sufficient community); (2) promoting local activities and production; (3) optimizing construction efforts (by using local materials); (4) extending a building's lifetime (by maintenance and communal efforts); and (5) saving resources (by optimizing their use) [18,28].

There are few studies that use VerSus parameters about environmental, sociocultural, and socioeconomic sustainability to analyze the sustainability of vernacular architecture [12], or to guide and evaluate the refurbishment of vernacular buildings [13]. These studies have revealed the techniques and potentials of traditional vernacular architecture, and demonstrated how to thoroughly approach it from all sustainability dimensions; how-

ever, they are mostly focused on actual vernacular architecture in traditional settings, and they do not concentrate on the study of new buildings, or architectural environments that are designed in light of vernacular principles.

This study, on the other hand, looks at a fairly recent architectural development in a contemporary setting, which had been formed under the light of vernacular principles, and attempts to study it in terms of its architectural formation and its approach towards sustainability and sustainable development. The study examines the formation of the architectural language of the town of Akyaka, which is initiated by the designer Nail Cakirhan in the 1970s and the 1980s, and evaluates the resulting architectural development of the town in terms of vernacular architectural principles, sustainability, and sustainable development. Cakirhan has formed the unique architectural language of Akyaka by becoming inspired by the traditional architecture of his hometown, Ula, and developed it with a sensitivity for the cultural and natural assets of the context. This study examines and evaluates the formation of this architectural language in Akyaka in terms of vernacular architecture principles by means of a typological approach. Further, it evaluates the architectural development of the town in terms of sustainability and sustainable development principles, by means the environmental, sociocultural, and socioeconomic sustainability parameters specified by the VerSus project, and also according to the sustainable development goals (SDGs) specified by the United Nations.

Cakirhan House, and architecture in Akyaka, as well as the traditional architecture of Ula, has been examined previously by multiple studies [29–33]; however, Cakirhan architecture and the architectural development of the town of Akyaka has not been thoroughly issued previously in terms of its sustainability and sustainable development. This study both aims to evaluate the sustainability of Cakirhan architecture and the architectural development of the town of Akyaka from all dimensions of sustainability, and it also attempts to analyze the architectural development of the town in order to understand the characteristics that form the harmonious unity of the town. The portrayal of this architectural development, which starts with the work of a single designer and ends with the formation of a whole town, could demonstrate how a fairly recent architectural practice can today result in the development of a sustainable and harmonious architectural environment. The case of Akyaka can be significant as to show the potential of vernacular architecture for contemporary architectural practices, and to exemplify the role of a new vernacular architecture for the maintenance of sustainability in contemporary architecture.

On this basis, this study will first explain the materials and methods of the study under Section 2. Secondly, it will examine the architectural formation of Nail Cakirhan house in Akyaka under Section 3 (Literature Review and Analysis) by means of three subsections, which, respectively, study the architectural characteristics of traditional Ula houses within the referential context of Ula, the architectural characteristics of Nail Cakirhan house in the actual context of Akyaka, and the environmental consciousness and sustainability of Cakirhan house in Akyaka. Thirdly, the study will examine the development of the town of Akyaka towards a sustainable, slow-city under Section 4 (Results) by means of three subsections, which, respectively, study the formation of Cakirhan architecture in Akyaka as a new vernacular architecture, the formation of the master development plan of Akyaka, and the development of Akyaka towards a sustainable, slow-city. Lastly, the study summarizes its results and expresses some final remarks under Section 4 (Discussion).

2. Materials and Methods

In order to examine the formation of the architectural language of the town of Akyaka and evaluate the resulting architectural development of the town in terms of vernacular architectural principles, sustainability, and sustainable development, this study has both conducted a discourse analysis and a field study for acquiring the necessary data for the examination.

The discourse analysis comparatively examined the topics of: the architecture of the town of Ula (the referential context of Cakirhan house); the architecture of the town

of Akyaka (the actual context of Cakirhan house); Cakirhan house and Nail Cakirhan architecture in Akyaka; the traditional Turkish/Ottoman house; vernacular architecture; authenticity; the slow-city movement; sustainability; and sustainable design and development.

The field study took place in the towns of Ula and Akyaka, and included the examination of the traditional architecture of Ula, the architecture of Cakirhan house, and the architecture of Akyaka by means of a typological approach. During the field study, the traditional buildings of Ula, Cakirhan House itself in Akyaka, and Cakirhan's other buildings in Akyaka were inspected, typologically analyzed, and documented by means of diagrammatical drawings and photographs. The architecture of Akyaka was also inspected, and Akyaka municipality was visited on that account to learn about the building regulations in the area and to obtain documents about the master plan. Additionally, the data acquired from the discourse analysis (especially on Ula, Cakirhan architecture, Akyaka, vernacular architecture, sustainable design, and development) was compared and matched with the insights attained from the field study.

The data attained from the discourse analysis and the field study were used to understand and analyze the traditional architecture of Ula, the architecture of Cakirhan house, and the architecture of Akyaka in terms of vernacular architectural principles, sustainability, and sustainable development.

The analysis was made by using two different methods. Firstly, a typological analysis was made to understand and detect the architectural characteristics of the traditional architecture of Ula, the architecture of Cakirhan house, and Cakirhan architecture in Akyaka, to compare them with each other and with the vernacular architectural principles. Secondly, Cakirhan house and Cakirhan architecture in Akyaka was evaluated in terms sustainability and sustainable development by means of the 15 parameters specified by the VerSus project about the environmental, sociocultural, and socioeconomic sustainability of vernacular architecture (five parameters for each of the three dimensions) [18,26,27] as explained in the previous section. Additionally, the development of the town of Akyaka was evaluated by means of the sustainable development principles and the 17 sustainable development goals (SDGs) specified by the United Nations [24,25].

As such, the study both attempted to understand the architectural characteristics that are effective in the creation of the harmonious unity of the town of Akyaka, and also to evaluate this architectural development in relation to sustainability and sustainable development principles as related to all sustainability dimensions.

3. Literature Review and Analysis: Architectural Formation of Nail Cakirhan House in Akyaka

The story of Akyaka (Turkey), once a small village at the foot of Sakartepe mountain coasting the Aegean Sea, begins when a self-trained Turkish architect/master builder builds a small house for himself and his wife, on a lot that he bought close to his hometown Ula (Turkey). Nail Cakirhan (1910–1988), who was in fact a poet and a journalist, became interested in construction after his forties while accompanying his archeologist wife, Halet Cambel, on her field studies. After a life full of turbulent events due to his sociopolitical views, Cakirhan started to work as a constructor of several projects in the 1960s. In 1969, he and his wife moved to Akyaka, a province of the city of Mugla (Turkey), due to his worsening health [29].

When in Mugla, Cakirhan saw that the traditional architecture he remembered from his childhood was gradually deteriorating due to reinforced concrete buildings that were slowly invading the whole country. Upon that, he decided to build a house for himself in line with the traditional architecture of the context, standing clear from reinforced concrete [29]. He first examined the local architectural types and characteristics of the traditional houses of his hometown Ula, which is only 30 km away from Akyaka. Finding two local carpenters there (the last remaining two), who knew traditional timber house-

building of the area, Cakirhan started to work with them to build a house for himself in Akyaka, in line with the traditional characteristics.

The house he built amalgamated the characteristics of the traditional house types of Ula with contemporary necessities, and it was designed to be in one with the nature outside. After its completion, it gathered much attention, and Cakirhan received many commissions for realizing similar houses and buildings for his friends, villagers, people from other cities, and several touristic establishments. Overall, he has designed and realized more than 30 buildings in Akyaka (28 houses and four touristic establishments) [29], which recreated the architecture of this small village from scratch and transformed the village into a popular touristic center. Due to the cultural and environmental sensitivity of his house and all the other buildings he has designed in Akyaka, Cakirhan was nominated for the Aga Khan Awards for Architecture and was awarded one for his own house in 1983 [29,30].

Afterwards, the town of Akyaka strongly embraced this architectural language created by Cakirhan and took the architectural unity sustained by it under protection with building rules and regulations in 1988–1989. In 2011, due to the value the town attached to natural and cultural qualities, sustainable development, and unique, environmentally friendly architecture, it even got the title of 'slow-city'.

In order to understand this developmental process, this study will firstly examine the architecture of the town of Ula, which acts as the referential context for the development of Cakirhan architecture, and the Cakirhan house itself in Akyaka, which forms the main inspiration in the development of the architecture of the town of Akyaka.

3.1. The Referential Context: Architectural Characteristics of Traditional Ula Houses

Cakirhan house makes a straightforward reference to the traditional houses of Ula, the town where the designer spent his childhood. Ula is a small town in the southwest of the Anatolian peninsula, close to the Gulf of Gokova in the Aegean Sea, in the province of Muğla (Turkey). Enveloped by mountains on four sides, it is inland, 600 m's high from the sea level, and under the effect of the temperate Mediterranean climate [31] (Figures 1 and 2).
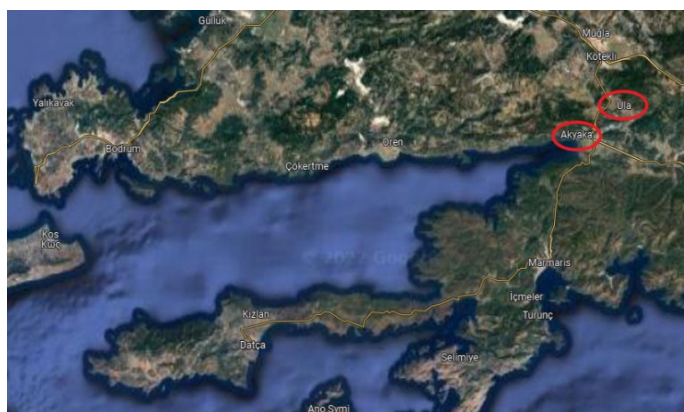

Figure 1. The towns of Ula and Akyaka at the Gulf of Gokova, in the province of Mugla, Turkey. Image attained from Google Maps (location mark added by the author).

Traditional Ula houses were developed according to the requirements of their context, mainly to protect their inhabitants from the intense summer heat, to deliver natural ventilation, and to maintain privacy within their courtyards [31]. Ula houses are good representatives of the traditional Turkish-Ottoman house, which is a house type that dominated the urban scene of west Anatolia and Balkan region from the 18th century onwards until the 20th century [34,35]. This house type is mainly characterized by its garden courtyard, which generally included functional elements such as the hearth; its stone masonry ground floor, which generally contained storage, stable or service spaces; its light timber frame upper floor(s), which functioned as the main living space of the house containing the *sofa* (main hall) and the rooms; its moderately inclined hip roof with tile covering; its gables;

projected bow windows; and wide eaves [34]. In terms of its planimetric organization, the most characteristic element in the traditional Turkish/Ottoman house is the *sofa*, which is the main living space of the house and the common area of circulation where the rooms are opened towards (In his book "*Turk Evi Plan Tipleri*", one of the first and most comprehensive studies about the traditional Turkish/Ottoman house, Sedad Hakki Eldem [35] categorizes the traditional Turkish/Ottoman house according the position of the *sofa* within the plan, as: (1) the plan type without a *sofa*, where adjacent rooms open directly to outside; (2) the plan type with an outer *sofa*, where adjacent rooms open to a semi-open or closed *sofa* that is located in front of them; (3) the plan type with an inner *sofa*, where two series of adjacent rooms facing each other open to the closed *sofa* that is in between them; and (4) the plan type with a central *sofa*, where the rooms surround the *sofa* from four sides, positioning it at the center) [35]. *Sofa* is also called by different names in different regions, such as *hayat*, *sergi*, *sergah*, *cardak*, or *divanhane* [35].
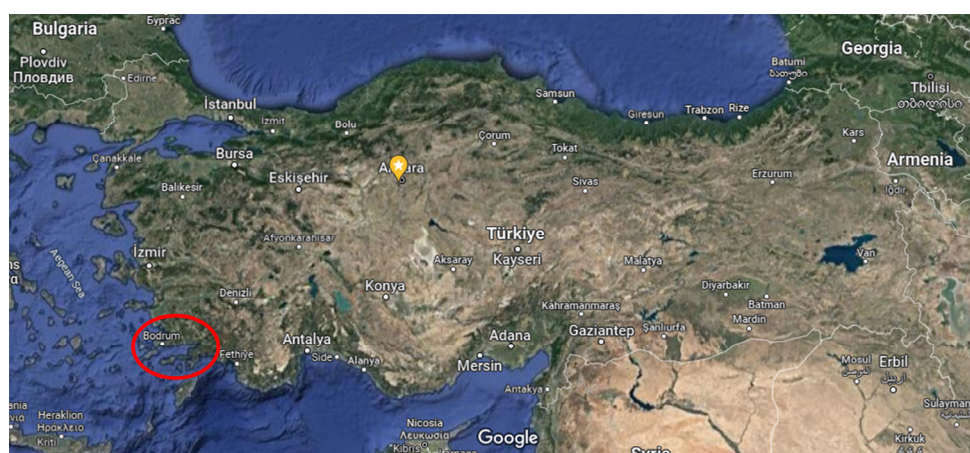

Figure 2. Gokova Region in Turkey, where the towns Ula and Akyaka are located. Image attained from Google Maps (location mark added by the author).

There are three main types of houses in Ula, classified mainly according to their *sofa* types [29,30,36]. All located within a courtyard, Ula houses are either: (1) one-storied, single-cell houses without or with a minimal, open, outer *sofa*; (2) one or two-storied houses with an open, longitudinal, outer *sofa* (locally called *haney or divanhane*) with two rooms flanked by an iwan in between them (locally called *mabeyn*); and (3) two-storied houses with a closed, polygonal, outer *sofa* (locally called *divanhane*) with two rooms flanked by an iwan (There are also two other house types in the region, which are the enclosed outer *sofa* type and the inner *sofa* type, but they are not as common as the main three types. The inner *sofa* type, which is observed in the big mansions of the town, started to be seen after 18th century [6]) [29,30].

The first house type (*doseme* type), which is seen in 150–200-year-old houses, does not have a proper *sofa*, but an outer space that the rooms open towards, which is called *doseme* (meaning pavement or floor) [36,37]. This space, which looks like a sidewalk covered with concrete, is covered on top with a wide timber eave (locally called *teneketura)* that circles around the house [30,36]. This house type does not have ornamented wooden columns and arches on its front façade as the second house type [30,36] (Figure 3).

The second house type (*mabeyn* type), which is seen in 100–150-year-old houses, has an open outer *sofa*, which is a longitudinal porch in front of the two rooms flanking the *mabeyn* [30,36]. This column supported, red tile covered open *sofa* is called *haney* (or sometimes *divanhane*) in the region [36–38]. It is generally 2–2.5 m wide, covered with a wide ornamented timber eave on top (locally called *teneketura)*, and screened by ornamented timber columns and arches on the front [30,36]. The doors of the two rooms and the *mabeyn* open directly towards this open *sofa* [30,36] (Figures 4 and 5).

Figure 3. Ula House Type 1 (*doseme* type) with a minimal, open, outer *sofa* (photograph by the author).

Figure 4. Ula House Type 2 (*mabeyn* type) with an open, longitudinal outer *sofa* (photograph by the author).
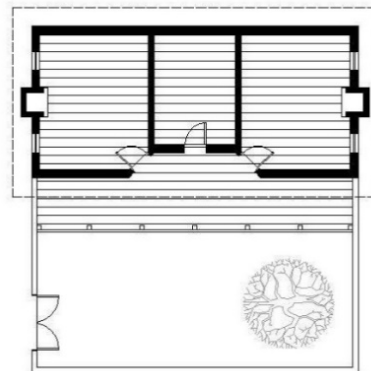

Figure 5. Plan of Ula House Type 2 (*mabeyn* type) with an open, longitudinal outer *sofa*. Drawing by author (Uysal, 2012).

The third house type (polygonal *sofa* type), which is seen in 50–100-year-old houses, is the most commonly found house type in the area and it is characteristic with its polygonal, closed outer *sofa* in the middle of the main façade, protruding and looking towards the courtyard. These houses are generally two storied and the entrance of the house is from this polygonal *sofa* both at the ground and the first floors. The rooms and the *mabeyn* face this polygonal *sofa* and they directly open towards it. The *sofa* is covered with windows in all its outer sides and is surrounded with a wide timber eave (*teneketura*) [30,36,37] (Figures 6–8).

Figure 6. Ula House Type 3 (polygonal *sofa* type) with a closed, polygonal outer *sofa*; example 1 Photograph by the author.

Figure 7. Ula House Type 3 (polygonal *sofa* type) with a closed, polygonal outer *sofa*; example 2. Photograph by the author.
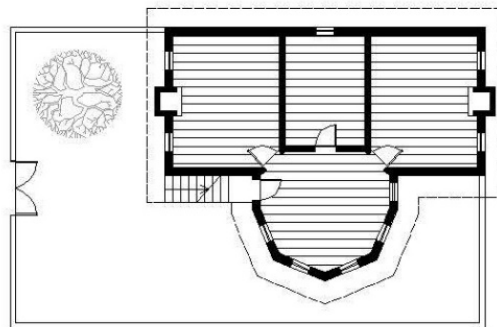

Figure 8. Plan of Ula House Type 3 (polygonal *sofa* type). Drawing by author (Uysal, 2012).

Ula houses are located within high walled courtyards, which are locally called *hayat* in the region [30,36]. They are attached to one side of their courtyards, and their main spaces (the rooms and the *sofa*) and their windows face the courtyard, looking generally towards the south [30,36]. The rear sides of the houses that look towards the street (or the other lot) are generally blind with no windows due to privacy concerns. All houses have unique courtyard gates with double doors and a small inner door for daily use (locally called *kuzulu kapi)* (Figure 9).

The rooms of the houses are multipurpose in character, and they act as living, eating, cooking, and sleeping spaces. Each room has a hearth, which bulges at the outer façade, with a pair of windows or cupboards on its either side [30,36] (Figure 10). The rooms also have a storage unit (*yukluk*), a small ablution bathroom (*gusulhane*), which is covered with zinc coating on the floor, and a lamp niche that is called *lambalik* [39]. A continuous high shelf over the height of the windows and doors is also common, which is locally called

elmalik or *serpenc* [36,37]. *Mabeyn* in between the two rooms is generally used as the kitchen and if so, it also has a hearth.

Figure 9. Unique courtyard gate of the region; Photograph by the author.

Figure 10. Hearth in a room with a pair of windows on either side. Photograph by the author.

The houses are generally constructed with the traditional construction technique of *hımış*, where a timber frame is filled with rubble stone and lime mortar [36]. If the house has two stories, the ground floor is generally built by stone masonry. The houses are always white-washed with lime mortar, and they are covered with timber frame pitched roofs with wide (70–80 cm) timber eaves (*teneketura*) that circle around the house [30,36,37]. All houses have a unique chimney type (Figure 11) and their windows are vertically proportioned and in pairs. They have well-crafted timber ornamentations on their windows, doors, ceilings, and large eaves [30].

As Cakirhan [38] notes, maybe the most important characteristic shared by all these houses is their unity with nature, where the inhabitant can feel at the interior and the exterior simultaneously. In Cakirhan's words, all these houses work for the shared goal of:

> "an intimate, harmonious togetherness, a unison, as it were, with nature, the effort of identification with it, not splitting apart. To be inside and outside simultaneously, embracing nature, but enjoying great privacy at the same time. The lightness, comfort and happiness these houses inspire seem to stem from this symbiosis". [38] (p. 27)

Figure 11. Unique chimney type of the region. Photograph by the author.

3.2. The Actual Context: Architectural Characteristics of Nail Cakirhan House in Akyaka

　　Akyaka, the town where Cakirhan's house is located, is a seaside town that lies on the southwest coast of Anatolia, on the valley at the foot of Sakartepe mountain, at the Gulf of Gokova (Figures 1 and 2). It is 30 km away from the town of Ula, but Akyaka possesses similar climatic and socio-cultural characteristics with that of Ula. Having a subtropical, Mediterranean climate, it has hot summer days moderated by cool breeze from the sea, and mild winters with cold nights [40].

　　When Cakirhan moved to Akyaka in 1969, it was a small fishing village with very few buildings. Upon seeing the urban environment of his nearby hometown Ula changing drastically by the construction of concrete buildings, Cakirhan decided that the house he wanted for himself in Akyaka would be in harmony with the climate, environment, and the cultural background of Turkey [37,38]. He sought a house in line with the traditional architecture of the region and in touch with the nature outside. For this reason, he first searched for local carpenters in Ula and found the last remaining two (Ali Duru and Cafer Karaca) who knew traditional timber house building. Together with them, he studied the architectural types and local characteristics of traditional Ula houses, and prepared the design of the house in Akyaka in line with the traditional characteristics. The construction of the house began in the Fall of 1970 [38].

　　Cakirhan house in Akyaka was built on a 2000 m^2 lot, on a cliff that is 20 m above the sea level, overlooking the sea. There are two masses in the lot, one is the house itself (147 m^2), and the other is the caretaker's lodge (48 m^2). The house was built in the lower half of the lot, faces south, and with views of the sea. The garden wall covers the three sides of the lot, except for the southern side, that looks towards the sea [38].

　　As Cakirhan [38] explains, the house was designed as a combination of the two traditional house types in Ula: one with the open, longitudinal, outer *sofa* (*haney*) (Type 2-*mabeyn* type), and one with the closed, polygonal, outer *sofa* (*divanhane*) (Type 3-polygonal *sofa* type). Cakirhan merged these two plan types into a new plan type in his design, and used the polygonal *sofa* not as the entrance space as in Type 3 houses in Ula, but sent it to the back of the house as a continuation of the traditional central iwan spaces of the Turkish/Ottoman house [30,32,40] (Figures 12–15).

Figure 12. Southern (entrance) facade of Nail Cakirhan House in Akyaka. Photograph by the author.
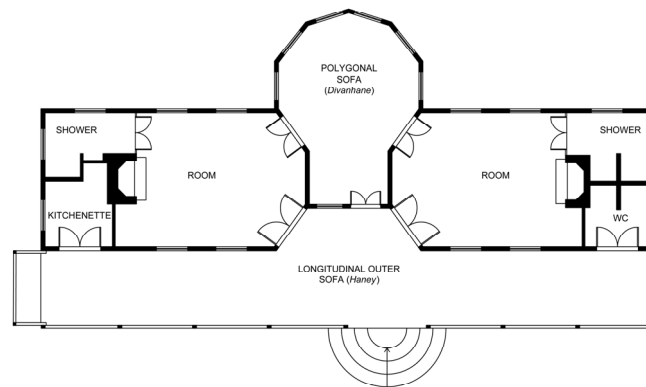

Figure 13. Plan of Nail Cakirhan House (by Nail Cakirhan) in Akyaka. Drawing by author.

Figure 14. West facade of Nail Cakirhan House. Photograph by the author.

Figure 15. Northern facade of Nail Cakirhan House. Photograph by the author.

Besides these two *sofa* types (*haney* and *divanhane*), the house also shares many other traits with traditional Ula houses, such as: ornamented double-winged courtyard gates; high courtyard walls (1.5 m high); timber frame construction with brick infill; foundations with rubble stone framing walls; lime plastered and white-washed exterior walls; timber floors; unique chimneys; rooms with fireplaces with cupboard doors on each side; the multipurpose character of rooms; ornamented vertical windows with wooden shutters; wide timber eaves (*teneketura*); iwan between the rooms (*mabeyn*); pitched timber roof covered with *alaturca* mission tiles; ornamented columns and arches of the longitudinal *sofa (haney)*; ornamented timber ceilings; built-in furniture; and a continuous shelf on the walls (*serpenc*) [37,38]. Differently, the house has a kitchen and two toilets/shower rooms inside, rather than outside, as in some traditional Ula houses; and *mabeyn* has been interpreted as a small corridor adjacent to the two rooms at its sides, connected to the polygonal *sofa* that acts as the main living space of the house [37].

Parallel to what Cakirhan sought in the beginning of the design, the house is also in unison with the nature outside, as in the traditional Ula houses. As Cakirhan [38] states, both the polygonal *sofa* (*divanhane*) and the two rooms on its sides open up to the longitudinal open *sofa* (*haney*) and the outside directly. Therefore, when all the doors are open, there is a continuous space between the rooms, *sofas* and the garden, and the house becomes one with nature [40].

Due to this environmental and cultural sensitivity, Cakirhan house was awarded with an Aga Khan Award for Architecture in 1983. The master jury of the Aga Khan Awards awarded the house for its cultural sensitivity, its subtle continuation of traditional values and craftsmanship that goes well over a simple imitation and reproduction, and its harmony with nature [37]. The jury reports praised the house for: its interpretation of traditional living patterns, traditional house types and construction techniques; the use of local resources, craftsmanship, materials and manufacturing; and the preservation of natural landscape, climatic consciousness, and harmony with nature [40]. As Halet Cambel writes in the project nominator's statement, another significant contribution of the house was its creation of a new visual sensibility among the citizens of Akyaka [40].

3.3. Environmental Consciousness and Sustainability of Cakirhan House in Akyaka

The cultural and environmental consciousness of the house also made it an early example of sustainable architecture. In terms of environmental, economic, social, and cultural characteristics, which are listed as the four legs of sustainable design and development [20,21,23,26,41], Cakirhan house can be evaluated as a sustainable architectural example, since it: (1) reduces its environmental impact by its resource usage and pollution/waste production (environmental sustainability) [4,23,26]; (2) preserves and maintains cultural values by utilizing cultural practices and modes of production (socio-cultural sustainability) [5,22]; and (3) saves financial resources by supporting local production and materials (socio-economic sustainability) [28].

When analyzed in more detail according to the parameters of environmental, socio-cultural, and socioeconomic sustainability in vernacular architecture as specified by the VerSus project [18], we see that in terms of environmental sustainability [18,26] the house benefits from natural and climatic resources of its site, such as the sun and the wind, by means of its siting, orientation, sunlight usage, and natural ventilation (second parameter of environmental sustainability in vernacular architecture by the VerSus project [26]); and it ensures human health and thermal comfort by means of its passive architectural means that deal with the heat, cold, humidity, wind, and radiation (fourth parameter of environmental sustainability in vernacular architecture by the VerSus project [26]). In the summer, its wide eaves, shaded porch (*haney*), timber window shutters, white facade color, proper window sizes and positions, timber ceilings (that ventilate hot air), and the vegetation in the garden deal effectively with heat and radiation [40]. In the mild winters, the fireplaces within the rooms are sufficient to heat the house and the polygonal *sofa* (*divanhane*), which is heated by opening up to the rooms and putting hot coal from the fireplaces onto a brazier. The

thermal insulation is sustained in the house by means of the large air space left under the gables of the roof [40].

The house respects nature and lives in harmony with the environment (first parameter of environmental sustainability in vernacular architecture by the VerSus project [26]) by using the natural topography in the siting; by using local, renewable, and environment-friendly materials in construction; preserving all the existing trees and planting new ones at the site; using local flagstones in the garden without cement for enabling the herbs to grow between them; and incorporating nature within the house [40]. It also reduces pollution and waste (third parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), by using local, biodegradable materials and local production, which eliminates transportation energy and mass production emissions; and mitigates the effects of natural hazards (fifth parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), by using the local technique of timber frame construction, which is appropriate for the risk of earthquake.

When analyzed according to the parameters of socio-cultural sustainability [18,27] and socio-economic sustainability [18,28] in vernacular architecture as specified by the VerSus project, we see that Cakirhan house preserves and maintains the cultural values, practices, and modes of production [27] by means of sustaining the local architectural tradition and construction culture (parameters of socio-cultural sustainability in vernacular architecture by the VerSus project [27]); and saves local financial resources [28] by means of supporting local production and materials (parameters of socio-economic sustainability in vernacular architecture by the VerSus project [28]). In more detail, in terms of the parameters of socio-cultural sustainability, we see that the house tries to maintain a cultural continuity in the region, transfers the know-how of the local craftsmen to future generations, reflects the collective memory of intangible values that create a social cohesion for the community, and opts for the physical and mental wellbeing of its inhabitants by supporting both material and immaterial dimensions (first to fifth parameters of socio-cultural sustainability in vernacular architecture by the VerSus project [27]) [38]. In more detail, in terms of the parameters of socio-economic sustainability, we see that the house promotes local economy and production by using locally produced materials, fabricating every major building element on site and crafting all wood work by local craftsmanship; and saves energy costs by using the natural resources of sun and wind effectively (second to fifth parameters of socio-economic sustainability in vernacular architecture by the VerSus project [28]) [40].

By means of all these characteristics, that are in line with an environmentally, socio-culturally, and socio-economically sustainable approach, Cakirhan house set an example and worked as an inspiration in the development of the town of Akyaka towards a sustainable and slow-city that valued its unique architectural language.

4. Results: Development of the Town of Akyaka towards a Sustainable, Slow-City

4.1. Formation of Cakirhan Architecture in Akyaka as a New Vernacular Architecture

Since its completion in 1971, Cakirhan House drew much attention to itself, and many people wanted similar buildings for themselves from the designer. First to friends, then to other people, Cakirhan built more than 30 buildings in Akyaka (Cakirhan has designed more than 40 buildings in the wider Gokova area [1]), both houses and touristic establishments (28 houses and four touristic establishments), which gradually started to form an architectural language for the town. In the 1980s, the once small and pristine seaside village became a popular touristic destination mainly because of its architecture. In 1991, it first became a municipality, and in 2012, it grew to become a municipal district of the town of Ula.

Cakirhan has created the architectural language in Akyaka by making reference to the traditional architectural features of the region. He respected the local cultural values, climate and natural environment, and the local building materials and craftsmanship [30,33]. As Erarslan [32] notes, Cakirhan generally used two plan types in his designs in Akyaka, which are the longitudinal one-storied plan organization with an outer *sofa* (*haney*), as seen

his own house, and the central plan organization with a polygonal central *sofa* (*divanhane*), as seen in his two-storied buildings. The first plan type gives reference to the traditional *mabeyn* type of houses in Ula and the other gives reference to the polygonal *sofa* type of houses there [32].

Although, Cakirhan mainly uses these two plan types, he always interprets them in different ways in each design that he undertook [32]. In the first plan type he used, which is the longitudinal one-storied plan organization with an outer *sofa* (*haney*), he modifies and uses the longitudinal *haney* space by shortening its longer side and using it as a portico [30,32] (Figure 16).
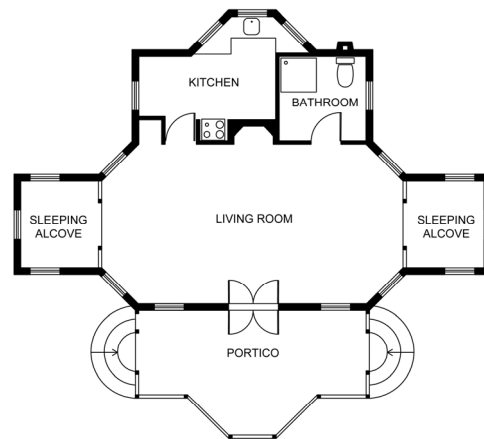

Figure 16. Plan of Minu Inkaya House by Nail Cakirhan, as an example to the use of the first plan type (the longitudinal plan organization with an outer *sofa* (*haney*)). Drawing by the author.

In the second plan type he used, which is the central plan organization with a polygonal *sofa* (*divanhane*), Cakirhan interprets the polygonal outer *sofa* of Ula houses as a central and generally hexagonal main hall of the two storied buildings [32] (Figures 17 and 18). The corners of these buildings are generally chamfered, and each space is projected in the façade and emphasized with its own wide eave, as an interpretation of traditional wide eaves (*teneketura*) of Ula [32] (Figures 19 and 20). In these two-storied buildings, Cakirhan also interprets the longitudinal *haney* of Ula houses (with their ornamented wide eaves and decorated columns) by shortening its longer side and using it as a balcony or the entrance portico [32] (Figure 19). As Erarslan [32] notes, the most significant characteristic that is common in all these buildings is the polygonal character and the chamfered corners of the buildings, which is evidently a reference to the polygonal *sofa* type of houses of Ula.
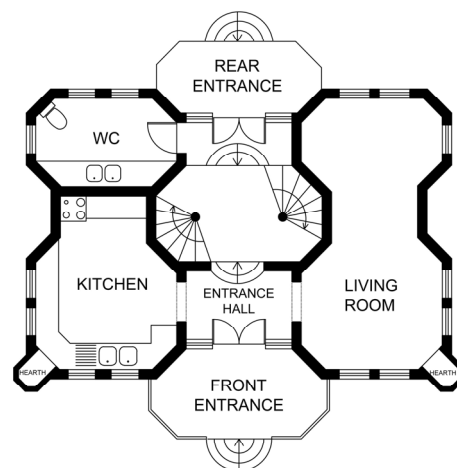

Figure 17. Plan of Sevgi Oncu House by Nail Cakirhan, as an example to the use of the second plan type (the central plan organization with a polygonal central *sofa* (*divanhane*)). Drawing by the author.

Figure 18. Entrance façade of Sevgi Oncu House (photograph by the author).

Figure 19. Example to the use of the second plan type and *haney* interpretation in a balcony and portico: Ozen-Utku Gurgen House by Nail Cakirhan (photograph by the author).

Figure 20. Example to the use of the second plan type and *haney* interpretation in a portico: Idris Gurpinar House by Nail Cakirhan (photograph by the author).

In both of these types, Cakirhan uses several architectural elements that make reference to traditional Ula houses, such as the wide, ornamented eaves that travel around the roof (*tenekatura*), the ornamented and arched columns covering the front facade of the open outer *sofa* (*haney*) or balconies, the chamfered corners of rooms that open up to the polygonal central *sofa* (*divanhane*), the double winged doors (*kuzulu kapi*) of the courtyard (*hayat*) or garden, hip roofs with alaturca tiles, ornamented timber ceilings, and specific (Mugla) type of chimneys with alaturca tiles [30,32,33]. At the interiors, he uses the traditional elements of hearth, *serpenc*, ornamented timber ceilings, built-in storage units with timber doors, and lamp niches (*lambalik*) [32,33]. The structural systems and building materials of

these buildings are also congruent with traditional Ula houses with their timber frame or masonry systems with white wash [32,33].

Although Cakirhan uses two main plan types and common architectural elements in his designs, he never repeats the same design, and always interprets the traditional elements and plan types in a new way for each building [32]. The combination of *mabeyn* and polygonal *sofa* types in his own house is an example to this approach. As noted by Erarslan [32,33], his architecture is far from being an imitative stylistic reproduction in this sense, rather it is a contemporary interpretation of a regional vernacular architecture that refrains from repetition and standardization. Therefore, this interpretative approach of Cakirhan is the most important quality of Cakirhan architecture in Akyaka [32], and it is also what gives Akyaka a shared characteristic with genuine vernacular architecture. In Cakirhan's architecture there is variety within harmony, which was created in the past by master-builders in traditional/vernacular environments by their use of variation within a typology.

It is true that Cakirhan architecture cannot be called vernacular in its true sense of the word, since vernacular architecture is without authorship [11], and it is a communal venture "produced not by specialists but by the spontaneous and continuing activity of a whole people with a common heritage, acting within a community of experience" [6]. As an antonym of 'scholarly' architecture, vernacular architecture is built by local crafts-men/master builders that carry the building tradition from generation to generation by master-apprentice relationship, and it is the direct reflection of the culture of the people that produced it [1,3]. This is the reason it is also called as folk architecture, anonymous architecture, or architecture without architects [6].

However, it is also true that Cakirhan architecture in Akyaka shares many commonalities with vernacular architecture. As vernacular architecture is specific to the particularities of a context/region, such as its climate, topography or geography; as it uses local building materials and local technique of construction; as it respects and reflects both the natural and the cultural environment of the region; as it is fit for the wellbeing of people by being in harmony with nature and culture, and as it maintains and forms cultural continuity and architectural identity [1–7,42], Cakirhan architecture in Akyaka could be interpreted as a form of new vernacular architecture that is produced with a revivalist attitude and sincere intentions. It maintains a synthesis of contemporary and cultural values, and provides an architectural language that attempts for continuity and harmony in the architectural environment.

Moreover, Cakirhan architecture in Akyaka exemplifies the use and formation of form and pattern languages, which are naturally held by vernacular architecture. As Salingaros [43,44] defines, form language consists of a vocabulary of building and design elements to be used in the formation of a coherent architectural language. It responds to contextual and cultural characteristics of a specific place, and in line, it ensures a coherence in building environment and creates a positive relationship with nature [43,44]. Pattern language, on the other hand, is a set of design patterns, which are the socio-geometric relations discovered in naturally evolved building typologies [43,45]. Defined by Alexander et. al [45], it is a set of human-environment relationships, and not rigid geometrical or visual rules, which provide healthy relationships between the design environment and human behaviors [43,45]. As explained by Salingaros, when used together, form language and pattern language offer an adaptive design method and provide the organized complexity of the living systems in different scales of building environment [43]. Their adaptive nature that results from being specified for the needs of each specific context enables creativity within constraints and ensures an evolved identity specific to a place [43,44]. As such, they exist as the products of a natural living process [46] and enable a positive built environment that is in synergy with human senses [44].

What Cakirhan did in Akyaka is very much in line with adaptive design method. By interpreting the architecture of traditional Ula houses, Cakirhan creates a form and pattern language that is specific to Akyaka. He establishes a vocabulary of building and

design elements (i.e., the *haney* space and its ornamented timber arches and columns that are interpreted differently for each case), which results in an architectural coherence in the town; and assigns healthy relationships between building spaces and human behaviors (i.e., as in the interdependent relations between the *divanhane*, the rooms, the *haney* and the garden), which results in a positive built environment that is in synergy with human senses and nature. He embraces a design-build approach, where he interactively collaborates with the user and the craftsmen while the construction process develops. As such, he supports not just the physical but also the sensual and emotional well-being of the people he designs for, and exemplifies what Alexander [45–47] tried to demonstrate in his works. Moreover, the adaptive nature of his architecture, which results from being specific for the needs of each context and user, enables creativity and provides an organized complexity. The architectural language he creates as such establishes variety within harmony in the town as in the genuine vernacular architecture.

4.2. Formation of the Master Development Plan of Akyaka

The town of Akyaka embraced this newly developed architectural language, and in order to protect and maintain it, it formed its master development plan with the guidance of Cakirhan himself. In 1988, the wider Gokova region, which included the province of Mugla, district of Ula and the town of Akyaka, has been declared as a "Special Environmental Protection Zone", and the natural, historical, and cultural values, biological diversity, and the architectural heritage of the Gokova region, was taken under protection [48] (Figure 21). Together with the initiation of this special status, new zoning and construction laws started to be prepared, and the Council for Environmental Protection, which was responsible for the formation of the construction criteria in the region, took Cakirhan architecture in Akyaka as a model because of its respectful attitude towards the cultural and natural assets of the region [49]. Therefore, as Ekinci [49] notes, Cakirhan became the source of inspiration and the author of the law that was protecting Akyaka landscape.
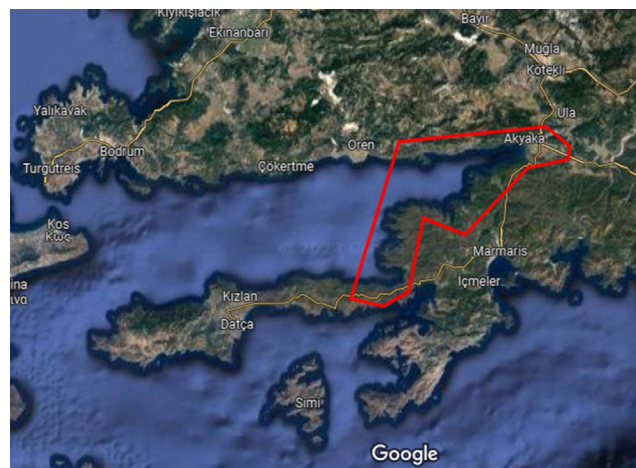

Figure 21. Gokova Special Environmental Protection Zone that includes the province of Mugla, district of Ula and the town of Akyaka. Image attained from Google (location mark added by the author).

In 1989, the 1/1000 scaled Implementation Development Plan for Akyaka Neighborhood and Coastal Areas *(Akyaka Mahallesi ve Kıyı Alanlarına ilişkin 1/1000 Ölçekli Revizyon Uygulama İmar Plani)* was legislated and it assigned the building construction rules and regulations in Akyaka. This plan underwent extensive revision in 1997, and became the Implementation Development Plan in effect *(mer-i imar plani)*, which contains the recent rules of construction in Akyaka that are still valid today [48]. In this plan, Nail Cakirhan house is registered as a civil architectural heritage example [50].

The plan assigns the houses in Akyaka to be two-storied at most with maximum building height of 6.5 m; to have wide, timber eaves of 50–100 cm; to have pitched roofs (with minimum 30% maximum 40% slope) with alaturca mission tiles; to have the unique chimney type of the region; to have vertical, rectangular timber windows (with height to width ratio being minimum 1.50 maximum 2.00); to have architectural elements (such as the windows, doors, columns and balustrades in balconies and porches) of timber in harmony with the architectural features of the region; and to have white-wash in the façade if the walls are brick (exposed if they are stone masonry) [48].

The plan also requires the houses to have dynamic facades that are variated with closed or open projections, balconies, or windows in harmony with the original architectural features of the region; to have the chimneys of the hearths reflected in the façade; to have the area of the door-window voids on facades being below 30% of the total facade area; to have cascaded ground floor levels to match the natural topography; to have lot borders surrounded by rubble stone or plastered garden walls; and to have 40% of the total area of the plot to be left as natural soil planted with local vegetation and trees [48].

The new buildings that are built according to these rules have created a synthesis of contemporary requirements (and techniques) with traditional elements and spatial characteristics. As asserted by the municipality, the buildings benefit from local resources by the materials that they use, they are in good harmony with the natural environment, and the climatic, social, and economic life of the town [51]. Overall, the town acquired an architectural unity by means of this architectural language protected by these regulations.

The authenticity of this architectural language is perhaps debatable, since using the characteristics of a nearby, local architectural tradition to produce a new architectural language from scratch might pose the risk of misleading the viewer to believe what he/she is viewing belongs to much earlier, traditional times. Many documents on conservation, such as the Venice Charter [52], warn us against the ills of this kind of approach, stating that imitating historical architecture might mislead the community about the actual period of the work. Nevertheless, as recent literature problematizes now, authenticity is an elusive and unstable term [53,54], and all kinds of authenticity should be evaluated by respecting the cultural diversity that created them [55]. It is found to be true that sometimes reinventions of cultural phenomena can become what is real or authentic for the people that experience them [53]. Putting the commodification of this new vernacular architecture for touristic consumerism aside, as we prevalently saw in the 1980s, the case in Akyaka shows us that this invented architectural tradition became what is authentic for Akyaka for the people living there.

4.3. Development of Akyaka towards a Sustainable, Slow-City

This unique architectural language brought with it a sensitivity towards the cultural and environmental assets of the town. In 2011, with the guidance of the then mayor, Akyaka applied for and took the title of 'slow-city' (*cittaslow*) from the Cittaslow International Association, on the basis of its unique architectural language, sensitivity towards natural and cultural values, and its environmentally friendly, sustainable development, which values the wellbeing of its inhabitants [56,57].

The *cittaslow* movement celebrates the unique, local characteristics of cities against the homogenization and standardization created by globalization; it values the protection of the cultural and natural values of cities; and supports sustainable, local development that considers the wellbeing of the inhabitants and nature [56,58,59]. It prioritizes the preservation of the tangible and intangible cultural heritage of cities (such as the local food, products or the traditional architecture), and the preservation of nature by using environmentally friendly technologies. Since its foundation in 1999, CittaSlow International Association registers its 241 member cities from 30 different countries according to these principles [58]. Although the main aim of the association—which is the protection and maintenance of unique, local qualities and the slow development of cities and towns—is not fully congruent with sustainability, the association still underlines sustainable development

and tourism practices as supplementary to its main aim, as stated in its declaration of philosophy and principles [59,60]. It encourages sustainable local development on the cultural and environmental fronts by prioritizing the preservation of the natural and cultural values of the cities [58].

Akyaka, both in terms of its municipality and its citizens, is very much aware of the importance of these values for its future, and consciously protects them against pressures coming from the outside for touristic development, although 40% of the city's income is from tourism [51]. With the attempt of keeping the title of 'slow-city', the town protects not only its architectural unity but also its sustainable, local development by establishing nature-friendly alternative tourism practices, using renewable energy resources, employing environment-friendly policies, protecting its biological diversity, promoting local production, and considering the wellbeing of its citizens [51,57].

The sensitivity of the unique architectural language of the town towards the cultural and environmental assets of the context, not just brought the title of 'slow-city', but also brought an awareness in terms of sustainability and sustainable development principles in architecture and town development. It is seen that, likewise Cakirhan house itself, Cakirhan architecture in Akyaka also conforms with the sustainability parameters in vernacular architecture declared by the literature [18].

When analyzed according to the parameters of environmental, sociocultural, and socioeconomic sustainability in vernacular architecture, as specified by the VerSus project [18], we see that in terms of environmental sustainability [18,26], Cakirhan architecture in Akyaka respects nature and lives in harmony with the environment (first parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), by using the natural topography in the siting (i.e., master plan requires the sites to have cascaded ground floor levels to match the natural topography); by generally using local, renewable, and environment-friendly materials in construction (i.e., master plan requires the use of timber in fenestration and alaturca tiles in the roof); by preserving the landscape and forming gardens at building sites (i.e., master plan requires the sites to have 40% of the total area to be left as natural soil planted with local vegetation and trees); and incorporating nature within the buildings by permeable architectural characteristics.

It also benefits from natural and climatic resources of its context such as the sun by means of its siting, orientation, and sunlight usage (second parameter of environmental sustainability in vernacular architecture by the VerSus project [26]); and it ensures human health and thermal comfort by means of its passive architectural means that deal with heat, humidity, and radiation (fourth parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), such as its wide eaves (i.e., master plan requires the use of wide, timber eaves of 50–100 cm), shaded porticos (*haney*) and balconies, timber window shutters, white facade colors, proper window sizes and positions, and the vegetation in the gardens that deal effectively with heat and radiation.

Cakirhan architecture also reduces pollution and waste to a degree (third parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), by using local, biodegradable materials such as timber, and local production, which eliminates transportation energy and mass production emissions. Moreover, it mitigates the effects of natural hazards (fifth parameter of environmental sustainability in vernacular architecture by the VerSus project [26]), by generally using the local technique of timber frame construction and by limiting the number of floors in buildings (i.e., master plan requires the houses in Akyaka to be two-storied at most with maximum building height of 6.5 m), which is appropriate for the risk of earthquake common in the area.

When analyzed according to the parameters of socio-cultural sustainability [18,27] and socio-economic sustainability in vernacular architecture [18,28], as specified by the VerSus project, we see that Cakirhan architecture in Akyaka preserves and maintains cultural values, the practices and modes of production by means of sustaining the local architectural tradition and construction culture (parameters of socio-cultural sustainability in vernacular architecture by the VerSus project [27]); and saves local financial resources by means of

supporting local production and materials (parameters of socio-economic sustainability in vernacular architecture by the VerSus project [28]).

We see that Cakirhan architecture tries to maintain a cultural continuity in the region, transfers the know-how of local craftsmen to future generations, reflects the collective memory of intangible values that create a social cohesion for the community, and opts for the physical and mental wellbeing of its inhabitants by supporting both material and immaterial dimensions (first to fifth parameters of socio-cultural sustainability in vernacular architecture by the VerSus project [27]). It also promotes the local economy and production by using locally produced materials and local craftsmanship; and saves from energy costs by using the natural resources of sun effectively (second to fifth parameters of socio-economic sustainability in vernacular architecture by the VerSus project [28]). Overall, by means of all these characteristics, Cakirhan architecture in Akyaka seems to be in line to a great extent with an environmentally, socio-culturally, and socio-economically sustainable attitude.

Moreover, when evaluated according to the sustainable development criteria as declared in the literature in terms of the overall town development, it is seen that Akyaka has adopted a sustainable development approach in its planning and implementation of policies. Sustainable development was first defined by the Brundtland Report of the International Union for the Conservation of Nature (IUCN) as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [19]. It describes a development where the natural ecosystem and the limited natural resources we rely upon is not devoured, by putting limitations on environmental resource use and on the waste that could be absorbed by the biosphere [12,19,20,26]. It has four interdependent dimensions, which are: the environmental sustainability (that includes eco-system integrity, carrying capacity and bio-diversity); economic sustainability (that includes growth, development, productivity, trickling down); social sustainability (that includes equity, empowerment, accessibility, participation/sharing, cultural identity, and institutional stability); and cultural sustainability, which is the latest defined dimension among the four (that includes the preservation of cultural values, practices, and artefacts) [20–22].

It is seen that Akyaka is in the attempt of maintaining the requirements of these four dimensions (of environmental, economic, social, and cultural sustainability) by having a sensitive approach in terms of its ecological balance; harmony with nature; bio-diversity; reduction of pollution and waste; environment-friendly policies and practices (especially in architecture and tourism); promotion of local production and materials; consideration of the wellbeing, inclusion and social cohesion of its citizens; and preservation of its cultural landscape, values, and practices (especially its architectural tradition) [51,57]. The local government and NGOs in the region (such as the local branch of the Chamber of Architects of Turkey or the local environmental protection associations) are very active in keeping with these requirements.

When evaluated according to the goals of sustainable development as specified by the United Nations in 2015, it is seen that in terms of the 17 sustainable development goals (which are listed as: "no poverty, zero hunger, good health and wellbeing, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice, and strong institutions, and partnerships for the goals" [24,25]), the town of Akyaka seems to be on the track of sustainable development to a large extent.

The town attempts to keep these criteria by safeguarding its cultural and natural heritage, maintaining an inclusive and sustainable human settlement planning, ensuring resource efficiency, increasing green and public spaces for all, providing an accessible and sustainable transport system, and ensuring air quality and waste management [24,51]. The town is aware of the importance of these criteria for the wellbeing of its inhabitants and

nature, for protecting their unique built environment, and for maintaining sustainable tourism practices that economically support them. On this basis, due to its specific architectural character that depends essentially on cultural and environmental values, the town inadvertently works for its sustainability.

5. Discussion

This study has shown that the interpretation of the local architectural types of Ula by Nail Cakirhan has formed a unique architectural language for Akyaka, which could be interpreted as a new vernacular architecture that possesses a sustainable approach due to its sensitivity for the cultural and natural assets of the context. The house built by Nail Cakirhan for himself in Akyaka, by means of interpreting the traditional houses of his hometown, Ula, that is a few kilometers away from Akyaka, not only created the architectural language of the whole town of Akyaka, but also inspired the town towards a sustainable development that values its natural and cultural assets and the wellbeing of its inhabitants.

The evaluation of the architectural language of the town in terms of vernacular architectural principles has found that, due to being specific to the particularities of its context, such as its climate or topography, its use of local building materials and local technique of construction, its respect and reflection of both the natural and the cultural environment of the region, its fitness for the wellbeing of people by being in harmony with nature and culture, and its maintenance of cultural continuity and architectural identity therein, the architecture of Akyaka could be interpreted as a new vernacular architecture that synthesizes contemporary and cultural values, and maintains continuity and harmony in the built environment.

The evaluation of the architectural language of Akyaka in terms of the environmental, socio-cultural, and socio-economic sustainability parameters, has demonstrated that the architecture of Akyaka is in line with a sustainable approach to a great extent: (1) due to its harmony with the environmental context, its use of natural and climatic resources, its reduction of pollution and waste materials, its maintenance of human comfort, and its mitigation of the effects of natural hazards (environmental sustainability parameters in vernacular architecture of the VerSus project); (2) due to its preservation and maintenance of cultural values by utilizing cultural practices and modes of production (socio-cultural sustainability parameters in vernacular architecture of the VerSus project); and (3) due to its support and use of local production and materials (socio-economic sustainability parameters in vernacular architecture of the VerSus project). The evaluation also found that the development of the town is also congruent with sustainable development principles and sustainable development goals (SDGs) of the United Nations to a great extent, due to its safeguarding of its cultural and natural heritage, maintaining an inclusive and sustainable human settlement planning, and ensuring resource efficiency and urban life quality.

These results imply that by means of its cultural and environmental sensitivity, and its characteristics that are in line with an environmentally, socio-culturally, and socio-economically sustainable approach, the architectural language of Akyaka created by Cakirhan appears as a new vernacular architecture that became effective in the development of the town towards a sustainable and slow-city. This developmental process appears as an example where one work of a single designer changes the whole outlook of a context towards a better, more sustainable future.

The study has also shown that the town has embraced this architecture language and sustainable development approach both in terms of its municipality and its citizens. So much so that, when the Ministry of Environment, Urban Planning and Climate Change, announced revisions for the 1/5000 and 1/1000 scaled Conservation Revision Implementation Plans for Akyaka District and Coastal Areas on 11.08.2022 [48,61], the citizens of Akyaka and local NGOs (such as Gokova Ecological Life Association *(Gokova Ekolojik Yasam Dernegi)* and Muğla Environmental Platform *(Mugla Cevre Platformu-MUCEP))* reacted to the revision and opened a lawsuit against it, due to a proposed increase in floor heights (in

proportion to their distance from the sea) and the use of some green areas for small scaled commercial buildings, as declared in the revisions. This level of public involvement in the protection of the architectural language shows that the success of this development was not just on the architectural and environmental scale, but on the sociocultural scale as well.

This architectural development, which starts with the work of a single designer and ends with the formation of a whole town, demonstrates how a single architectural practice can today result in the development of a sustainable and harmonious architectural environment. The case of Akyaka can be significant as to show the potential of vernacular architecture for contemporary architectural practices, and to exemplify the role of a new vernacular architecture for the maintenance of sustainability in contemporary architecture.

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