

Article

The Vernacular and Rural Houses of Agrarian Areas in the Zeta Region, Montenegro

Goran Skataric ^{1,2}, Velibor Spalevic ^{3,4}, Svetislav Popovic ⁵, Nenad Perošević ⁶ and Rajko Novicevic ^{7,*}

¹ National Parks of Montenegro, 81000 Podgorica, Montenegro; goran.skataric@yahoo.com

² Faculty of Economics and Engineering Management, University Business Academy, 21102 Novi Sad, Serbia

³ Biotechnical Faculty, University of Montenegro, 81000 Podgorica, Montenegro; velibors@ucg.ac.me

⁴ Study Program of Geography, Faculty of Philosophy, University of Montenegro, 81400 Nikšić, Montenegro

⁵ Faculty of Architecture, University of Montenegro, 81000 Podgorica, Montenegro; svetislav@ucg.ac.me

⁶ Study Program of History, Faculty of Philosophy, University of Montenegro, 81400 Nikšić, Montenegro; nenadp@ucg.ac.me

⁷ Faculty of Business Economics and Law, Adriatic University, 85000 Bar, Montenegro

* Correspondence: rajko.novicevic@t-com.me

Abstract: Architectural quality and preservation of rural characteristics is a goal of building design for sustainable environments. The environment has a different function for different societies, creating a large variety of meanings. In the Zeta region of Montenegro, the negative transformation of the rural environment is happening more rapidly than the recording of its traditional built assets. Protection and conservation of traditional rural architecture in this rural region of south-eastern Europe are important to both mitigation of the consequences of unsustainable rural shifts and the preservation of cultural heritage. This research focuses on the meaning of the different dwelling and residential environment features for the residents of the traditional houses of the rural areas of the Zeta region, Montenegro. The aim of the research was to obtain more insight and information on the meaning of architectural and rural design features by exploring the sustainability-related characteristics of traditional rural houses in the so-far insufficiently studied micro-region of the western Balkans to reveal their value and to initiate discussion of the role of heritage regeneration in sustainable rural development. Fifty (50) traditional houses of agrarian and rural areas of the Zeta region of Montenegro were observed and analysed in terms of the building site, space planning of the interior space, and building materials used. The analysis has revealed that many ecological aspects were taken into consideration and different methods were implemented during the construction of the traditional houses of the Zeta region. Taking into consideration the age of those structures, the constructors did not have an in-depth awareness of sustainability theories, and they were acting based on their personal practices and specific environmental requirements. This study's results can help update a database of sustainability for the traditional architectural heritage of Montenegro, which will enhance the process of creating sustainable buildings without losing the place identity and staying in the same cultural context. Restoration of the traditional houses of the Zeta region of Montenegro, but also of the other rural areas of Montenegro, must in future be defined in a way that enables the preservation of recognized general values and further improvement of environmental quality and climate resilience. Simultaneously, functional reactivation of traditional houses should be understood as a contribution to the sustainable development of the studied region of Montenegro.

Keywords: sustainable rural development; traditional rural houses; rural architecture; sustainable design principles; Montenegro



Citation: Skataric, G.; Spalevic, V.; Popovic, S.; Perošević, N.; Novicevic, R. The Vernacular and Rural Houses of Agrarian Areas in the Zeta Region, Montenegro. *Agriculture* **2021**, *11*, 717. <https://doi.org/10.3390/agriculture11080717>

Academic Editor: Jessica Crowe

Received: 18 June 2021

Accepted: 27 July 2021

Published: 29 July 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Architecture reflects the lifestyle and the culture of a society. It shows how people are living in a particular community [1,2]. The traditional architecture of any region anywhere the world characterizes the simplicity of this architecture and the smart usage

of the surrounding environmental materials [3–5]. In general, traditional architecture is being demolished and abandoned due to many reasons that affect the world's architectural style [6].

“Philosophers, sociologists, and geographers are trying to reach a universal description for a simple concept of Place. A search for the Identity of Place and Identity with Place has become more intensive in the second half of the 20th century. One would say that people became more aware of the Importance of Place and the processes of maintaining the identity of place as much as possible” [4]. The knowledge necessary to organize the experience of the surrounding is mainly based on very explicit functions of the places. Sociologists examine the importance of place through the terms concept of place and nature of place experience. Unfortunately, architects and planners in their process of “place creation” very often neglect the place experience as an essential element of the planning process [5–8].

The settlements of Zeta were developed in places with optimal natural characteristics and a large potential for agricultural production. People who are living there are aware of the Idea of a location—the location as it relates to other things and places. The Place where they live is an integration of elements from the natural and cultural environment that implies that the location in which they live is unique, and the villages in which they live are also interconnected. These villages are part of a larger area called Zeta and represent focuses in a system of localization. Settlements and houses where they are living are changing with historical and cultural change. New elements are added, while some old ones disappear. Places where they are living have meanings: they are characterized by the individuals who lived there.

Preserving traditional rural architecture is usually not a strategic priority in developing regions. The chief concern of a society is always turned to other short-term socio-economic priorities, neglecting the already endangered existing rural heritage built in previous centuries. Gradual degradation of rural facilities intended for housing, livestock breeding, and storage of agricultural goods often occurs as part of the overall deterioration of rural areas in our region. The entire western Balkans, to which the studied area of the Zeta region also belongs, is currently facing an extensive negative transformation of its rural settlements, especially of those belonging to its remote areas. This process is a consequence of poor economic conditions, deruralization, fundamental changes in agricultural production, overall deterioration of infrastructure, and inadequacy of current rural development policies of all neighbouring countries of Montenegro.

Traditional settlements in the rural areas of Montenegro, as well as its individually built structures, are an integral part of the country landscape of Montenegro and are part of the valuable cultural heritage of this part of the Balkans. The valorisation of the rural landscape invariably includes both natural and cultural dimensions. The two specific dimensions of the rural landscape of the western Balkans, as well as their interrelationships, have yet to be incorporated into contemporary studies, policies, and practices. The existing dissociation of essential nature and culture is perhaps best seen in those rural areas that possess exceptional common values but have suffered either (1) the already mentioned degradation of rural areas, despite their natural potential, or (2) the process of overall development of society changes its attitude towards cultural traditions, especially in terms of housing and architecture of the traditional houses of rural Montenegro—in this specific case study of the Zeta Plain.

In general, traditional rural houses illustrate the diversity of life cultures and practices, construction methods, and architectural styles, but in the western Balkans, they are insufficiently studied and are mostly unprotected structures awaiting valuation by experts, recognition, and treatment as cultural heritage.

Therefore, the study and extensive research of the traditional houses of rural areas is an important need of this region. In addition, the deliberate adoption and effective implementation of heritage strategies could be relevant for the adequate protection and preservation of the local landscape, as well as for overall rural development. Based on the presented facts, this research primarily aims to expand the cultural understanding

of material heritage in one of the important rural regions of Montenegro, revealing the specific values of lesser-known traditional houses in the rural area of Zeta. The rural areas of this region are characterized by exceptional natural values and a special collection of traditional houses, and that was the reason for selecting the area of Zeta in Montenegro as a case study for this research.

The concept of sustainability comprises different spatial levels and domains of human activity. In the field of architecture, the notion of sustainability mainly refers to the environmental quality of buildings [8,9]. Studies of traditional architecture at the regional and local level generate knowledge [1,9,10] about bioclimatic and other ecological principles of design, construction, and (re)use [11–18] and provide a valuable basis for future interventions. Nevertheless, when viewed as part of a cultural heritage [16], the preservation of traditional rural residential architecture plays a significant role in achieving the overall goals of sustainable development. Finally, the sustainability of human communities and human settlements, as well as the structure, depends on the economic conditions of each society. For this reason, contemporary studies of rural architectural heritage should always address different aspects of sustainability, and such an approach was applied during the research of traditional Zeta houses in this study.

Initially, the paper discusses the historical, then the spatial–socio-cultural context in which, as far as possible, the traditional houses of rural areas in the Zeta region were analysed. Then, the architectural characteristics of 50 selected Zeta houses were studied. Their basic values were identified and explained. Based on the established set of environmental criteria, the subsequent comparative analysis resulted in the formulation of sustainability-related characteristics.

The synthesis of the findings led to the definition of (1) the existing general and specific values of the traditional rural houses of the Zeta region and (2) proposals of measures that could be applied in their regeneration and/or future reconstructions. This paper concludes with a discussion of the correlation between the direction of reactivation of traditional rural heritage and the overall sustainability of traditional houses of rural areas in the region of Zeta, Montenegro.

The large volume of architectural building types is undoubtedly the inexhaustible source of essential elements of Identity, an Identity created through centuries and based on long-term experiences and the need for functionality using traditional building materials. The results presented in this paper will undoubtedly be of great interest and help to scholars searching the Identity of Places through architectural and cultural lenses.

2. Materials and Methods

2.1. Study Area

The Zeta area of Montenegro is located between Podgorica and Skadar Lake, i.e., Malesija and Malo Blato. It is recognized for its intensive and successful plant production, mainly due to the area's favourable geographic and ecological conditions and the availability of water for plant production [19].

Within this area there are 35 villages and hamlets plus a town. The surface of the studied area covers an area of 15,305 ha (measurements from the Topographic Maps by the "Surface and distance Measuring" Program [20]). It has been geographically, administratively, and historically recognizable since the Middle Ages. Today it is the territory of the Municipality of Golubovci, which is within the Capital, with Golubovci as the administrative centre with other settlements being Balabane, Berislavce, Bijelo Polje, Bistrica, Vukovci, Gostilj, Goricani, Kurilo, Mojanovice, Ponari, Susunja, Mahala, Mataguze, Ljajkovici, Srp-ska, Botun, and Mitrovice (Figure 1), and Zeta region in the 13th century, presented on the Figure 2.

The observed area was already inhabited in the Paleolithic, as the remains of the tangible culture which demonstrate the formation of human communities approximately 180,000 years ago have been discovered.

The Neolithic period provides some more tangible prehistoric remains, which prove the presence of human communities in this area.

The Neolithic area of Montenegro could both geographically and culturally be divided into the Adriatic area (the coast with the hinterland, the plains of Zeta, and Bjelopavlici as well as the area of Stara Crna Gora, Polimlje, together with the valleys of the rivers Cehotina, Tara, and Lim). Finally, the area of Piva is a kind of transitional region [21].

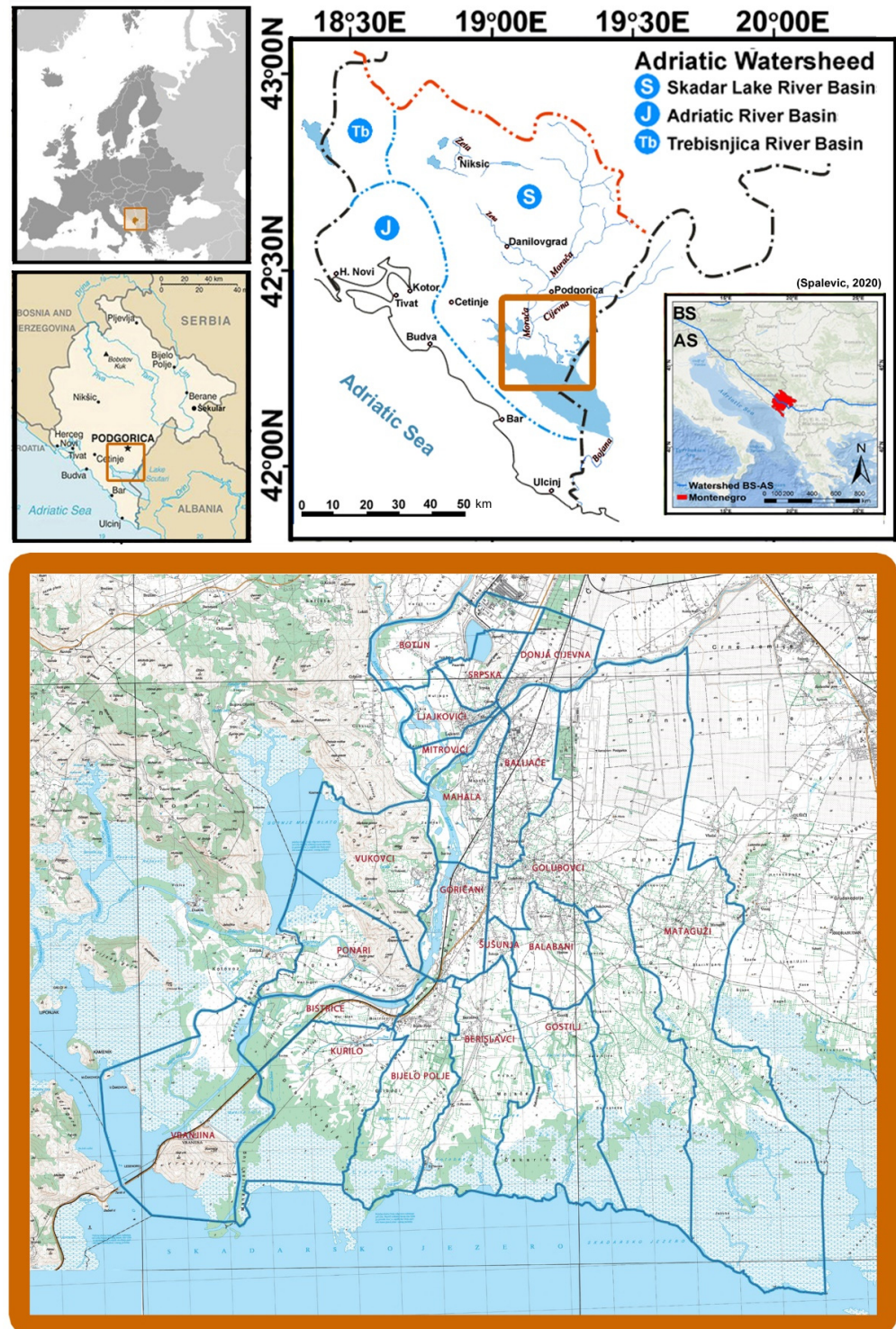


Figure 1. Study area of the Zeta region (15,305 ha). Nowadays it is a region that covers the territory from the south of Podgorica to the Skadar Lake (prepared by Velibor Spalevic).



Figure 2. The Zeta region in the 13th century encompassed the area from the Bay of Kotor (Boka Bay) to the rivers Bojana and Drim, and from Ostrog to Podgorica and Skadar Lake. At the end of the 14th century, the territory of Zeta was divided into the Upper and Lower. The Upper Zeta consisted of the area between the mountains Lovcen, Sutorman, Skadar Lake, the river Zeta, Ostrog, Grahovo, and Kotor, while the Lower Zeta stretched from the Lustica peninsula to the river Bojana. The Lower Zeta included Grbalj, Pastrovici, the Bar area with Crmnica and the entire area of the Mountain Rumija, and Ulcinj and Zabojana, the area between Rumija and Bojana (arranged by D. Starčević).

The Zeta Plain, as part of the Zeta-Bjelopavlici, but also called the Podgorica-Skadar valley, represents the largest plain in Montenegro with an area of about 250 km². This plain was inhabited in Illyrian and Roman times, but there is no evidence of settlement in the earlier period (the Palaeolithic and Mesolithic), most likely because the area of Zeta Plain is extremely seismically active, with some strikingly exogenous fluvio-glacial factors. Objects made of polished stone in Trijepce testify to Neolithic agriculture. The Iron Age provides many more material remains that prove the presence and life of human communities in the Zeta Plain. A detailed analysis has shown that out of 430 finds (prehistoric, Illyrian-Roman, medieval, and Turkish periods), about 30 of them belong to fortifications, while about 260 of them belong to the tumuli, 248 are attributed to stone, and about 12 are attributed to earth. There are a number of earthen tumuli in the village of Balabani, whereas the most ancient object from the Iron Age—a cross axe of the Albanian-Adriatic type—has been found in Tuzi. There is not enough archaeological data to accurately reconstruct the appearance and way of life in the fortified settlements. However, a common feature for all fortified settlements of the Zeta Plain and Montenegro in general is that they were erected on dominant, hardly accessible hills and had been protected on easily attainable sides by

defensive walls (dry stone walls), which gave the settlement its basic shape while following the terrain configuration. Archaeological excavations have shown that the deceased were buried, just like in the previous epoch, in an extended position in simple pit tombs, usually surrounded by a stone wreath and covered with stones.

During the later Iron Age, burial was still performed in tumuli, but at the same time there were flat graves with skeletal burial as well as graves with the deceased having been burnt. The area of the Zeta Plain should be considered the embryo of the Illyrian state, which dates back to the 5th century BC. Researchers mention Meteon as the most important Illyrian settlement in the Zeta Plain, where Medun was built later in the Middle Ages, whereas after the establishment of Roman rule (168 BC), the most important settlement from the Roman period was Duklja (Doclea), which was formed in the 1st century [21–25].

With the collapse of the western Roman Empire (476), and the migration of Slavs to the Balkan Peninsula, Zeta entered a new phase of its development. Zeta was under the Byzantine Empire in the Middle Ages; it was the centre of the first Slavic state—Dioclea (the end of the 10th century), while it later became part of the state under the Nemanjic dynasty, mainly as an autonomous region (the end of the 12th century to the 14th century). From the second half of the 14th century, it was strongly connected with the coast and the Mediterranean as the state of the Balsic and after that of the Crnojevic dynasty in the 15th century.

From the end of the 15th century, the Zeta Plain was under Turkish rule until its liberation at the Berlin Congress in 1878. In the Principality and later the Kingdom of Montenegro, the Zeta Plain was one of the most economically important regions, and its role became especially dominant after the proclamation of Podgorica as the capital of Montenegro in 1946 [21]. Paramount and complex processes and changes in the life and development of the population of Montenegro took place during the interval from the 15th century until the first decades of the 20th century, i.e., for more than four centuries. Under the influence of external historical factors from the 15th century onwards, what used to be a largely homogenized Slavic population in anthropogeographic and ethnic terms—i.e., the old population of Zeta and the Serbian population—was diverted from its autochthonous development trend into further specific transformations, which had marked relative stagnation and socio-economic regression from a historical point of view [21,22].

The geographical complexity of the area, primarily the complexity of the relief, and the weak traffic connection had conditioned the formation of tribes in the area of Montenegro since the time of the Illyrians, tribes being the most appropriate way of organizing the population. Such a way of life enabled a fairly autonomous life and greater security in relation to the surrounding population in certain regionally and geographically separated areas. The population used to change, some tribes spread to the detriment of the surrounding ones, but such an organization of life had persisted until fairly recently [21,22].

As for the modification of the number of inhabitants in Montenegro, and thus in the Zeta Plain, no reliable data for scientific analyses were available until the first official census in 1921 [21,22]. However, it can be assumed that more favourable conditions were established with the arrival of the Romans. Therefore, the Zeta Plain must have been better populated due to the development of trade and good roads built by the Romans. This was particularly conspicuous after “the centre of municipal life moved from the former Labeatae fortress of Scodra to Doclea, a town situated in a fertile plain, which apparently had formerly been a tribal city of the Illyrian Docleatae”. Doclea was relatively quickly connected with important centres such as Narona, Epidaurum (Cavtat), Risinium (Risan), Acruvium (Grbalj), and Salona (Solin). Zeta Plain being densely populated continued with the period of the arrival of the Slavs, who became the majority in the Balkan Peninsula. It was here that Ribnica and later Podgorica on one side and Shkodra on the other, together with the coastal towns, were emerging as a single territorial unit, where old settlements developed to a certain extent and new settlements were increasingly spreading, both on feudal foundations.

During the Vojislavljevic and Nemanjic dynasties, the Zeta Plain was well populated as a region of great economic importance, with highly developed trade, while the arrival of the Turks at the end of the 15th century caused great devastation of the Zeta Plain, which generated a significant population shift. The settlement reality of this area came out of the period of Turkish occupation in essentially two manners. On the one hand, relatively developed and somewhat “orientalised” rural settlement segments emerged, and on the other hand, “villages with miserable and neglected ground-floor houses and barns” prevailed. In urban areas such as Podgorica and Tuzi, urbanization from the Turkish period was reflected in “chaotic” and “closed” civil engineering with courtyards, crooked streets, and alleys [22]. The famous German geographer Kurt Hassert, who visited Montenegro four times (1891, 1892, 1897, and 1900), wrote that Podgorica’s “winding and broken streets intersect without order, and the high walls confine the time-stricken and partially derelict houses, which look like dungeons due to its small barred windows” [26].

All villages of the Zeta Plain can be typologically classified as dispersed or scattered and compact or nucleated settlements. The houses of the first type of village are about 150–200 m apart and they regularly have a larger yard and often vegetable and fruit gardens. The yards themselves are planted with sparse fruit trees, and the fields are more or less close to the houses. The scattered type is hardly present, mainly at the point of transition from an infertile to a fertile land, i.e., area. The houses are far from each other because they were built on plots of fertile land. Unlike the scattered type, the compact type is highly present. The houses of this type are situated next to each other and are very often adjoining in length, while the division has generally been caused by the division of property among brothers or the closest relatives. The houses are often grouped around wells, so that they form a kind of village square.

Additional reasons for the grouping of houses should be sought in the lack of arable land, and as the division of land was mostly carried out by close relatives, certain psychological and behavioural needs of staying in immediate proximity to close relatives persisted in order to help each other in performing various toils, among other things. However, such a way of life, i.e., the compactness of houses, also led to some negative phenomena that had a bad effect on health and hygiene conditions. Barns for cattle, pigs, poultry, and fodder were built in a small area between the houses. In addition, there were usually landfills for various waste and livestock faeces.

The houses in this part can be classified into two types: the so-called towers, houses built on a cellar or a tavern and ground-floor houses present in the largest number, and the second type, two-story houses, with two floors intended for habitation. The type of a two-story house was hardly present. Ground-floor houses were usually covered with straw, without flooring, but built of stone, lime, and later cement mortar.

The first type of house, although in an elevated position, was adapted to the way and needs of peasant life. They had to be built of stone in the open field, and instead of straw they were covered with tiles (bricks) only from the first decades of the 20th century. The lower part of the house was intended for cattle, fodder, etc., and the family lived upstairs. As there was no quality flooring, numerous unpleasant fumes from the lower part were felt in the upper part of the house where they lived. Such houses were made for several reasons: they were more economical because they provided more space, this kind of construction provided better protection from the flooding of Skadar Lake, and in the past they were easier to defend from invaders. Ground-floor houses (the so-called “pozemljuse”) were usually built of stone and lime mortar, which was hardly available, and later they were built of cement mortar. They were low and elongated. Until the 1930s, most of these houses had been oriented from north to south, with the front door facing east, rarely south, in order to provide protection from strong and destructive north winds and to get more sunlight. They generally had small windows while they often lacked a single window; quite rarely were they divided into two parts. In one part there was a fireplace and in the other there was a “chamber” (room) for sleeping. They were badly plastered and the walls were black with soot due to the fireplace. Between the two world

wars, there were only a few cases of building two-story houses. All auxiliary facilities were characteristically poorly built in all villages, with few exceptions. A yard being the outer part of the house played a significant role in the life of the village, and it used to be fenced either “naturally” (if it was located near a mound or a hill), such being very few, or “artificially” fenced. The yards consisted mainly of two parts: one part of the yard was a real “clean” yard intended for activities and habitation of people, and the other part of the yard was intended for the free movement of livestock and poultry. That other part of the yard was called the “pen”.

According to the territorial-demographic systematization of settlements applied after 1945, 45 villages were located in the Zeta Plain [24]. Panoramic view on some parts of the Zeta Region is presented in the Figure 3.



Figure 3. Panoramic view on some parts of the Zeta region, Montenegro (Photo: D. Starčević).

2.2. Methods

The process of defining the research goals started with literature analyses and a field study, all with the idea of formulating the research aim, structure, and methodology. During the field work we observed and collected data about people who live there, cultures, and natural environments. This allows us to collect data about the dynamic of the places, people, and the environment around them. Field work enables us also to examine how our

theories interact with real life focusing on physical characteristics of nature and natural environments of the studied area.

Field work (2018–2020) consists of studying and describing the customs of the local communities and their culture. Data from outside sources were collected from local leaders and then compared with architectural and socio-economic theories. The researchers spent some time in a particular community within the studied geographic area. Rather than relying on outside sources, the activities and customs of local people living in the Zeta region were recorded. The researchers interviewed and recorded the people's stories and participated in their daily events as active field workers, experiencing the everyday life of their subjects in order to explain the purpose of this specific research, but also collecting some other research materials for the upcoming research activities.

Field work was conducted by the whole team of authors, depending on the specific section of the subject research, by visiting and documenting all the necessary inputs with the idea of preserving local knowledge in order to better understand the diversity of human experiences with this subject matter.

To answer the research question, Expert Interviews and Interviews methodologies were adopted as a tool for analysis and interpretation of contemporary phenomena [27,28]. As argued by Meuser and Nagel "The Expert Interview as a method of qualitative empirical research, designed to explore expert knowledge, has been developed considerably since the early 1990s" [29]. In parallel, we held the Interviews in the field with the people who are living in the studied area of the Zeta region, Montenegro.

The Expert Interview methodology has been widely discussed, and the existing literature review provides a structured theoretical framework. Basically, this methodology, requires that we ask for the opinions of the people considered "experts in their field" with the aim of (1) exploring, (2) systematizing, or (3) theory-generating [30]. There are various reasons why such a methodology could be considered adequate in fields like the one of this research: first of all, the *"fact that respondents are highly qualified in the analysed question, eliminates the need to use additional screening and clarifying questions aimed at revealing true, but hidden from the interviewer respondent views"* [31]. In essence, therefore, the data obtained have reliability that does not require additional considerations and it is possible to obtain a good representation of the studied phenomenon with relative transparency and correctness. A methodology was applied individually (as in the case of this research) but also in a context of triangulation of methods [29–31]. However, the *"Expert Interview is still an interview methodology that, although providing a privileged and more reliable point of view, always remains the representation of different points of view"* [31]. During the process of Expert Interviews, we concluded that reliability depends very much on the correct choice of experts and on the material provided for discussion.

Before we decided on Expert Interviews, we started from Meuser and Nagel, who quoted the study of Hitzler, Honer, and Maeder, on the definition of an expert. *"An expert is a person, who has knowledge of his own area of interest and who, at the same time, possesses an institutionalized authority to construct reality"* [29]. The importance of defining experts is emphasized also by Libakova and Sertakova, who highlight how the concept of "expert" must ensure certain criteria, including, *"education and skills, position, related to the research topic, work experience in the subject in question, the degree of quality of the prior expert judgments, the level of public recognition, objectivity of the submitted ratings"* [31].

During the field visit, 50 examples of traditional houses of the rural areas in the Zeta region, Montenegro constructed from the beginning of the 20th Century were mapped and analysed. The survey questionnaire consisted of the following elements:

PART I—BASIC HOUSEHOLD DATA including the following details: (1) Last name and first name of the owner; (2) village name and address; (3) GPS location from the field and from Google maps; (4) contact phone, e-mail; (5) surface area of the property and the object we are analysing; (6) when did the ancestors form a rural household move to this territory?; (7) who among the family members initiated the construction of the house?; (8) the type of building studied: housing and/or additional space (auxil-

inary/storage space) and/or abandoned building; (9) is the building in the same shape as was initially constructed or not (area, floor plan, extension, storeys)?; (10) did the owner receive the support of rural residents with materials, tools, or equipment?; (11) is the facility privately or state-owned?; (12) how many buildings were previously on these foundations (year of construction)/demolished/upgraded, and how many were on the farm before, how many now?; (13) length/width/height of the object in question (external dimensions); (14) floors/number of rooms per floor/ceiling height; (15) foundations (concrete/basement/stone/preferably detailed information); (16) is there flooding of basement rooms and at what time of year; walls (thickness, material, pillars); (17) partition walls (thickness, material); (18) stairs (of which material/interior-exterior?); (19) mezzanine construction (of which material?); (20) painting interior and exterior decoration (icons, photos, paintings); (21) windows (total number) and their size, number of windows per room; (22) entrance doors (total number) and their size; position of the front door facing which direction?; (23) roof (of which material; on two or four “watersheds”); (24) economic significance—with its location, architecture, interior, and other values—a tourist attractive object of great potential (from 1 to 10); (25) total number of household members today; (26) total number of household members at the time of construction of the house; (27) the maximal household members at the time they lived in the community; (28) structure of family members (gender, age, level of education); employee structure (gender, age, level of education); (29) primary activity: a) agriculture, b.) Tourism, c) other; (30) If it’s agricultural, what kind?

PART II—PHYSICAL FRAMEWORK including the following details: Materials (percentage ratio); Envelope; (with short description); Services/Use/Condition (with short description); Equipment (with short description); MECHANISMS (heating; cooling; ventilation; daylight use; alternative water sources; water recycling; passive water heating; landscaping; basements, traps); INTERIOR ARRANGEMENT (spatial organization; spatial comfort; indoor air quality; thermal comfort; light comfort; visual comfort; ACTIVE MECHANISMS (electric generators; solar collectors; geothermal pumps; active heating; active lighting; intelligent systems); SIGNIFICANCE/VALUE OF THE FACILITY: Historical value (1–10); Age value (year/2020); Ambient value (1–10); Artistic value (1–10); Origin value (1–10); Representativeness value (1–10); Integrity value (1–10); SIGNIFICANCE/VALUES OF THE OBJECT BY FUNCTION: Scientific significance (1–10), historical (1–10), sociological (1–10), architectural (1–10), and interest for future research (1–10).

PART III—SWOT analysis of what the HOST says about the building/facility;

PART IV—SWOT analysis of what YOUNG PEOPLE say about the building/facility;

PART V—SWOT analysis of what WOMEN say about the building/facility;

PART VI—SWOT analysis of what ELDERLY PEOPLE says about the building/facility;

Part VII—Other from the host, young people, women, and elderly people;

Part VIII—Sketch/floor plan, with dimensions in meters (length/width/height of the room in m).

Part XIX—Family tree (from the moment of building the house).

The houses are located in the villages of Balabane, Berislavce, Bijelo Polje, Bistrica, Vukovci, Gostilj, Goricani, Kurilo, Mojanovice, Ponari, Susunja, Mahala, Mataguze, Ljajkovici, Srpska, Botun, and Mitrovice (Figure 1). Based on the recommendation of Kosanovic et al. [31], their selection was based on accessibility to housing structure, preserved original characteristics, and distinctiveness in relation to other houses built during the same period. According to the use status, the chosen houses fall into three groups: houses that still have a residential purpose, houses used as an auxiliary/storage space, and abandoned houses.

After the literature review, in the period from the begging of 2018 until April 2021, several field visits with in situ measurements were executed. The local constructors and house owners were interviewed, and in parallel collected materials were studied. This was necessary in order to understand and afterwards to describe the impact of traditional lifestyles on the design of traditional houses in the rural areas of the Zeta region. This includes the analysis of the methods applied in their construction and what leads to the

development of the typology of Zeta houses, while the identification of similarities enabled the formulation and description of their common characteristics.

Common regeneration interventions in contemporary territories are seen in places whether urban or rural, particularly as an evolutionary necessity of a community in response to many of the challenges posed by worldwide changes affecting many people's ways of life [32,33]. From touristic to environmental services; from a more social/community-led approach to a more holistic perspective, the reality is that historic-rural settlements are used to complying with all the needs and desires of new generations eager to try something different from what they had previously [34,35]. Based on the recommendation of Kosanovic et al. [32] *“Physical Framework, Passive Mechanisms, and Indoor Environment were taken as a backbone of the study of the actual state, while the potential application of active mechanisms was considered in the context of future regeneration-related interventions”*.

3. Results and Discussion

3.1. Cultural Heritage

The cultural heritage of the Zeta region is a testimony to the creativity and life of previous times, and it is made up of cultural, historical, architectural-ambient, artistic, aesthetic, archaeological, and ethnological values of the studied area, objects, and elements of its traditional culture. Zeta has a significant and diverse cultural heritage that testifies to the continuity of social life and its creativity. It has long been the subject of scientific research and attention, and the results of this research reaffirm its importance. Monuments to material culture in space are numerous in this region: archaeological sites Mjace and Velje Ledine, old towns, i.e., fortifications in Oblun, Balsin Grad, and the fortress on Vranjska Gora, sacral buildings, i.e., churches in Srpska, Mataguzi, and Vukovci.

The most important material cultural heritage in the Zeta region is from the Lower Zeta, i.e., the northern shore of Skadar Lake. It keeps the secrets of the Illyrian, ancient, and medieval periods of Doklea (Duklja) and Zeta and modern Montenegro.

In the area of today's Zeta, the existence of about thirty church buildings was recorded, of which even today 13 are still functioning, and two churches are in ruins. *For many former ones the churches have preserved mentions of their existence, but their material remains have largely not been preserved or identified (Stari Mataguzi, Stari Gostilj, Plavnica, etc. and monasteries such as Goricani, Miran Glavica, Biscani and Jaginica). Of the three mosques, which existed during the Ottoman domination in today's Zeta, the ruined remains of one mosque is preserved in Goricani.*

In the area of Zeta there are the remains of many old towns and fortifications. One of the most significant monuments of its kind it is certainly a fortress on Vranjska Gora, which is located above the villages of Vranj and Mataguzi, not far from the Church of St. Nicholas. Historically and traditionally the remains of an old fort can be tied to the struggle of Vojislavljevic and the Byzantines from the beginning of the 11th century at Vranje, which is mentioned and described by priest Dukljanin in his famous writing from the twelfth century. In front of Vranje or Mataguska Church of St. Nicholas, we recorded a Roman milestone, and a local legend has been published after which the Duklja and Greek warriors from the battle of Vranje were buried under stone slabs the necropolis of this church. All stone houses in Donja Zeta, i.e., in the settlements on the west banks of the Moraca and Cijevna have been constructed with stone extracted from Vranjska Gora for centuries.

Balsin Grad is above the present-day settlement of Ponari (Figure 4). It is traditionally associated with the Balsics (1360–1421) and the period of the end of the 15th century. Fragments of prehistoric and ancient pottery were found on that location, so it is concluded that the city is much older. The town was also used by the Crnojevics and they stayed in the vicinity of this town throughout the year, in the summer at Divan Grad (Figure 5).



Figure 4. Balsin Grad (Photo: D. Starcevic).



Figure 5. Divan Grad (Photo: D. Starcevic).

The town of Oblun is above the Vukovci settlement. Together with Medun and Samobor, Oblun controlled the access to Illyrian–Hellenistic settlements on the shores of the lake and formed part of the defensive northern line of the Skadar Lake basin, during the Third Illyrian–Roman War. Photographs of the Oblun are presented in the Figure 6.



Figure 6. Oblun (Photo: D. Starcevic).

An important construction in the studied area is the fortress on the island of Lesendro (Figure 7), which dates from the 19th century. At the beginning of 1843, the Montenegrin ruler Petar II Petrovic Njegos rebuilt an earlier fortress on Lesendro, near the Vranjina settlement for a crew of 25 Montenegrin soldiers armed with scythes, rifles, and one cannon.

As the lake was then used for traffic, trade, and fishing, the control of its narrowest passage was of exceptional importance.

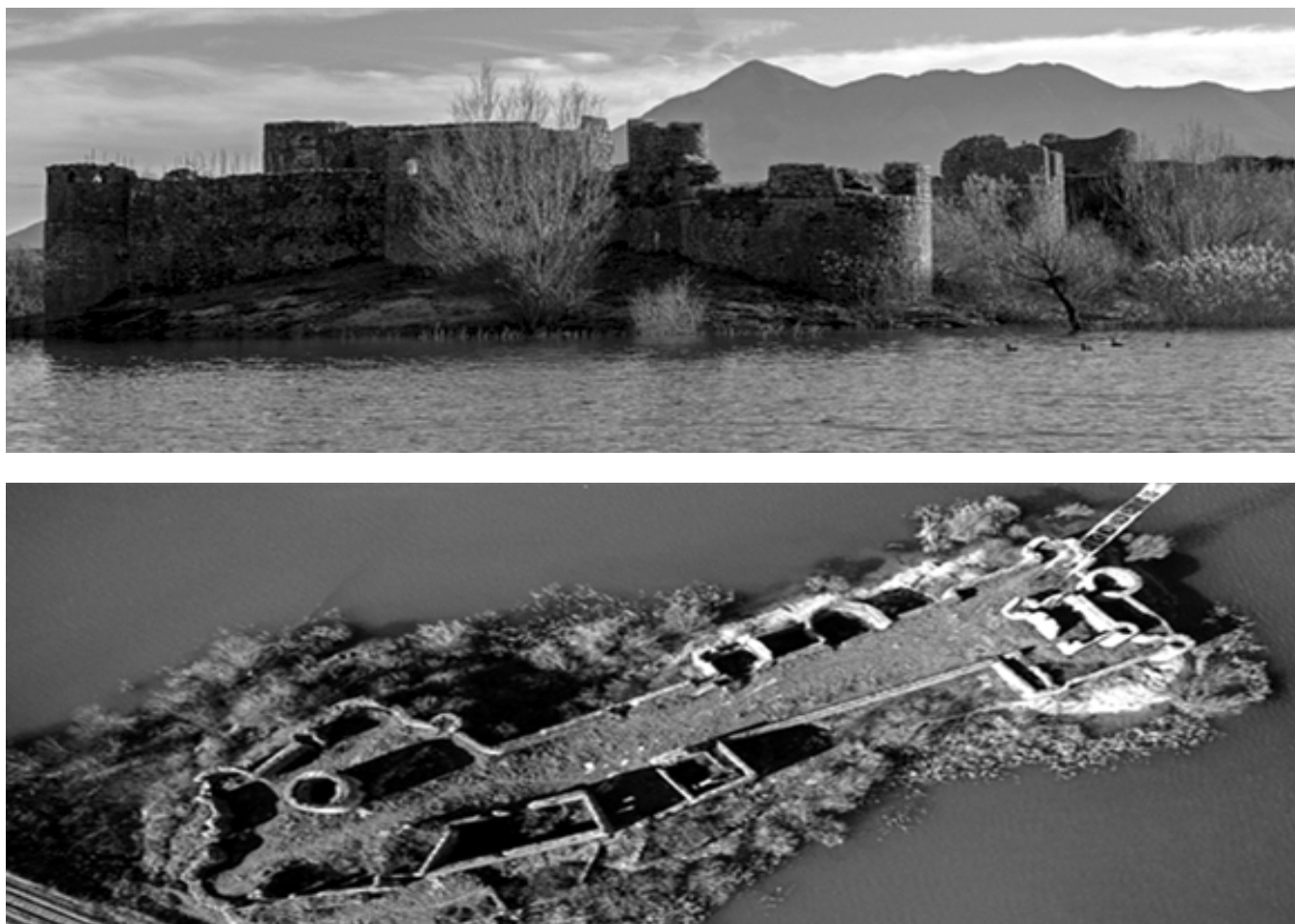


Figure 7. Lesendro (Photo: D. Starcevic).

3.2. *Life in the Past*

Some forms and features of the traditional culture of Zeta were recorded by travel writers from the end of the 19th and the beginning of the 20th century. Their impressions mostly refer to the border Zeta villages towards old Montenegro, descriptions of the rural landscape, traditional business, and clothing of the inhabitants, but also local cuisine, accommodation, landscape, and folklore. Analysing and comparing data from the past with the current situation, the Zeta region has changed radically in all areas of life of the community and of individuals in the last 150 years. The changes began after 1878 (Berlin Congress), and intensified after World War II, when Zeta shared the benefits of a longer period of peace, regardless of the diversity of the socio-political and economic system.

One of the most important sources for the life of Zeta in the 19th century is the travelogue of the Russian researcher Yegor P. Kovaljevski, who in 1872 published the “Montenegro and the Slavic Countries”. Among other things, he refers to the position of the Zeta plain and to its fortification by Zabljak, Podgorica, and Spuz.

Kovaljevski describes a visit to the Bijelo Polje in Zeta, and his accommodation at the guesthouse, which was a two-story house that in the lower part had space for livestock and storage of various items needed by the household, with the accommodation on the first floor for guests. The fireplace was on the floor, on which “the whole ram on the spit” was roasted.

Kurt Hasert, a famous German geographer who visited Montenegro for the first time in 1891, also gives a description of life in Zeta. His travelogues, published in Vienna, Pest, and Leipzig in 1893, are the first descriptions of Zeta made after the Berlin Congress (13 July 1878), that is, after the liberation of Zeta. Hasert arrived in Zeta at the end of September 1891. On the way to Plavnica, he crossed a 125-step arch bridge, on the Cijevna River. Along the way, he met hard-working peasants in characteristic Zeta cars loaded with local products. Details of life from that period are presented in the Figures 8 and 9.

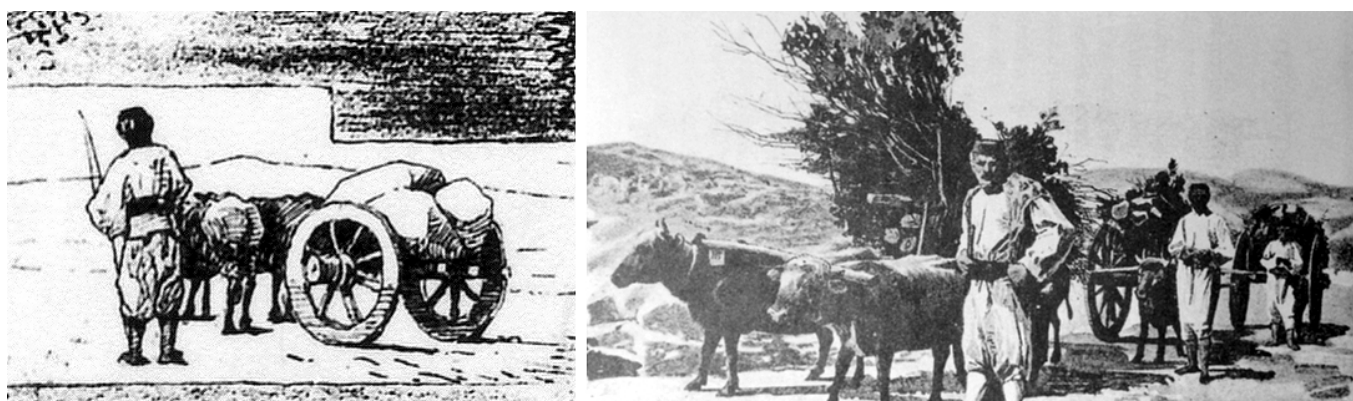


Figure 8. A bullock cart in Zeta, drawing by L Kuba, (1890).



Figure 9. Fisherman in Zeta by L Kuba (1890).

He noticed that the landscape changed as he advanced towards the lake. He recorded more fertile land and a more tame appearance of the landscape, with meadows, corn fields, orchards, and a lot of blackberry hedges. He describes “solid buildings” with white painted walls and decorated window frames. In the house where he was staying the ground floor was a small shop, where you could get coffee, sugar, brandy, rice, hats, fabric for suits, sandals, bottles, ink, and the like. He described the upstairs accommodation as a space with a fire in the corner and beds with blankets. During that stay in Zeta (Montenegro), Hasert performed appropriate measurements and studies and described the waters and winds of the Skadar Lake the appearance and nature of the inhabitants who skilfully managed the boats on the Skadar Lake.

The Czech geographer, politician, and alpinist, Dr. Viktor Dvorski, visited Zeta (Montenegro) twice (1906 and 1908). As Dvorski explains, the villages of that part of Montenegro were formed so that separate individual buildings formed settlements. Between the houses were “gardens and fields and tall trees”. Tobacco and corn were planted, and there were no permanent settlements near the Skadar Lake due to the risk of floods and malaria.

For Montenegrin ethnography, the famous book “Montenegro in the past and present” by Pavle A. Rovinski also contains descriptions of certain customs from Zeta.

3.3. Architecture of Traditional Houses from the Zeta Region

Construction systems and materials, but also systems of organisation of the space in and around traditional houses in rural areas have been the subject of research around the world [36–39]. However, there has not been much research into the functioning and construction techniques of rural houses in Montenegro. This was the reason for the research in the Zeta region.

Zeta is a fertile area and settlements were formed in the centre of trade communications. The location of the houses by the river was considered a good position. The most compact houses are in Vranjina, in Ponari and Vukovci.

A “pojata” (a type of hut on a peasant household) was spacious, had one big room, and a low dry-stone wall and a door facing East. The fireplace was located in the upper (Northern) part of the house, and next to it in the right corner was a place where bread was baked.

Towards the interior of the house, there was a “baun” (place for flour), and on it was placed a “vagan” and “nacve” (circular wooden rectangle for preparing bread). Along the west wall are beds, wooden suitcases for clothes, and laundry; on the wall is a shelf with smaller kitchen tools. The interior of the Traditional Houses of the Zeta area is presented on the Figure 10.

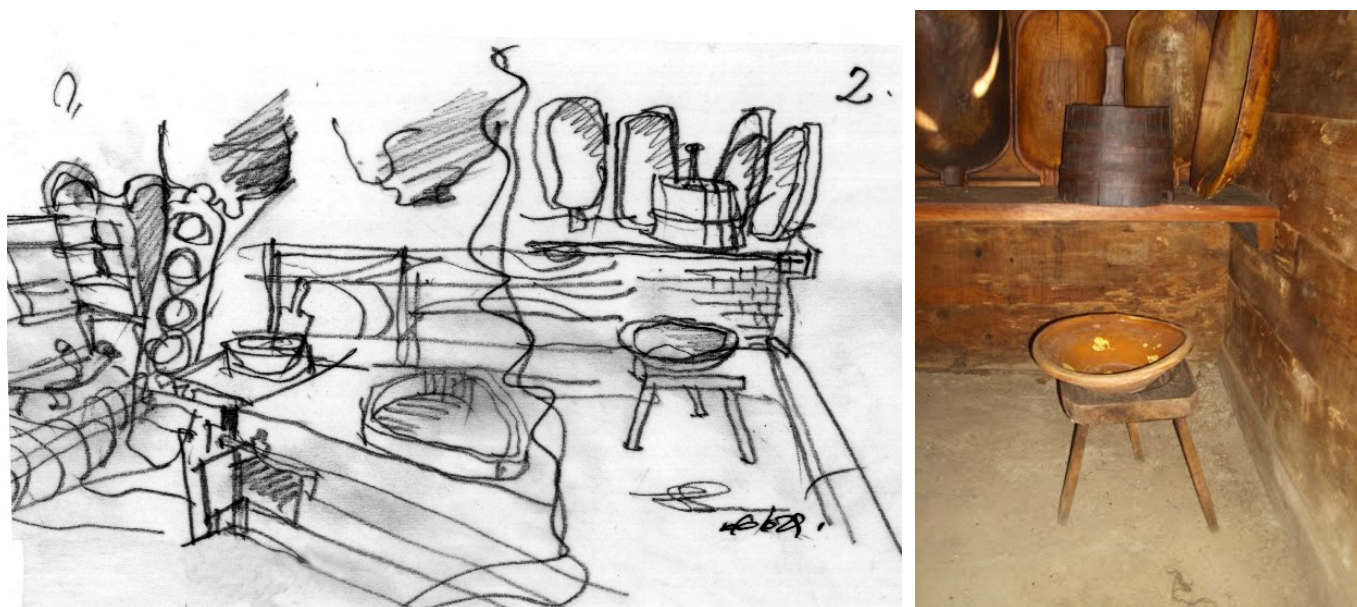


Figure 10. The interior of the Traditional Houses of the Zeta area (S. Popovic, G. Skataric, 2021).

Opposite the fireplace was a space for utensils for processing milk and storing cheese—“kaduc”, “stap”, and “pučerica”. Right behind the front door was a place for a water tank—a wooden tub “kaca sa cepcijom”. The bread was baked in large pots; it could weigh up to 10 kilos. Some believed that “there is no more beautiful and tasty bread in Montenegro.” Around the fireplace are arranged big chairs “stolovace” with small chairs

next to a low table “sofra” and wooden cutlery (sometime of copper), and wine was drunk with jugs called “krcag” and brandy with bottles (“boca”).

Along the longitudinal walls, there were beds with woollen blankets and if the house was one room, there were also wine barrels, baskets (“kasuni”) with butter and cheese, tubs with cheese, etc. Apart from houses, every dry and purpose-built economic facility was considered valuable property. Among them, the most important was certainly a stable for cattle (“pojata za stoku”). In the “Turkish era”, only those from the Turkish administration lived in large houses called towers (“kula”). In addition to housing, they could also have a defensive function. It was believed that the Lekic family towers were the most beautiful in Zeta. They had a dozen residential and economic rooms.

After the liberation of Zeta, the local population preferred to build towers rather than single-story houses, especially in the areas near to the Lake, in order to save the residential part of the house from flooding. Each better-built two-story house was considered a tower, and also a symbol of Montenegro’s traditional architectural heritage. Those houses allowed later alterations in the form of additions and partitions in order to adapt to the requirements of modern housing and remain inhabited. The towers (“kule”) in Zeta have been preserved in relatively large numbers, although they are older than a century. In general, according to our findings, if they are authentically preserved, they are in poor condition. The largest numbers of them were in the villages: Goricani, Golubovci, Mahala, Bistrica, Gostilj, Mataguzi, Gosici and other pre-lake villages and hamlets, where they have been preserved in their original form. Like with the other Montenegrin areas, towers (“kule”) were the most desirable form of home. Those types of houses were from time to time described in folk songs, and their owners and constructors were often respectable people of the community. Their characteristic is that the ground floor was used for economic purposes and only the first floor for residential purposes.

According to our research of the architectural heritage of the Zeta region (Montenegro), the existence of three types of traditional buildings has been established: (1) ground floor houses, (2) towers or houses on taverns, and (3) two-story houses with attributes of urban architecture in which people lived on the ground floor as well. The most numerous are the houses on the plinth (“kuce na cokli”), built in the 1860s, basically with the shape of the Cyrillic letter G (Latin letter L). The preserved construction fund of the ground-floor and tavern houses testifies that they were built of hewn stone with abundant use of lime between the two faces of the walls as filling.

The exterior facade of the house is plastered with lime and built with stone blocks of fine workmanship. On all the constructions of traditional architectural heritage, the corners have the best quality and finest workmanship, but also the frames of the windows and doors. Traditional residential buildings have a rectangular base, and they consist of longitudinal sides (ribs) and shorter, lateral sides (listra). The main facade, i.e., the “face” of the house, is usually facing East or West so that the longitudinal base of the house is oriented in a north–south direction. On older forms of houses, especially towers, the roof is partly lowered over the ribs in order to obtain a suitable shorter or somewhat longer canopy (roof or porch, “trem”).

The houses were usually built with one entrance. There were often two entrances for longer houses for two households. There were one or more windows in each room. Ground-floor houses and Zeta towers did not have rich household furniture and hygienic living conditions. The reason for this is that the farmers used all the strength and potential for the daily cultivation of the land. The land meant wealth and social status, but the large surfaces of the land they possessed did not significantly increase the comfort of living and the culture of housing. Both the largest and the most famous Zeta houses and towers were cold and did not have a bright interior, like other modest Montenegrin homes. Traditional furniture was also modest and contained only pieces that were of practical use. The culture of housing was linked to the family economy, so the number, size, layout, and equipment of the premises were reduced to a minimum. The central part of each house was the fireplace, and it was initially the whole house.

Houses built between the two World Wars, also made of stone, always had multi-part interiors. They had masonry chimneys instead of fireplaces, a balcony on the main façade, and a record of the year of construction above it. With the use of concrete, houses were built in a different way. Owners of new, so-called planned houses, from the 1960s returned to the construction of ground floor residential buildings, but always with foundations raised from the ground on plinths (“cokla”) with a multi-part interior and the appropriate number of windows in relation to the number of rooms. Socio-economic and historical circumstances have made the traditional type of house develop, change, and adapt, leaving behind transformed, but still traditional, houses.

The turmoil of the 1990s led to the complete discontinuity with tradition, which is best seen in houses. Economic and auxiliary facilities, formerly built on fields, meadows, barns, and gardens, have lost their traditional economic significance and have been transformed from agricultural land into construction land.

Based on our research experience, it was concluded that the highest ambient values of the settlements in the Zeta region were Vranjina, Plavnica and Berislavci, Ponari, and individual buildings such as old towers in Dubrava and Mataguži, houses and taverns in Gostilje, Golubovci, and Gosici, and examples of two-story old houses in Mahala and Mojanovici.

The fishing community of Vranjina is settled on the shores of Skadar Lake and is a cultural asset of Montenegro, protected in 1979. The same year the studied region experienced strong earthquakes, which destroyed old, authentically preserved houses from Vranjina. These well-known cultural heritage sites were reconstructed but in most cases without professional help from the Institute for Protection of Cultural Monuments. Therefore, for three decades we have had a “new” Vranjina with atypical architecture. Nevertheless, its historical, ambient, and landscape significance and features have been preserved. Still, there is a possibility of restoring a small number of originally preserved buildings and renovating new buildings under conservation rules.

The towers (“kula”) of Zeta had a defensive function in the border area. They undoubtedly represent a specific phenomenon of profane construction. Thus, in the settlement of Dubrave, the old Montenegrin tower, i.e., the border watchtower (a smaller fortress on the border between Montenegro and Turkey) has been preserved. The building is a large, stone, two-story building with a circular tower on the southwest side. The residential part of the building had taverns on the ground floor and an entrance to the tower. According to the partially preserved mezzanine construction, it can be concluded that the building was built primarily as a defensive one. The entire building was left without a roof and it is in a dilapidated condition, but the preserved structural assembly and architectural elements would enable an ideal reconstruction of the authentic appearance.

One of the border towers is located in Mataguži, and it is assumed that it was built at the end of the 19th or the beginning of the 20th century. It is called “Maric’s house”. The complex of the house contains residential, economic, and defensive parts, i.e., the complex consists of a house, walls, two gates, auxiliary buildings, inner closed yard, spacious outer yard in front of the southern (lower) gate with access, a water reservoir “ublo” on paved terrain, and a green area with tree lines. The base of the Maric house complex with walls is approximately of square shape. To the east, the residential area is located, and on the opposite side the economic part of the complex is present, while to the south and north are large covered gates. The massive gates with a gabled roof are authentically preserved, and the old wooden door is preserved at the south, as well as the inner stump with a loophole. The residential and economic part of this important architectural and historical complex is not authentically preserved, but it still clearly testifies to the historical conditions of the building, the culture of housing, and the continuity of life in this household.

The two types of old towers in Gosici are two-story houses and taverns with spacious courtyards facing east. The house of Andjusic is of a simpler type, and the houses of Vujacic and Skataric have a distinctly elongated rectangular base and was divided into two houses (i.e., households) by an internal partition at the beginning of the 20th century. The house of

Vujacic has wide walls built of stone with a subsequently plastered facade. On the ground floor, there are three taverns with an unplastered interior and numerous stumps. The first changes to the buildings of both houses took place in the 1960s, with the construction of the current concrete stairs and terraces. There was also a later redesign of the openings and the plastering and colouring of the facades.

Skrobanovic's house in Mojanovici is a real two-story house in which the ground floor and the first floor are used for residential purposes. The large two-story house with an attic and a balcony has an iron fence built of stone and is covered with a multi-pitched roof. That house was built in 1936, which can be seen by the carved and built-in stone slab on the main facade of the building.

From non-residential constructions and buildings, significant traditional buildings were mills, dams, schools, roads, and bridges, as well as "guvna" (Figure 11).

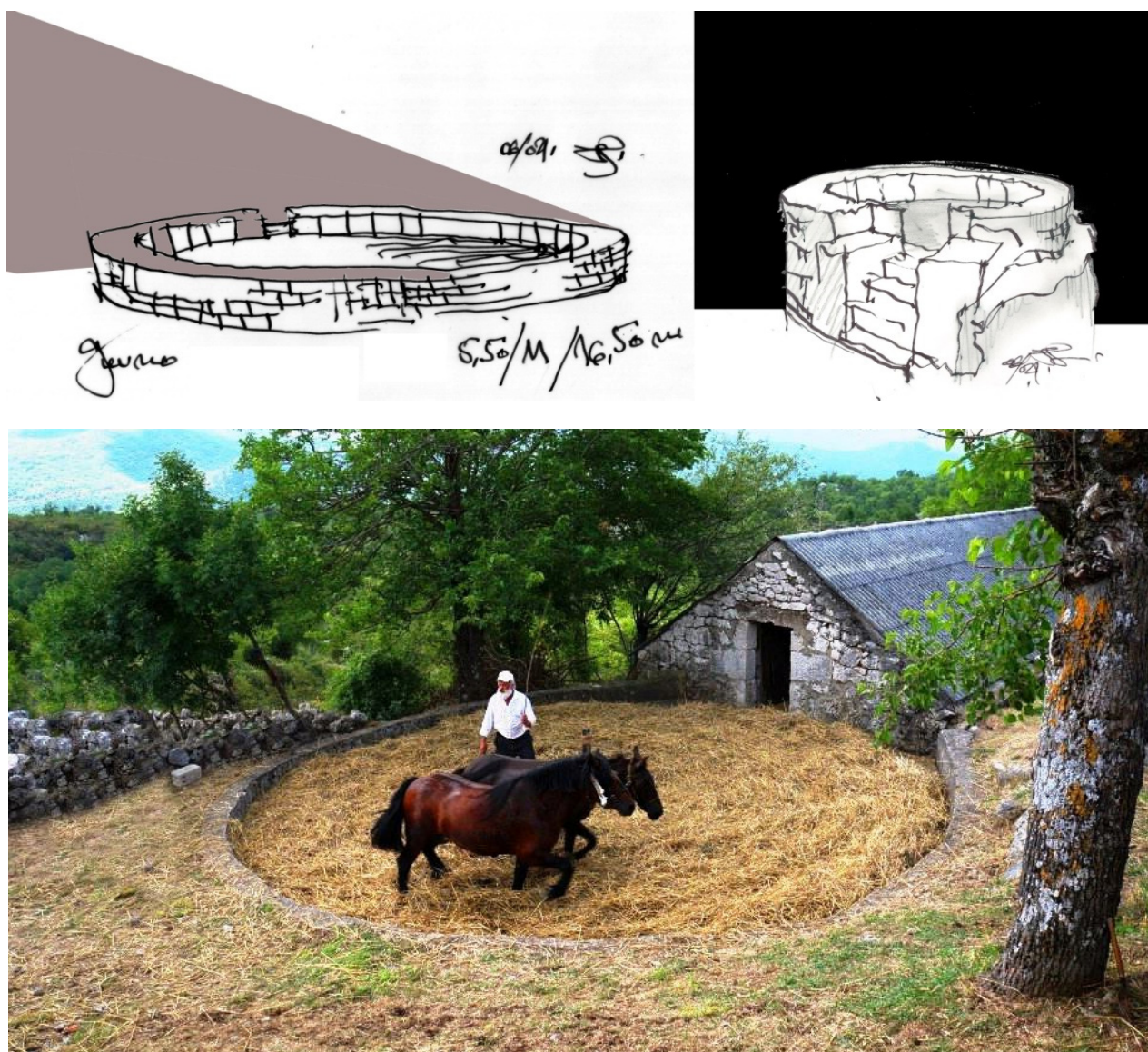


Figure 11. *Guvno*, Drawings, Svetislav G. Popovic, Photo, Braco Cosic.

Of all the buildings of traditional, non-residential construction, we did not record a preserved "guvna", although their mention in the past of Zeta is not uncommon. A guvno was a place of gathering for rural people, and in Montenegrin traditional culture it is considered a symbol of national cultural heritage.

Grain, wheat, millet, and sorghum were brought to the “guvno” and threshed there. After that, the cows or horses walk in a circle. On Sundays, farmers from Zeta, according to the interviews we performed, usually say: “After lunch, we’ll meet at the “guvno” to have a dance, sing songs, and make stories until nightfall”.

The technique of construction of a deep well from which water is lifted by a bucket on a rope has not changed for centuries. In order to prevent the collapse, they had to be walled up. Water was extracted in Zeta from a depth of six (6) to 16 m, depending on the terrain on which the ditches were dug. In Donja Zeta, water was found more easily and at a shallower depth, while in the areas of Cemovsko polje and around it, it was found at much greater depths.

3.4. Traditional Houses of the Rural Areas in the Zeta region of Montenegro

The origin of traditional houses of the rural areas in the Zeta region of Montenegro can be explored in the wider context of Mediterranean and Ottoman architecture. During the 19th–20th century, the houses of the Zeta region evolved into a distinctive architectural form with local specificities. The architecture of the houses built in the Zeta region from the second half of the 19th century–20th centuries is a product of a particular combination of several determinants. Spatial organization applied to building materials and structural systems were chief among them. As a result, they had much in common with one another. However, in contrast, each house is also a small independent world with its distinct socio-micro-spatial setting. As a consequence, every case study of the studied traditional houses is unique and it is important that we recorded it in a special database of the traditional houses of the agriculture and rural areas in the Zeta region, Montenegro.

Based on the vertical distribution of space, two basic typologies can be distinguished: single-story and two-story houses (majority). In contrast to the mountainous regions of Montenegro, the two stories are not because of the adjustment to the sloped terrain, as the Zeta region is a flat area. The point here is that the functional response to the way of life and the primary household activity, which is agriculture.

Horizontal spatial complexity is based on the principle of linear addition of rooms. The houses “are growing all the time” following the development of the families who live there, and to some extent to its socio-economic status. A house often has the shape of an elongated rectangle with a width range of 10–15 m. The single-story houses have two rooms; a central residential room (“kuca”) and another as an auxiliary space.

If, based on the vertical distribution of space, it is a two-story building, the basement is used for storage, and in some cases as a stable for livestock; and on the upper floor (upper story) are the living room and bedrooms.

Inner corridors are rarely found in traditional houses of the Zeta region. This is influenced by the climate with long and hot summers, so in-house communications, like those found in the mountainous regions, are not necessary. Visual harmony established through symmetry or asymmetrical balance was recorded during the field visits of this research. The examples of the most characteristic houses of this area are presented in Figures 12–22, and agriculture activities in the Zeta region on the Figure 23.

The studied region is seismically active, with a history of earthquakes and the possibility for catastrophic events. “Kamen”—hard natural stone taken from nearby—is one of the basic materials used in the construction of traditional Zeta houses. The good quality and resilience of the local material (“kamen”) explains the durability of the traditional Zeta houses. This material is well received by the local population, as the stones are considered a good choice for stabilization of indoor temperatures during the extremely hot summers when temperatures exceed 30 °C (June–September). Temperatures during July and August can exceed 40 °C [40,41].



Figure 12. Photos of the House of Skataric, Zeta region, Montenegro (Photo G. Skataric).

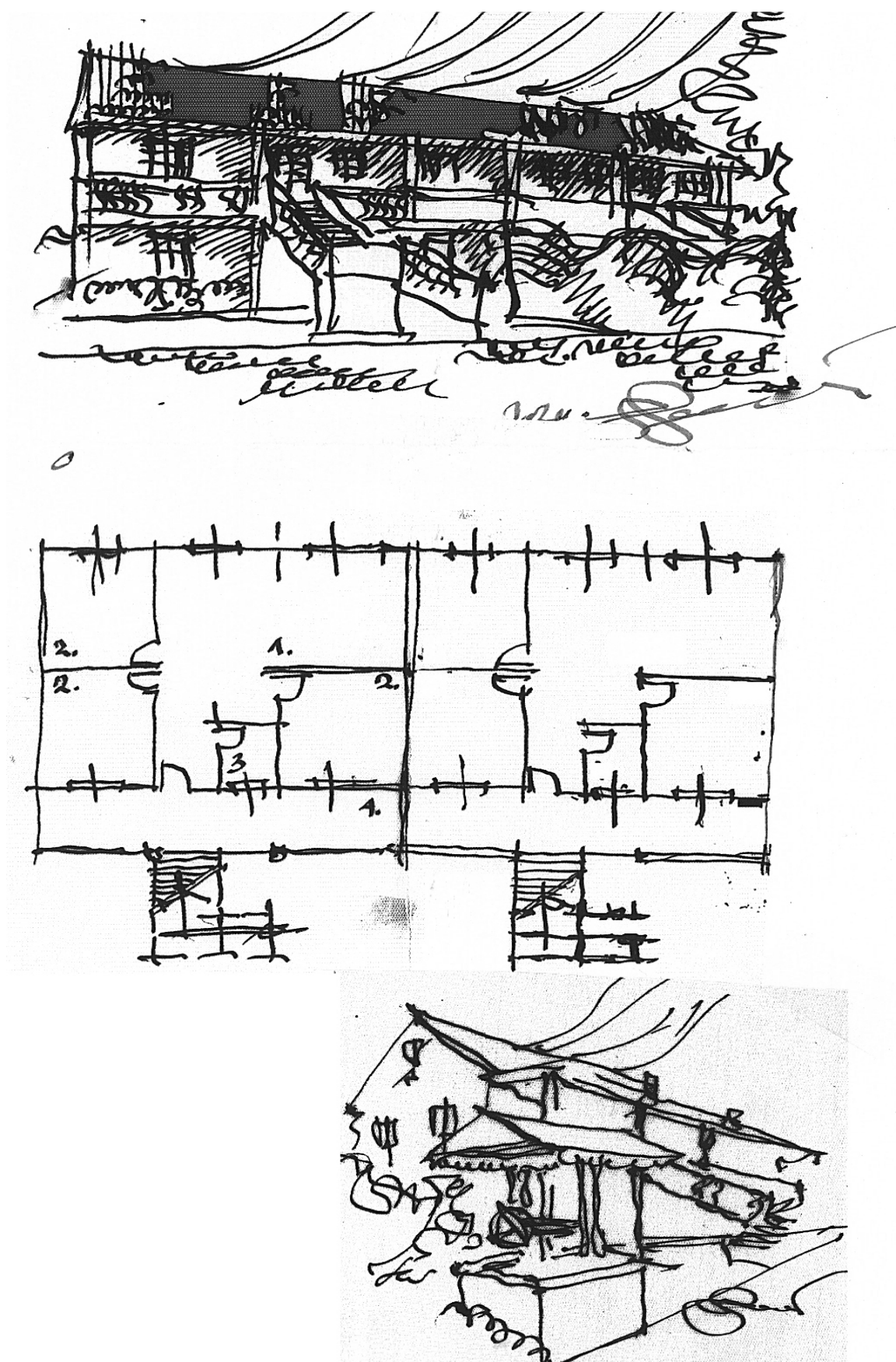


Figure 13. Drawing of the House of Skataric, Zeta region, Montenegro (S. G. Popovic).



Figure 14. Photos of the House of Skrobanovic, Zeta region, Montenegro (G. Skataric).

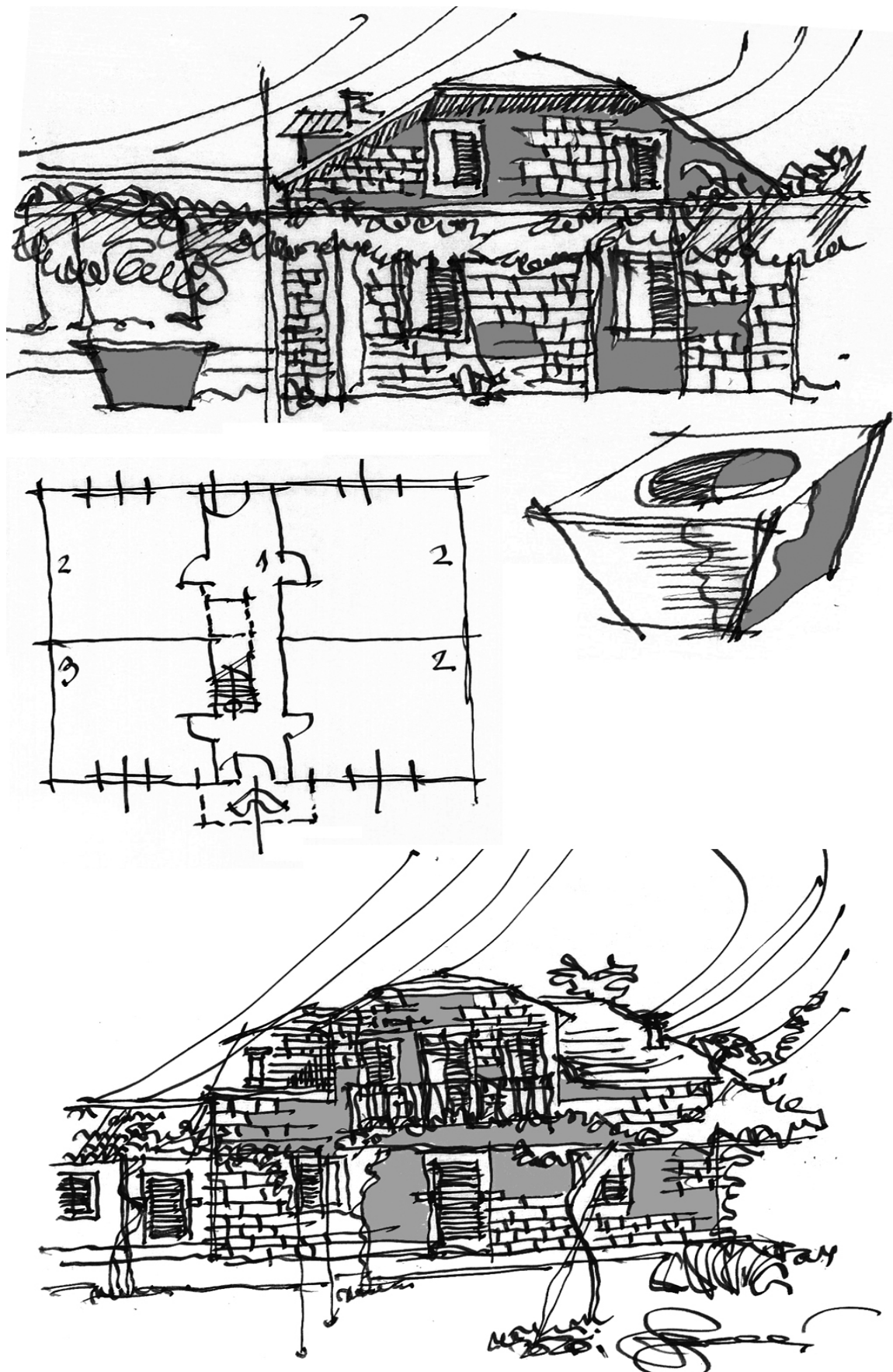


Figure 15. Drawing of the House of Skrobanovic, Zeta region, Montenegro (S. G. Popovic).



Figure 16. Photos of the House of Maric, Zeta region, Montenegro (G. Skataric).

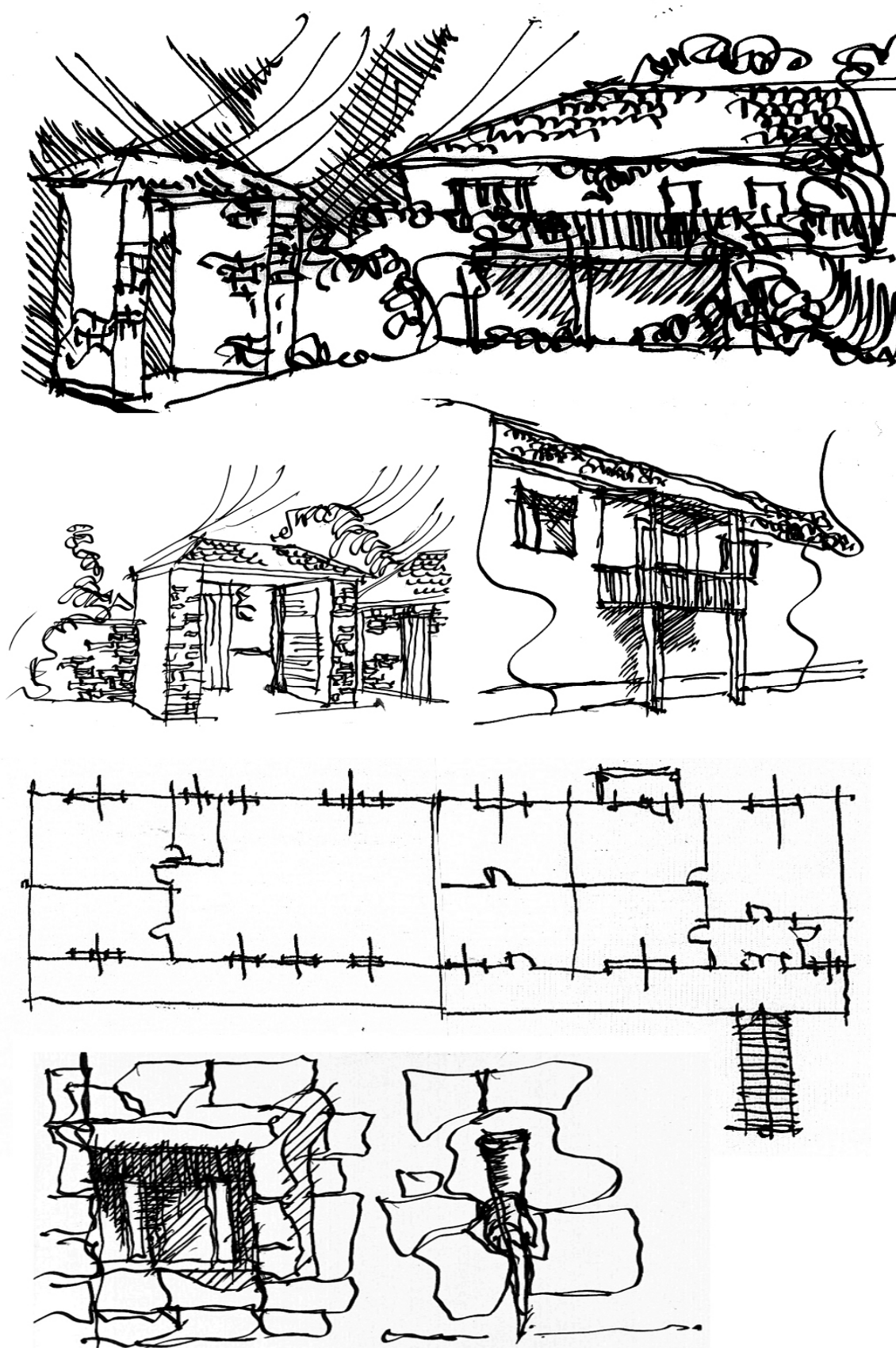


Figure 17. Drawing of the House of Maric, Zeta region, Montenegro (S. G. Popovic).

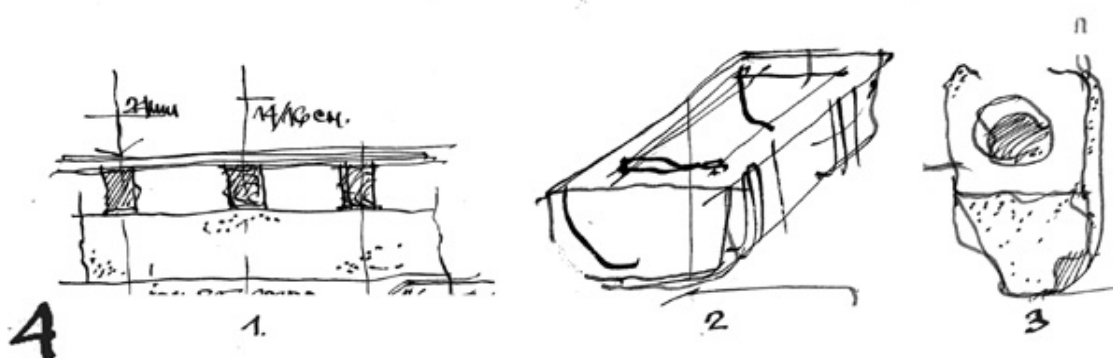
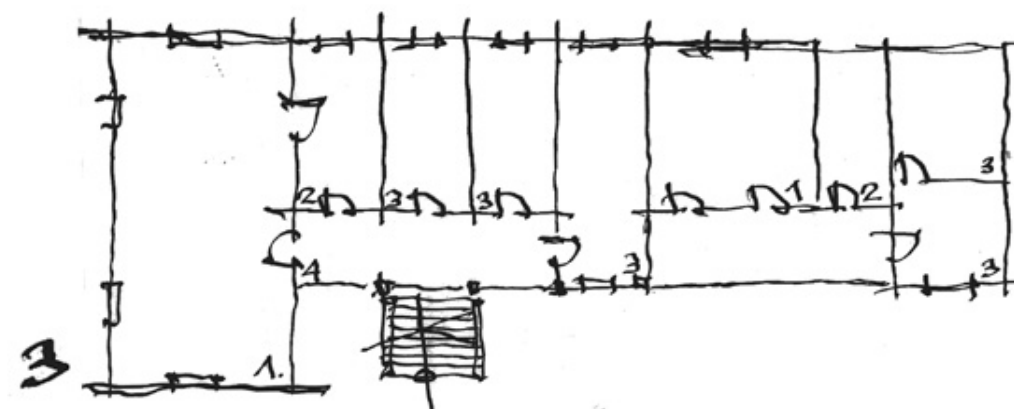


Figure 18. Photo and drawing of the House of Vujacic, Zeta region, (Photo G. Skataric).

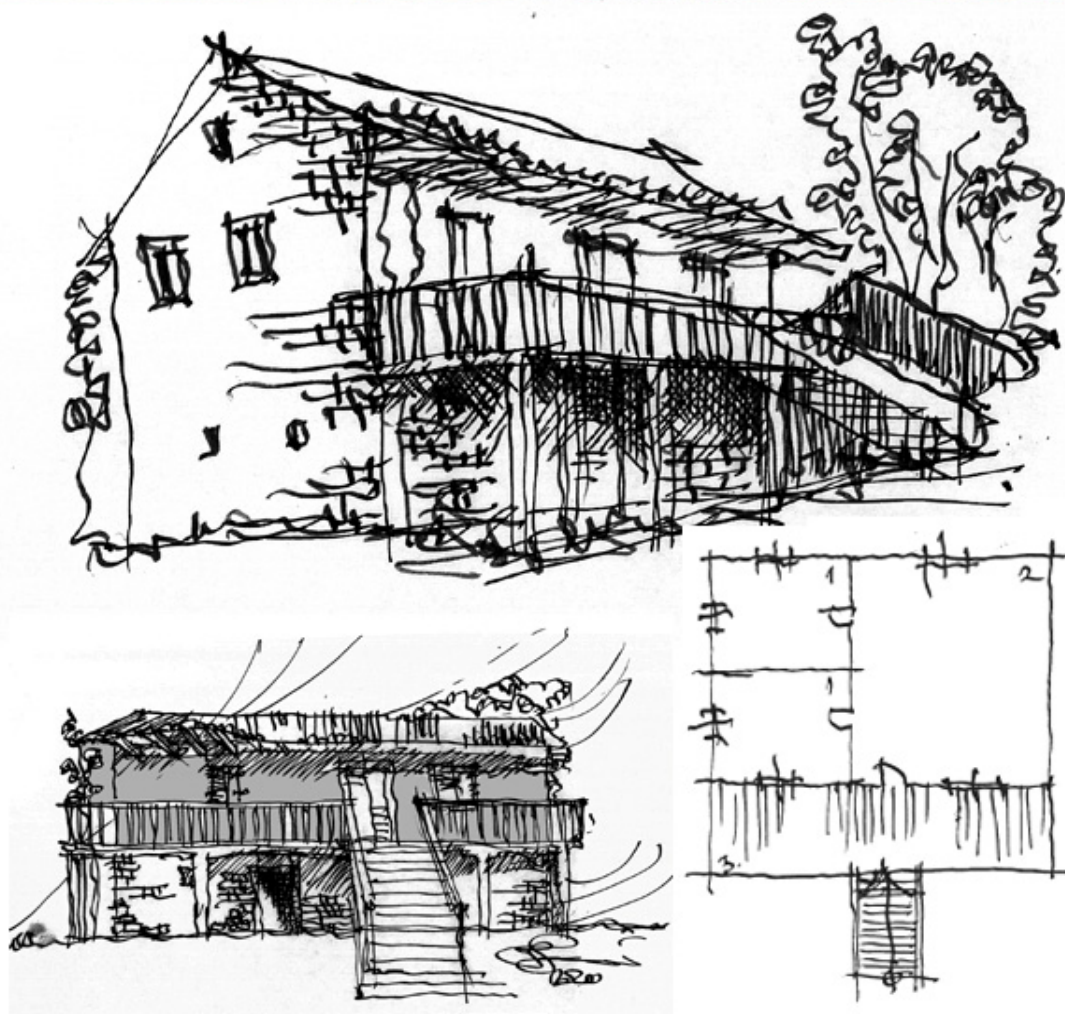


Figure 19. Photo and drawing of the House of Vukcevic, Zeta region (Photo G. Skataric).

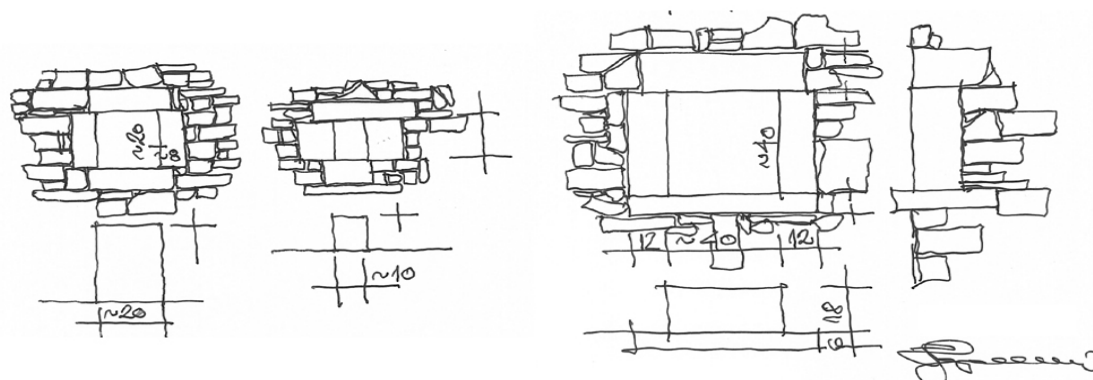
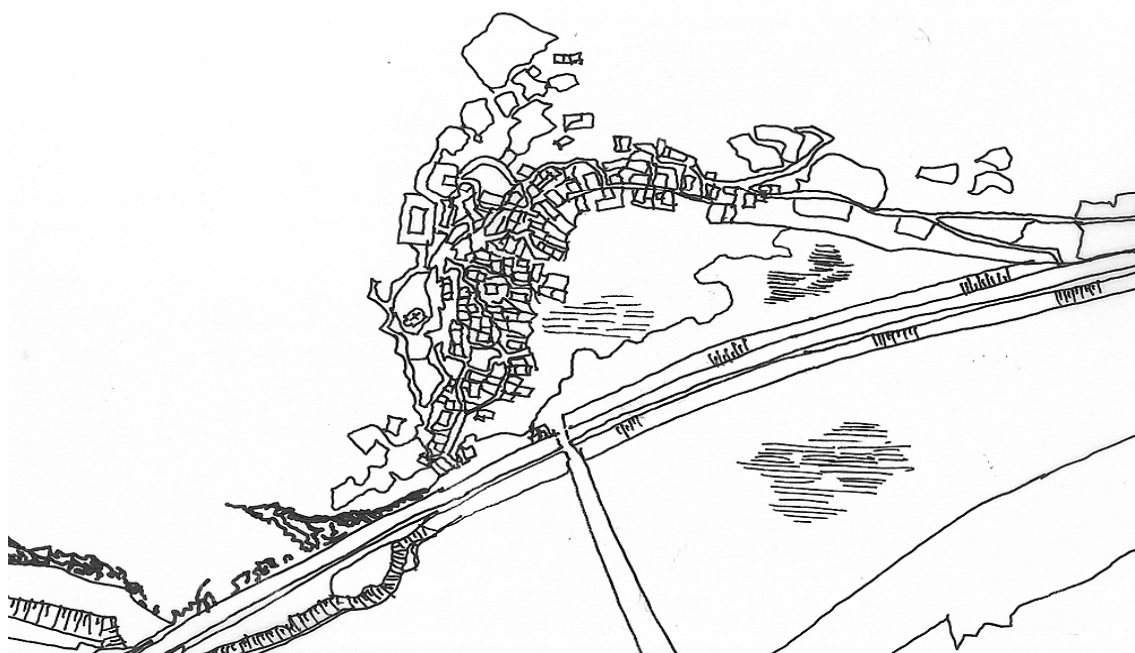


Figure 20. Photo and drawing of Vranjina settlement, Zeta region (S. G. Popovic).

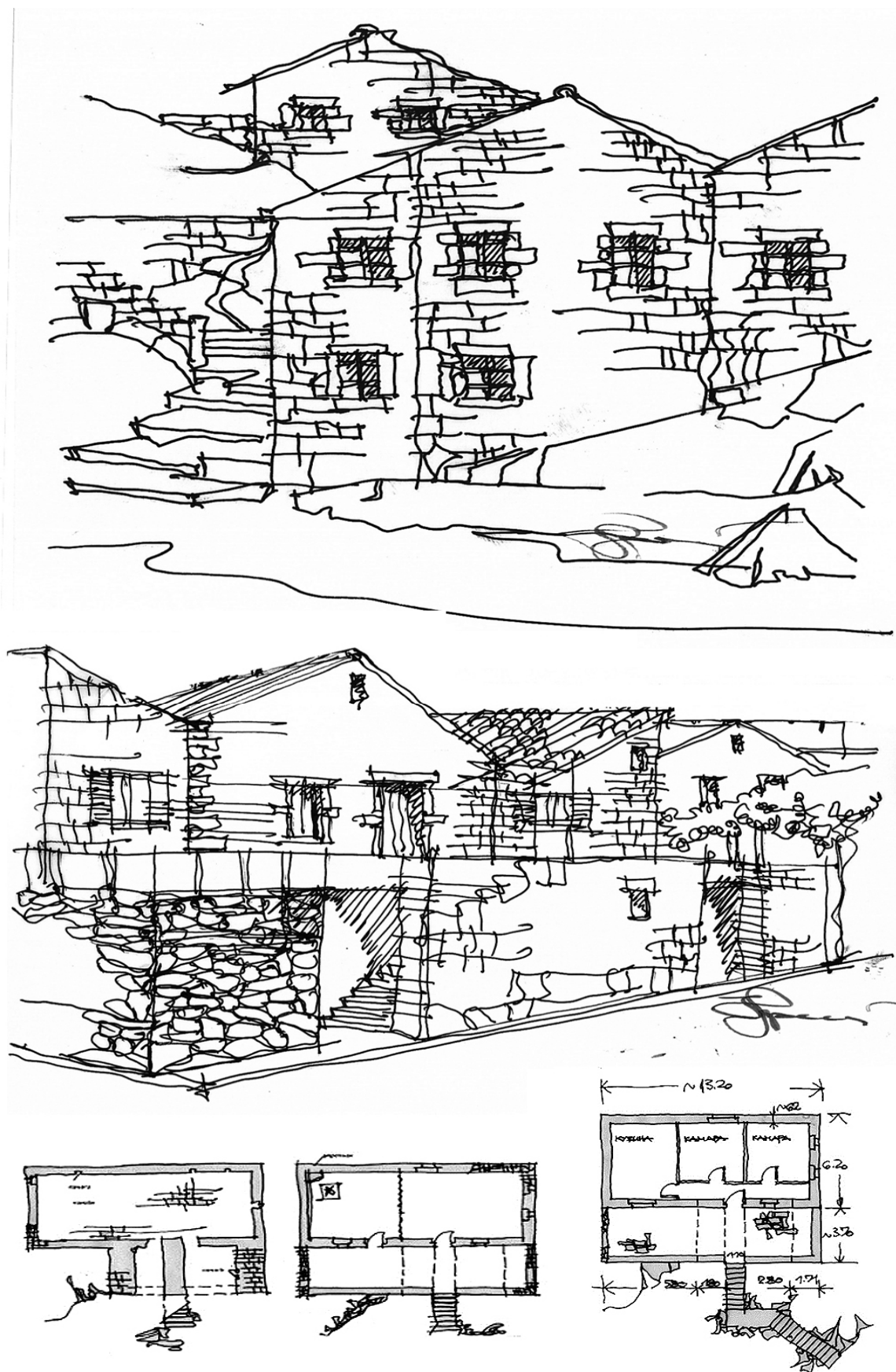


Figure 21. Drawing of Vranjina settlement, Zeta region, Montenegro (S. G. Popovic).

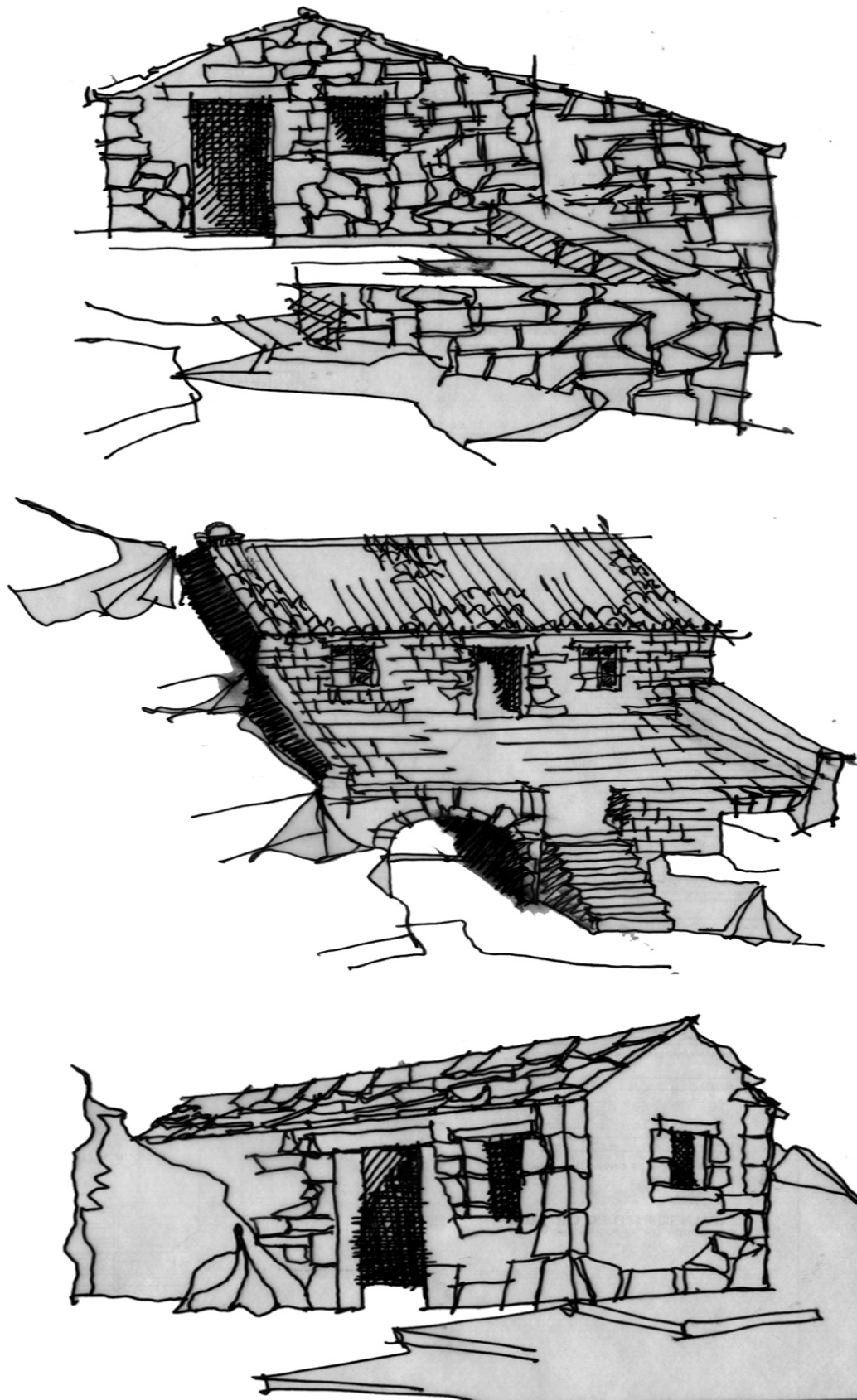


Figure 22. Drawing of Vranjina houses, Zeta region, Montenegro (S. G. Popovic).



Figure 23. Agriculture activities in the Zeta region, Montenegro (Photo: D. Starčević, [40]).

Stones are sometimes reused for reconstruction or the construction of new houses on the ruins of the previous constructions.

Wood (beech, walnut, and cherry wood are used in the manufacture of doors and window frames) is used for skeleton structure, the structure of roofs, and sometimes staircases. We recorded that some local constructors were smoking wood in order to increase the quality of the wooden material to be applied for construction.

The traditional houses of Zeta are characterized by massive walls made of stone and just in some rare cases of timber. The stone walls range between 60 and 80 cm and can even reach more than 100 cm at the lower stories and basements. Partition stone walls range

from 20 to 40 cm. In some cases, we recorded partition stone walls of 60 to 80 cm, but that was earlier the external wall, which became a partition wall after the extension of a house. The most common binder type used in the construction of stone walls was lime mortar.

Most outdoor staircases are made of stone, but timber staircases with steep stairs are often found in semi-open systems.

Exterior and interior wall surfaces of the traditional houses in the Zeta region were covered with lime mortar. At earlier times, the floor was mostly made of rammed earth, and in some cases of stone tiles. The upper-story floor cover consists of timber planks placed over a horizontal loadbearing construction. Exterior and interior wall surfaces and ceilings were painted with lime (calcium hydroxide).

Fresh water was originally provided from household wells next to the house. At earlier times, sanitary rooms were constructed as separate timber structures with the septic tanks in the soil below the sanitary rooms, far from the area where the wells are placed.

Thermal insulation was not usually applied since this region had a Mediterranean climate. The heating of traditional Zeta houses was achieved with wood stoves or open fireplaces at the centre of a room to enable efficient heat distribution. Individual heat sources were present in more than one room only in rare cases. The chimneys of open fireplaces were built into the massive façade walls, thus allowing for the use of the waste heat as a secondary source. During the day, the heat was directly generated from burning wood. During the night, the thick stone walls would release previously absorbed heat.

Master-builders of traditional Zeta houses perceive direct solar radiation as a significant threat to indoor summer thermal comfort, and that is one of the reasons they used stones for construction. Terraces from the upper floor usually provide shade for the basement and are comfortable spaces to spend time during the warm season.

Massive house structures provide effective temperature stabilization as they postpone heat radiation and protect the indoor space from overheating during warm summer days. In some positions, passive cooling during the night was enhanced with a cross-ventilation effect [32]. The rooms have large surfaces and heights of 2.4–2.7 m, and this in principle provides good spatial comfort. Light was not of primary importance initially as the farmers spent most of their time outside the house, especially during the warm part of a year.

We agreed with the findings of Süyük Makaklı [42] that the “vernacular tradition has the potential to make for the development of a sustainable future and may be integrated into contemporary building practices in order to create more appropriate settlements and buildings. It is important to retain awareness about the importance of preservation of these traditional houses and their environment”.

The results of this research case study can be transformed into a plan for the development of rural areas that expresses an organic vision in a broad territorial context. Selection should be carried out on the basis of the significance of the interventions, their replicability, and the financing opportunities that can be activated. The more the actions will be able to balance and integrate the ecological–environmental, landscape-fruitive, economically productive and socio-inclusive values, the greater the possibility of triggering a long-lasting processes of enhancement of rural heritage, with positive effects for both the rural and urban environment [43].

4. Conclusions

The thoroughly conducted analysis showed that the traditional houses of rural areas in the Zeta region, Montenegro represent a valuable material heritage whose significance surpasses local importance (in Montenegro). We base this finding on the fact that during this research we have recorded a lavish spatial–functional typology and a distinct architectural expression and essential characteristics of the very design of a traditional house in the rural region of Zeta, Montenegro. The results of the study determined numerous sustainable schemes and systems related to the characteristic design and construction of traditional houses in this rural area. In the research results, the described schemes have clearly shown their rationality; the presented systems are flexible and have durable valuable structural

solutions. Most of the materials used for construction are natural, available from the immediate environment, or manufactured locally. It can be concluded that traditional houses in rural areas in the Zeta region have a high level of spatial comfort, which also applies to pieces of furniture outside the physical boundaries of the house due to the direct connection with the local environment.

Having completed the research, we have defined the recognizable design, quality, and type of construction of traditional houses in rural areas in the Zeta region, Montenegro. We concluded that the context is not based on new principles of design and it is in relationship with the surrounding environment of individual buildings and/or groups of buildings and/or studied settlements. We also showed how general principles can be adapted and applied to future interventions in space. Analysis and later defining of the typology of traditional houses in rural areas in the Zeta region, Montenegro, could be an appropriate basis for their future reconstruction.

Field research we conducted in the period 2018–2021 indicates that the numerous interventions we observed on the studied buildings were necessary for almost all studied houses, but that all future interventions should concern the instinctive respect of local builders of ecological principles, quality, and recognized architectural values that meet current requirements. The survey also identified some significant weaknesses related to the sustainability of existing traditional houses in rural areas in the Zeta region.

Future interventions should improve, as far as possible, the energy efficiency of existing traditional houses in rural areas in the Zeta region. Current thermal protection is very modest and active conditioning mechanisms with the upgrading of insulation properties should be instigated at the earliest possible convenience.

Wastewater treatment and the use of septic basins are currently inadequate, leading to partial pollution of local groundwater and surface water. Although the use of water from wells is very common in this area, the efficiency of water consumption could be increased by introducing alternative water sources, like the collection of rainwater or by installing efficient indoor and outdoor facilities. Water is a global issue of the future.

New materials will be used in the reconstruction of existing buildings that are in poor condition, but it is necessary to recommend ensuring the preservation of traditional types of buildings and the use of natural materials whose ecological characteristics do not lag behind the distinctive characteristics of materials installed in existing traditional houses in rural areas.

The introduction of tax relief and a significant percentage of state support in the reconstruction of old houses and ancillary facilities that will respect the principles of traditional construction should be recommended to the governments of the region. From the analysis we carefully performed, we concluded that the possible use of synthetic materials for the construction of the facade and finishing should be intentionally avoided.

The reconstruction of traditional houses of rural areas in the Zeta region should also include resilience building. It is necessary to reduce the risk of damage from floods in the areas close to Skadar Lake, as flooding has already occurred in this area in the past. It is recommended to apply a holistic approach for every house on a case-by-case basis and to conduct the corresponding multi-criteria analysis. When the need for a more extensive scope of interventions can be justified, the regeneration of traditional houses in rural areas in the Zeta region could result in neo-vernacular architectural expression.

Transferring these research experiences from the past to the present and for future generations must involve a deep respect for nature, the environment, and the people who live there. The reconstructions of traditional houses of the rural areas in the Zeta region should be understood as a comprehensive strategy for the sustainable development of this important region of Montenegro.

People have been changing place of residence so as to be able to live off the land for as long as there has been separation between everyday existence and the need to produce with one's own hands. Starting from the message of Halfacree [44], the present paper suggests

the need for similar studies to investigate the ‘place’ of counter-cultural back-to-the-land movements.

In summary, people living in the Zeta area of Montenegro and the environment that surrounds them communicate with each other. The functional relationship between people and the objects they build matters. By studying the meaning of different architectural and rural design features, one can gain a better insight into the basic goals and values of the people who live there. This study aims to expand the cultural understanding of material heritage in the Zeta region, revealing the specific value of lesser-known traditional houses in this rural area in order “to apply meaningful preservation strategies to local heritage and incorporate this knowledge into concepts of sustainable rural housebuilding nowadays” [43]. The aim of this research, which was to gain a better insight into the significance of architectural and rural design features, was achieved.

Author Contributions: Conceptualization, G.S., V.S., and R.N.; methodology, G.S., V.S., and R.N.; formal analysis, G.S., V.S., S.P., N.P., and R.N.; investigation, G.S., V.S., S.P., N.P., and R.N.; resources, G.S., V.S., S.P., N.P., and R.N.; data curation, G.S., V.S., S.P., N.P., and R.N.; writing—original draft preparation, G.S., V.S., S.P., N.P., and R.N.; writing—review and editing, G.S., V.S., S.P., N.P., and R.N.; visualization, G.S., V.S., and S.P.; supervision, V.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Salgın, B.; Bayram, Ö.F.; Akgün, A.; Agyekum, K. Sustainable Features of Vernacular Architecture: Housing of Eastern Black Sea Region as a Case Study. *Arts* **2017**, *6*, 11. [\[CrossRef\]](#)
- Agost, M.-J.; Vergara, M. Principles of Affective Design in Consumers’ Response to Sustainability Design Strategies. *Sustainability* **2020**, *12*, 10573. [\[CrossRef\]](#)
- Tomovska, R.; Radivojevic, A. Environmental features of building materials of traditional Ohrid house and their contribution to its human design. In Proceedings of the 2nd International Academic Conference: Places and Technologies 2015, Nova Gorica, Slovenia, 18–19 June 2015; pp. 85–92.
- Lipovac, N. Planning as a Function of Preserving the Identity of Place. Ph.D. Thesis, College of Environmental Design, University of California at Berkeley, Berkeley, CA, USA, 2000.
- Popovic, S.; Lipovac, N.; Vlahovic, S. Planning and creating place identity for Podgorica as observed through historic urban planning. *Prostor* **2016**, *24*, 62–73. [\[CrossRef\]](#)
- Čurović, Ž.; Čurović, M.; Spalevic, V.; Janic, M.; Sestras, P.; Popović, S.G. Identification and Evaluation of Landscape as a Precondition for Planning Revitalization and Development of Mediterranean Rural Settlements—Case Study: Mrkovi Village, Bay of Kotor, Montenegro. *Sustainability* **2019**, *11*, 2039. [\[CrossRef\]](#)
- Parsipour, H.; Popovic, S.; Behzadfar, M.; Skataric, G.; Spalevic, V. Cities expansion and land use changes of agricultural and garden lands in peri-urban villages (Case study: Bojnurd). *Agric. For.* **2019**, *65*, 173–187. [\[CrossRef\]](#)
- Sokienah, Y. Aspects of Sustainability in the Design Elements of Traditional Jordanian Houses. *Civ. Eng. Arch.* **2020**, *8*, 1194–1201. [\[CrossRef\]](#)
- Popovic, G.S.; Lazarevic, S. Skadar lake cultural landscape and architectural heritage-Potential for the Development of Fisheries and Rural Tourism. *Agric. For.* **2021**, *67*, 255–269.
- Kosanović, S.; Fikfak, A.; Folić, B. Sustainability and resilience—(In)consistencies in two design realms. In *Sustainable and Resilient Building Design: Approaches, Methods and Tools*; Kosanović, S., Klein, T., Konstantinou, T., Radivojević, A., Hildebrand, L., Eds.; TU Delft Open: Delft, The Netherlands, 2018; pp. 67–81.
- Correia, M.; Dipasquale, L.; Mecca, S. *VERSUS: Heritage for Tomorrow, Vernacular Knowledge for Sustainable Architecture*; Firenze University Press: Firenze, Italy, 2014; 286p.
- Radivojević, A.; Blagojević, M.R.; Rajčić, A. The issue of thermal performance and protection and modernisation of traditional half-timbered (bondruk) style houses in Serbia. *J. Arch. Conserv.* **2014**, *20*, 209–225. [\[CrossRef\]](#)
- Tomovska, R.; Radivojević, A. Tracing sustainable design strategies in the example of the traditional Ohrid house. *J. Clean. Prod.* **2017**, *147*, 10–24. [\[CrossRef\]](#)
- Vuksanović, D.P. *Tradicionalna Arhitektura Crne Gore i Bioklimatizam*; Zadužbina Andrejević: Beograd, Srbija, 1998; 155p.
- Yüksek, İ.; Esin, T. Analysis of traditional rural houses in Turkey in terms of energy efficiency. *Int. J. Sustain. Energy* **2013**, *32*, 643–658. [\[CrossRef\]](#)
- Anna-Maria, V. Evaluation of a sustainable Greek vernacular settlement and its landscape: Architectural typology and building physics. *Build. Environ.* **2009**, *44*, 1095–1106. [\[CrossRef\]](#)

17. Sahebzadeh, S.; Heidari, A.; Kamelnia, H.; Baghbani, A. Sustainability features of Iran's vernacular architecture: A comparative study between the architecture of hot-arid and hot-arid-windy regions. *Sustainability* **2017**, *9*, 749. [CrossRef]
18. Nocca, F. The role of cultural heritage in sustainable development: Multidimensional indicators as decision-making tool. *Sustainability* **2017**, *9*, 1882. [CrossRef]
19. Nikolic, B.; Radulovic, M.; Spalevic, V.; Nenezic, E. Mulching methods and their effects on the yield of tomato (*Lycopersicon esculentum*, Mill.) in the Zeta Plain. *Agric. For.* **2012**, *52*, 17–33.
20. Spalevic, V.; Dlabac, A.; Jovovic, Z.; Rakocevic, J.; Radunovic, M.; Spalevic, B.; Fustic, B. The "Surface and distance Measuring" Program. *Acta Agric. Serbica* **1999**, *4*, 63–71.
21. Borovinic, N. Neolithization of Montenegro. Available online: <https://montenegrina.net/fokus/neolitizacija-crne-gore/> (accessed on 17 June 2021).
22. Radojicic, B. *Geographical and Encyclopedic Lexicon*; University of Montenegro, Faculty of Philosophy: Niksic, Montenegro, 2015; p. 863.
23. Radusinovic, P.S. *Population and Settlements of Zeta Plain from the Earliest to the New Age, 1–2*; Journal Publishing Company "Univerzitetska rijec" Niksic, Historical Institute of Montenegro: Niksic, Montenegro, 1991.
24. Radusinovic, P.S. *On Montenegro and Its Population*; Anthropogeographic and Ethno-Sociodemographic Treatises; Komovi, Andrijevic Publishing House: Andrijevic, Montenegro, 2002.
25. Markovic, C.; Vujicic, R. *Cultural Monuments of Montenegro*; Presmedij Novi Sad, Republic Institute for the Protection of Cultural Monuments of Cetinje: Novi Sad, Montenegro, 1997.
26. Hassert, K. *Travelogues, I-II, CID, Podgorica*; Publishing Center "Cetinje": Podgorica, Montenegro, 1995.
27. Groat, L.N.; Wang, D. *Architectural Research Methods*, 2nd ed.; Wiley: Hoboken, NJ, USA, 2013.
28. Cattaneo, T.; Giorgi, E.; Flores, M.; Barquero, V. Territorial Effects of Shared-Living Heritage Regeneration. *Sustainability* **2020**, *12*, 8616. [CrossRef]
29. Meuser, M.; Nagel, U. The Expert Interview and Changes in Knowledge Production. In *Interviewing Experts*; Research Methods Series; Bogner, A., Littig, B., Menz, W., Eds.; Palgrave Macmillan: London, UK, 2009; pp. 17–42.
30. Bogner, A.; Menz, W. The Theory-Generating Expert Interview: Epistemological Interest, Forms of Knowledge, Interaction. In *Interviewing Experts*; Research Methods Series; Bogner, A., Littig, B., Menz, W., Eds.; Palgrave Macmillan: London, UK, 2009; pp. 43–80.
31. Libakova, N.M.; Sertakova, E.A. The Method of Expert Interview as an Effective Research Procedure of Studying the Indigenous Peoples of the North. *J. Sib. Fed. Univ. Humanit. Soc. Sci.* **2015**, *1*, 114–129. [CrossRef]
32. Kosanović, S.; Folić, B.; Kovačević, S.; Nikolić, I.; Folić, L. A Study on the Sustainability of the Traditional Sirinić Houses in the Šar Mountain Region, the South-Western Balkans. *Sustainability* **2019**, *11*, 4711. [CrossRef]
33. Cattaneo, T.; De Lotto, R. *Rural-Urbanism Architecture. Design Strategies for Small Towns' Development*; Alinea Editore: Firenze, Italy, 2015.
34. Cattaneo, T.; Sha, Y.; Ji, Y. Architectural design strategies for the rural development in Europe. In *Urban Architecture (UA)*; Heilongjiang Science and Technology Press: Harbin, China, 2015; pp. 109–111.
35. Phillips, M. Counterurbanization and Rural Gentrification: An Exploration of the Terms. *Popul. Space Place* **2010**, *16*, 539–558.
36. Ngowi, A.B. Improving the Traditional Earth Construction: A case study of Bostwana. *Constr Build Mater.* **1997**, *11*, 1–7. [CrossRef]
37. Goodhew, S.; Griffiths, R. Sustainable earth walls to meet the building regulations. *Energy Build.* **2005**, *37*, 451–459. [CrossRef]
38. Delgado, M.C.J.; Guerrero, I.C. Earth building in Spain. *Constr. Build. Mater.* **2006**, *20*, 679–690. [CrossRef]
39. Karsten, L. Counterurbanisation: Why settled families move out of the city. *J. Hous. Built Environ.* **2020**, *35*, 429–442. [CrossRef]
40. *Monograph*; Municipality of Golubovci: Podgorica, Montenegro, 2017; pp. 1–220.
41. Scepanovic, A.; Vujovic, S.; Ivanovic, M.; Scepanovic, S. Body growth, development and nutritional statues of puberty children in urban and rural areas of Podgorica and Berane in Montenegro. *Agric. For.* **2019**, *65*, 89–98. [CrossRef]
42. Süyük Makakli, E. The Rural Houses of Akçakese—Istanbul. *Online J. Art Des.* **2019**, *7*, 275–291.
43. Mussinelli, E.; Riva, R.; Bolici, R.; Tartaglia, A.; Cerati, D.; Castaldo, G. The Technological Project for the Enhancement of Rural Heritage. In *Regeneration of the Built Environment from a Circular Economy Perspective*; Research for Development; Della Torre, S., Cattaneo, S., Lenzi, C., Zanelli, A., Eds.; Springer: Cham, Switzerland, 2020. [CrossRef]
44. Halfacree, K. From dropping out to leading on? British counter-cultural back-to-the-land in a changing rurality. *Prog. Hum. Geogr.* **2006**, *30*, 309–336. [CrossRef]