

Article

Derbent's underwater cultural heritage as a tourist resource

Eldar M. Eldarov^{1,*}, Sergey M. Fazlullin²¹ Faculty of Management, Dagestan State University, Makhachkala 367008, Russia² Department of Higher School of Restoration, Russian State University for the Humanities, Moscow 125993, Russia* **Corresponding author:** Eldar M. Eldarov, geodag@mail.ru

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Abstract: The article reflects the results of expeditionary works on revealing and studying historical artifacts on the bottom of the Caspian Sea near Derbent—the southernmost and most ancient city of Russia. The approaches to geographical study and mapping of the remains of ancient fortification architecture under water and other numerous finds of scuba divers in the area under consideration are described. The authors analyzed the specifics and results of underwater archaeological research from the point of view of the prospects for the development of diving tourism in the Derbent water area. The article also concludes that it is advisable to strengthen the integration of Dagestan historical and geographical science, which will allow researchers to reconstruct little-known pages of history with greater depth and accuracy. The constructive section of the article is devoted to the development of recreational diving and underwater museology in Dagestan, as well as to the general outlines of the underwater park project on the very southern coast of Russia.

Keywords: Caspian Sea; Derbent; diving; underwater historical and cultural heritage; underwater park

1. Introduction

Underwater archaeology was born when man had the opportunity to safely explore the depths of the sea in specialized diving equipment. Some believe that this happened in 1900–1902, when work was done to recover objects from shipwrecks of the II century BC near the island of Antikythera (Greece) [1,2]. Others refer to the very first of the most large-scale works in this area as underwater exploration and lifting operations near the town of Mahdia (Tunisia) in 1908–1913 (continued in 1948 and later) [3,4]. In those years, underwater exploration was carried out in bulky ventilated suits and rarely involved the direct participation of archaeologists.

The invention of the scuba in 1943 greatly expanded the possibilities and increased the efficiency of underwater archaeological research. The expeditions conducted in the Mediterranean and the Caribbean in the 50–70s were the richest in historical finds [5,6]. This raised the question of museification of underwater heritage sites, which in turn implies the formation of a special system of protection and the achievement of understanding by people (society, state) of the historical significance and cultural value of these finds [7].

The world practice of familiarizing people with underwater historical and cultural heritage provides for the formation of museum spaces both directly underwater and on land [8,9]. It is considered that underwater research routes can be combined with parks for divers, which specialize in demonstrating: 1) underwater landscapes, submerged gorges, and caves; 2) archaeological sites and ensembles; 3) sculptural creations and religious buildings; 4) transportation and military equipment in the form of submerged

ships and aircraft; 5) underwater arenas for entertainment (underwater hockey, underwater rugby, underwater rifle shooting, etc.).

It should be noted that the very process of perception of the volumetric-spatial composition of the underwater park is unique. In the marine environment, a person, as in weightlessness, moves freely in space, being able to consider objects at any distance from almost all sides [10]. Thus, the practice of people’s perception of cosmic conditions beyond the limits of gravity is mastered.

Visitors of underwater parks, in addition to directly diving to the exhibited objects, can use tourist submarines or boats with a transparent bottom; walk in glass helmets and inside the corridors of underwater museums [11–13].

Underwater parks are most actively developing in the Mediterranean. Among them, the most famous are Baia (Italy) and Old Caesarea (Israel). Diving services in these underwater parks are similar: visitors are offered several types of underwater routes, each lasting up to 40–45 mins.

The Cancun Underwater Museum of Art in Mexico is particularly popular among divers. It opened in 2010 and now boasts almost 500 sculptures that are submerged to a depth of two to ten meters in two different galleries (**Figure 1**). The gallery at Punta Nizuc is located off the southern end of Cancun’s hotel zone. It is not recommended for scuba diving tours, as it is only four feet deep. Snorkeling is practiced here—a type of swimming under the surface of the water with a mask and a breathing tube and usually with flippers. It is fun and educational for both children and adults. The other underwater gallery is located in Manchones, off the coast of Isla Mujeres, and ranges from eight to ten meters deep. Scuba diving is the preferred way to view the sculptures here [14].



Figure 1. Price lists of underwater tours from Isla Mujeres and Cancun [14].

The world’s largest underwater theme park has recently opened in the Arab state of Bahrain, located on the southern shore of the Persian Gulf. The area of this park is 100,000 m², or 10 hectares. The central object here is a deliberately flooded Boeing 747 aircraft. In addition to the plane, various statues are being installed in the park, artificial coral reefs are being formed, and a copy of the “traditional Bahraini trading store” is being created [15].

There are still no underwater parks in the Russian Federation. However, the construction of a park for divers in the Black Sea lagoon of Gelendzhik resort has already begun. Dagestan is the closest to the idea of creating underwater tourist parks on the Caspian coast of the Caucasus. Four diving parks are planned to be created in the southern coastal zone of this national republic of Russia: “Khazar”, “Ancient Derbent”, “Patriot” and “Samur”. All of them will work according to the standards of the best Mediterranean underwater parks.

There is every reason to believe that some areas of the Dagestan coast of the Caspian Sea will eventually become quite competitive both in the Russian and international underwater tourism markets [16,17].

In sensitive and vulnerable underwater environments, effective diving management is required to protect the unique natural and cultural values hidden underwater. Sustainability of the marine environment is a major global issue that can be addressed by host local communities interested in both stable income from attracting tourists to attractive places and strict protection of these places from destruction [18,19]. At the same time, an understanding arises of the need to integrate economic and ecological systems and the interests of users and owners of underwater tourism resources [20–22].

Thus, the Dagestan coast of the Caspian Sea has all the prerequisites for organizing the diving industry in accordance with the best international practices in the next 5–7 years [23].

The purpose of this article is to analyze the most important results of underwater historical and cultural research in the coastal part of Derbent over the past 60 years to determine the prospects for the museification of underwater objects and the development of diving tourism in this part of the Caspian Sea.

2. First experience of underwater archaeological research in the region

To the first complex hydroarchaeological research in the coastal zone of Derbent, it is accepted to refer underwater works, which were conducted in August 1961 by a group of Leningrad scientists under the leadership of the outstanding Russian historico-geographer and ethnographer Lev Gumilev [24]. One of the main tasks of this 10-day expedition was to study the condition of the sea-flooded parallel walls of the famous Derbent defense structure, which descended from the Naryn-Kala citadel located on the northeastern spurs of Mount Jalgan to the shore of the Caspian Sea. A medieval engraving of ancient Derbent with its fortress walls is presented in **Figure 2**.

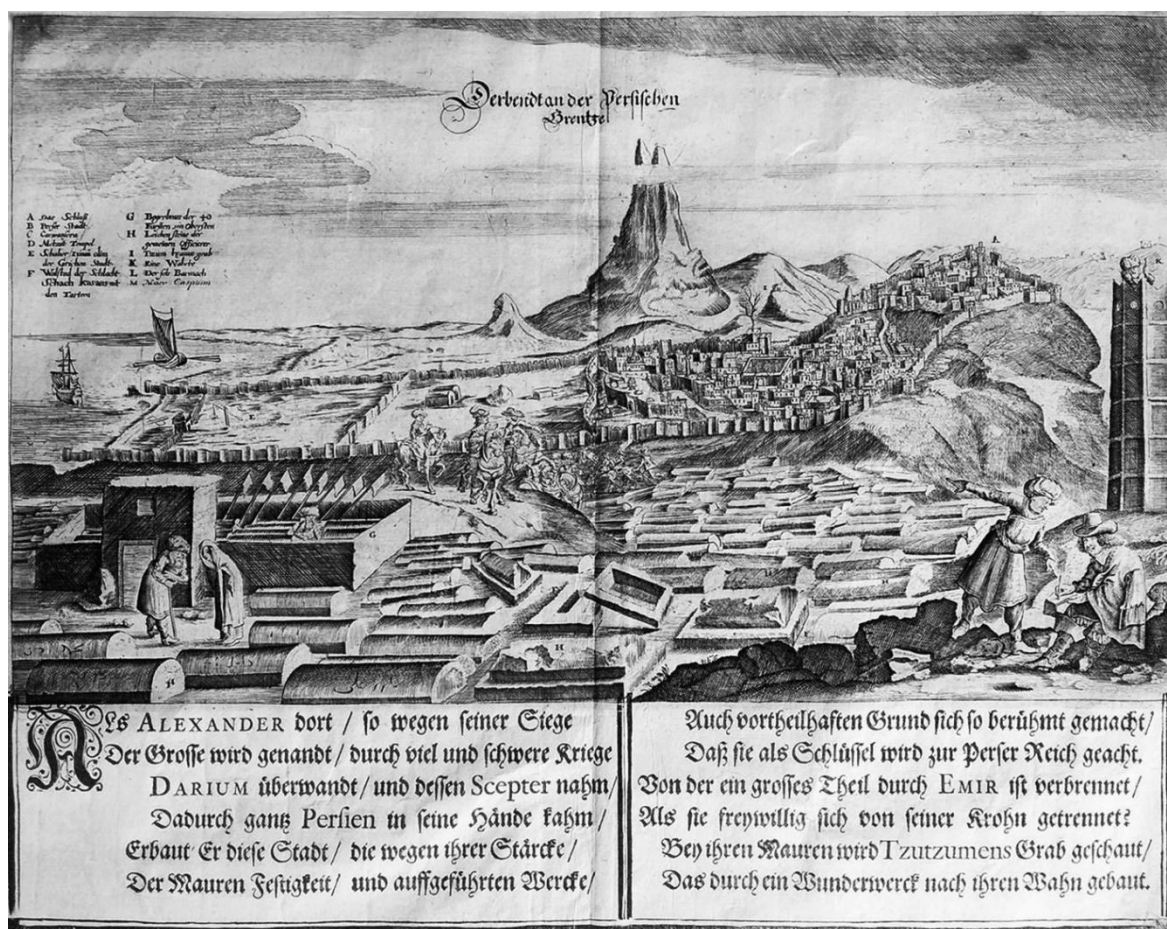


Figure 2. A picture of medieval Derbent with its defensive longitudinal and transverse walls. (View from north to south).

Here is what L.N. Gumilev writes: “It should be said that the preservation of the southern wall in the land part is very poor. Most of it was destroyed during the construction of the lower city by the sea. This city did not fit into the ancient boundaries and expanded to the south. But the destruction could not have touched the sea bottom, and if so, the absence of the remains of the south wall under water is not the fault of men. We had to draw the inevitable conclusion that the southern wall was built not simultaneously with the northern wall but when the level of the Caspian Sea rose to minus 25 m or higher and there was no need to protect the sea. But then the place of ships’ anchorage protected by the chain could not be bounded from the south by the continuation of the southern wall, and no chain could stretch half a kilometer without powerful stone supports, and there were no such supports on the southern side of the fortification. Obviously, the descriptions of Arab geographers referred only to the northern wall” [24].

In the second half of the 1960s, an underwater detachment of employees and students of the Lomonosov Moscow State University Geography Department worked in Derbent for several summer seasons [25]. The geographers faced the main task—underwater geomorphologic study of ancient coastlines in connection with historical fluctuations in the level of the Caspian Sea [26]. Nevertheless, the expedition devoted some time to the study of the remains of the northern city defense wall of Derbent, traceable in the form of rubble stones at a distance of up to 300 m from the shore (**Figure 3**).

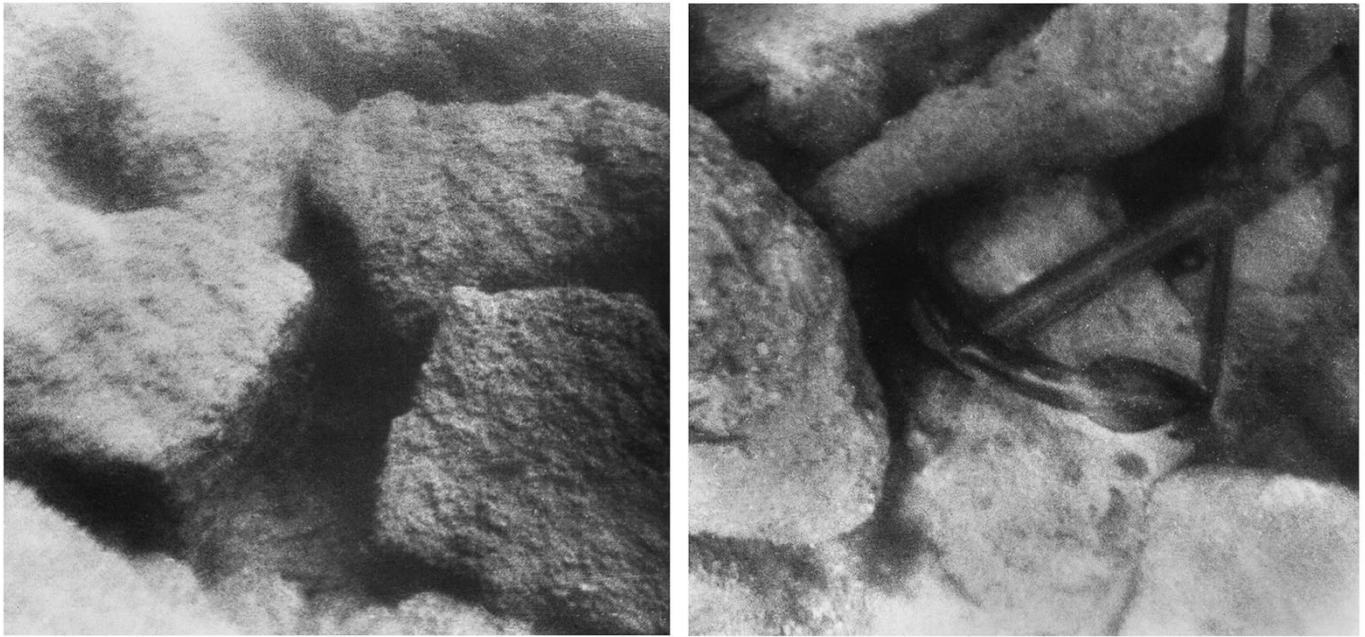


Figure 3. Underwater ruins of the northern defensive wall of Derbent at a depth of 5 m.
Source: Underwater photography made by E.I. Ignatov in 1968 [25].

In the 1980s, the scientific specialists of the Dagestan branch of the USSR Academy of Sciences under the leadership of Alexander Kudryavtsev started a very thorough underwater archaeological research program [27,28].

Numerous dives by this group of scientific specialists were accompanied by very interesting findings. The work was carried out with the involvement of volunteers from several Moscow diving clubs within five seasons. During the survey of the water area of the ancient port, numerous items were found, including various ceramics, fragments of glassware, including a whole glass bracelet of the IX-X centuries, architectural details and crafts made of stone, metal tools, ingots of non-ferrous metals, various fishing gear, and stone and metal anchors [29]. Among all the objects recovered from the seabed, a variety of stone anchors deserve special attention, which are represented by rectangular, sometimes trapezoidal, large blocks with two or three holes in the upper and lower parts (**Figure 4**).

One of the results of the expedition of the Dagestan branch of the USSR Academy of Sciences was the confirmation of L.N. Gumilev's conclusion that the Derbent harbor lacks any signs indicating the presence of a southern wall here in the past. In their article, A.A. Kudryavtsev and M.S. Gadzhiev categorically stated that there was no southern sea wall as such during the construction of the Derbent defense system of the VI century [30].

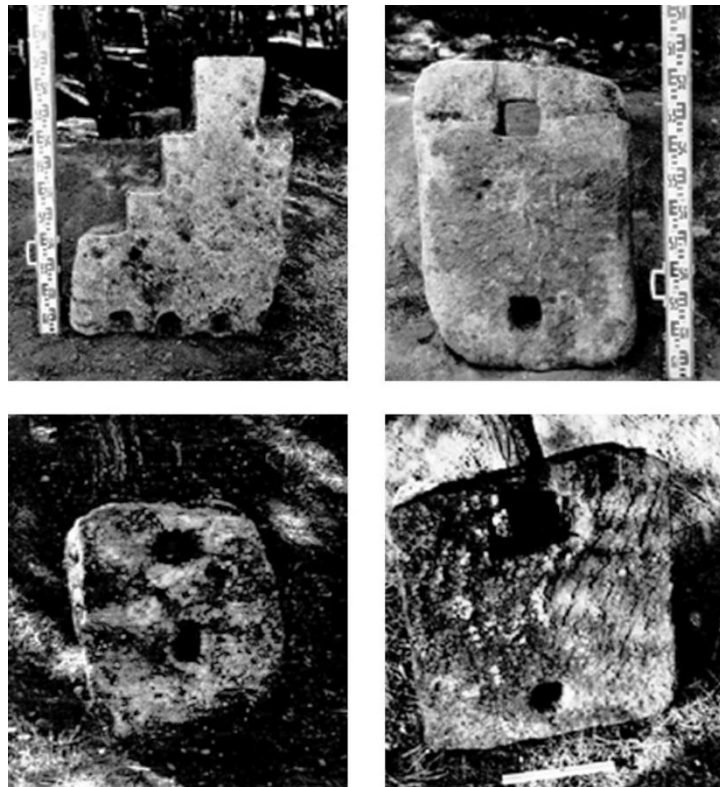


Figure 4. Ancient stone anchors raised from the bottom of the Caspian Sea near Derbent.
Note: Photo from the early 1980s [29].

3. Underwater and near-shore remnants of Derbent’s defensive walls

The city of Derbent is one of the most economically and militarily strategically important parts of the Caspian lowland. Here the mountains of the Greater Caucasus come closest to the sea, leaving only a narrow 3-km strip of plain. The famous Derbent fortress is part of a grandiose defense system that protected the peoples of Transcaucasia and West Asia from nomadic invasions from the north. The system included city walls, citadels, sea walls, and the Dagbary Mountain Wall [31].

According to the unanimous testimony of Arab authors of the IX-X centuries, who first described Derbent’s defensive structures in detail, the northern and southern city walls were far into the sea. Medieval authors have no unanimous opinion about the length of the walls going into the sea. According to some sources, the walls reached the length of one mile (1 Arab mile is about 2 km), according to others—3 miles, according to others—6 towers. If we take into account that the distance between the towers on the northern wall is about 70 m, the length of the walls will be 400–420 m [32].

The analysis of the data of ancient authors clearly indicates that defensive walls were built and used not only as an obstacle to bypass the city in shallow water along the coast but also as an artificial harbor and a marine defensive structure. The reality of this point of view is also evidenced by the fact that Derbent was the largest port on the Caspian Sea in the Middle Ages.

The Moscow merchant Fedot Kotov, who visited Derbent on his way to Persia in 1624, wrote: “...And the city stands with its end on the mountain and the other end in

the sea. And they say that the sea took thirty towers from that city. And now the tower stands in the water, great and strong” [32].

Underwater archaeological research of the Soviet period, in which Leningrad, Moscow, and Dagestan archaeologists participated, allowed us to conclude that there were no signs of the southern defensive wall of Derbent. Instead, the remains of a breakwater in the form of a pile of slabs and large stones, as well as a number of medieval Muslim stone tombstones, can be traced at the very edge of the sea. According to Dagestani historians, the initiative to build this bridge belongs to Peter the Great, who stopped here during the famous Persian campaign of 1722 (**Figure 5**).

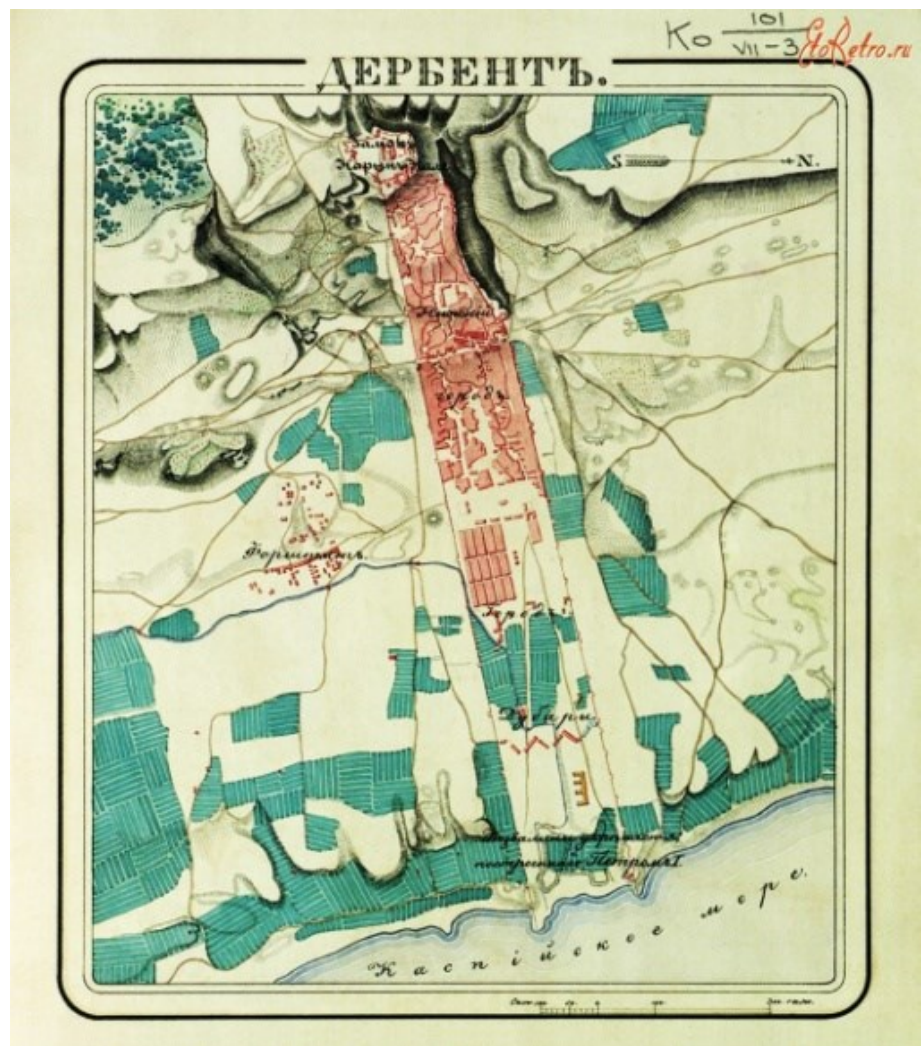


Figure 5. Plan of the city of Derbent in the first quarter of the XVIII century.
Source: Site EtoRetro.ru—photos of old towns.

In the summer of 2012, at the invitation of the Dagestan branch of the Russian Geographical Society, the first expedition of the RGS underwater team from Kazan, led by Dmitry Shiller, arrived in the republic. The expedition was called «Caspian Atlantis» because it was supposed to survey the remains of seaside buildings, which are now on the bottom of the Caspian Sea as a result of marine transgression. The sea regression was especially noticeable in the period from about the middle of the 6th century A.D., when the Caspian Sea marks were about -32 m, i.e., they were about 3

m lower than the modern ones. It was at the time when a large defensive complex appeared in the Derbent Passage, the walls of which reached the sea beach. But by the end of IX—beginning of X centuries—the sea level rose to -28 m, close to the modern mark. A number of Caspian coastal settlements, as well as a part of the Derbent fortification complex, were submerged under water and at a rather remote distance from the coastline [33].

The remains of the southern wall of the Derbent citadel were the main object of the study expedition of the Kazan divers. The Kazan residents proceeded from a scientific hypothesis, which they were introduced to by the head of the Dagestan branch of the Russian Geographical Society, Eldar Eldarov. The essence of this hypothesis is reduced to two main points.

Firstly, due to the unstable level regime and very active coastal lithodynamics of the Caspian Sea, the condition of the coastal zone of Derbent has changed greatly compared to the 1980s, when maritime archaeological surveys were last conducted here. The entire coastal zone of coastal Dagestan has been subject to a rather strong anthropogenic impact. During the last decades of the twentieth century, practically all dune massifs of the central and southern parts of the seacoast of the republic were withdrawn for construction needs. This has led to a significant reduction in the mass of the coastal sand rampart, as well as to the exposure of many stone ridges and ledges, which were previously preserved by underwater sand. At the same time, these processes can also reveal new archaeological sites previously buried under sandy sediments.

Secondly, the efficiency of underwater research has increased dramatically in recent decades as a result of the introduction of new technologies and electronic devices—comfortable scuba diving equipment, wrist-worn depth gauges and other parameters of the aquatic environment, compact cameras for high-quality photo and video recording, portable GPS navigators and echo sounders connected wirelessly to laptops, and so on. Dagestani geographers also noted other objective circumstances that made it possible to rely on interesting historical and archaeological discoveries in the modern conditions of underwater sand masses formation of the Derbent coastline.

The result of the first (four-day) expedition of the underwater detachment of the Russian Geographical Society was in principle a sensational conclusion about the presence of the remains of the southern wall of medieval Derbent at a sufficient distance from the shore. This was shown by a visual inspection of the bottom area along the trajectory of the southern wall, where Kazan divers found and filmed on an underwater video camera actually a continuous line of piled stones, from 300 m to about 350 m long from the modern sea edge to depth marks from 7.5 m to 8.5 m [16].

The current regressive stage of hydrodynamics in the Caspian Sea has led to the exposure of other previously poorly visible elements of the Derbent defense complex to the surface. It is about the transverse wall of this complex, which is now clearly traceable in the nearshore zone of the sea at a distance of about 190 m (**Figure 6**).



Figure 6. Section of the seaside transverse wall of the Derbent defense complex.

Source: Photo from the side of the Northern Wall of Derbent, March 2021[34].

This is the lowest of the three transverse walls of Derbent, which in the middle of the VI-VIII centuries divided the space of the city between the longitudinal northern and southern defensive walls into four parts [34]. Now the remnants of the lowest transverse wall stretch along the seashore from the northern longitudinal wall at a slight angle to the south and further disappear in the sands. The distance between its extreme points is not less than 360 m. Judging by its direction, it was once almost perpendicular to the southern city wall. According to A.A. Kudryavtsev and M.S. Hajiyeu, the distance from this seaside transverse wall to the coastline during the construction of the Derbent defense complex (it is 560s AD, when the sea level was approximately from -31.5 to -32.0 m) was at least 150 m [31].

It should be noted that in 2021, presented in **Figure 5**, the transverse wall of Derbent was included in the “Unified State Register of cultural heritage objects (monuments of history and culture) of the peoples of the Russian Federation” as an object that has the features of a cultural heritage object and archaeological heritage object, “Transverse defensive wall of Derbent” [34].

Starting in 2021, research work in the coastal part of Derbent continued. The nature of these works has acquired new features. The main task since the summer of 2021 was to involve already discovered historical and cultural objects in the tourist turnover and to continue studying the underwater environment of the Caspian Sea with a complex of modern geophysical and diving methods. Since the summer of 2021, the Moscow branch of RGO and Russian Underwater Activities Confederation (supervised by S.M. Fazlullin) has been conducting complex coastal research in the water area of Derbent under the program “Marine Historical and Cultural Heritage of

the Caspian Sea". The first year of the program was devoted to the analysis of materials of archaeological research in this area, conducted in the early 1980s by A.A. Kudryavtsev, M.S. Gadzhiev, and S.V. Gusev. Objects lifted from the seawater and now stored in the collections of the Derbent Museum-Reserve were studied. The expedition leaders established scientific ties with the Dagestan branch of the Russian Geographical Society and the Derbent City Administration.

In 2022, for the first time, this program explored the waters of the ancient port using side-scan sonar (SSS). This allowed the extensive underwater areas to identify mounds of stones that once formed the harbor walls and quay elements.

In 2023, geophysical works in the water area of Derbent were continued. Most of the water area, where the remains of the fortress wall material are supposed to be found, were surveyed with a portable side-scan sonar complex. In sum, the location of mounds of heterogeneous material on the extension of the North and South fortress walls was confirmed.

In the area of a stone ridge a few kilometers north of the remains of an ancient port, evidence was discovered in 2023 that made it possible to assume the existence of an ancient anchorage in the place now Kosa. These evidences, first of all, include twelve stone anchors found earlier in the area and described in 2023 by S. Fazlullin, which are similar in material and shape to the anchors found in the 80s in the Kudryavtsev's expedition.

In the following year 2023, representatives of the Moscow Region, Dagestan, and Tula branches of the Russian Geological Society took part in conducting and providing underwater archaeological works. The work program included both research by the side-scan sonar complex and exploratory underwater dives. The data array obtained with the help of side-scan sonar showed that separate noticeable clumps with boulders up to 50 cm, as well as separate blocks, are distributed in the water area of the ancient port from the depths of 2.5–3.0 m and occupy the area of the seabed up to the depths of 5–6 m. Such mounds are found both on the continuation of the line of the Northern City Wall and traced on the continuation of the line of the Southern City Wall.

A diving survey showed that fragmented pottery is quite common throughout the water area of the ancient port. Both stone and metal anchors were recorded. An atypical for the Caspian Sea T-shaped iron anchor was found, rather characteristic of Byzantine medieval ships. Another interesting find is a bronze mortar. Preliminary chemical analysis of this object showed that the bronze itself has an atypical composition, with almost no tin but lead and palladium in noticeable concentrations. In addition, the surface of the mortar is covered with a thin film of lead.

Scientific materials obtained over the past few years have made it possible to justify the creation of the Derbent underwater archaeological expedition in 2024 under the leadership of S. Fazlullin, funded by a grant from the Russian Geographical Society.

Expected in 2024, discoveries of marine cultural heritage objects of the Caspian Sea will undoubtedly enrich knowledge in the field of history and archaeology of this most ancient city of Russia. These expeditionary studies involve not only experienced marine researchers and RGS volunteers but also scientific youth from the Russian State University for the Humanities (RSUH). The planned scientific and expeditionary work will be combined with seminars and practical training with RGS research divers.

This will make it possible to train the necessary number of specialists for future underwater archaeology work within the framework of this expedition [17].

4. Prospects for the development of underwater parks and tourist diving

Based on the data obtained in the field seasons 2021–2023, it can be stated that the Caspian Sea near Derbent has a significant potential for the development of tourist diving. The city has all the necessary environment for the organization of at least two underwater parks in the coming year or two. With the development of the tourism industry in the south of Dagestan, the number of underwater parks, according to our estimates, can increase up to four.

Typically, the staff of one underwater park for all types of tourists (real diving, snorkeling, observation through the transparent bottom of a boat, and underwater virtual tours) includes a director, three managers, two shift nurses, two equipment maintenance specialists, six lifeguards, two dive instructors, ten dive guides, four service boat workers (sailors), etc. This is about 30 people. The vast majority of workers will be representatives of the local community. This means that only due to diving in the tourism industry of Southern Dagestan, up to 150 highly paid jobs will appear. In one underwater park, with the help of 10 dive guides, about 100 tourists can be immersed in water in one day. If we consider that the summer diving season in Southern Dagestan lasts 120 days and dives will take place daily, then one underwater park here will be able to accommodate up to 12,000 people. The economic effect of this will be \$600,000. From the point of view of the Dagestan tourism market, such profitability provides good opportunities for sustainable growth of the diving business in this region.

As the level of the Caspian Sea decreases (at the current regressive stage of the evolution of this water reservoir, the level of the sea decreases by 5–7 cm annually), we can expect the new ruin elements of historical architectural structures to appear within the borders of Derbent. With a particular approach, there are all possibilities to museify these architectural elements and introduce them into the touristic turnover.

It is clear that according to the complex of specific features, the most promising places for construction are the Derbent seashore water area a few meters south of the stone cape Kosa (underwater park Khazar) and in the area of submerged defensive walls of the city (underwater park Ancient Derbent).

The seashores south of Derbent are also of high tourist value: about 20 km away, where currently the Dagestan Cultural and Historical Park Patriot (underwater park of the same name) is under construction, and 30 km away, where the National Natural Park Samurskiy les (underwater park Samur) has recently been established (**Figure 7**).

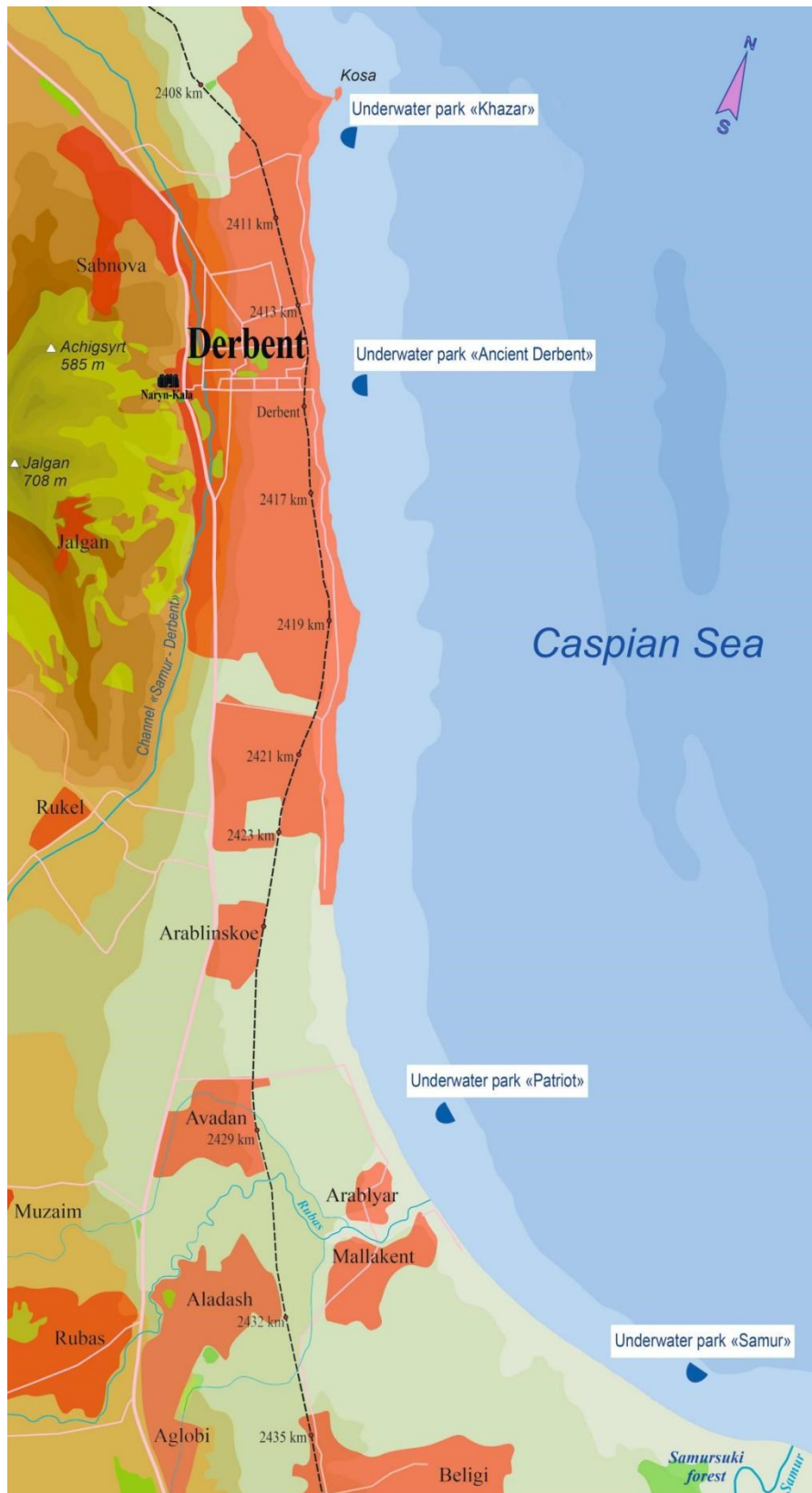


Figure 7. Forecast scheme of underwater parks location in the southern part of Dagestan.

In their sum, these four destinations, from Derbent to the Samur River, on the southernmost seashore of Russia and Dagestan, will allow to create an independent

tourist cluster of water and underwater activities, satisfying the most diverse demands of tourists.

The project of the underwater park consists of land and sea parts. Accommodation facilities and tourist amenities, sports and entertainment-cultural zones, a dive center and a marine sports center, and a thalassotherapy service center will be located onshore. The marine part will include natural (Sarmatian limestone ridges) and artificial reefs, groups of underwater sculptures, and art objects. They are so popular among scuba diving enthusiasts. It is also possible to create a depository of underwater archaeological finds and some large fragments of historical ships. In the coastal part, it makes sense to build a marina with the possibility of accepting sailing and motor yachts, providing excursions for tourists and cruise ship passengers [35].

It should be noted that this project will be the beginning of technical development of marine underwater historical and cultural parks in the Russian Federation. This is fully in line with the modern strategy of tourist development in the southern coastal territories of the country. It should also be taken into account that the use of the Derbent water area with the historical and cultural evidences located there for the development of cognitive tourism corresponds to the current global trend of «Geographical Turn» in museology [36,37].

5. Conclusion

The recent discovery of underwater ruins of the southern fortification wall of Derbent was facilitated by geographical ideas about the regularities and peculiarities of lithodynamics of the coastal strip in the area of this city. This indicates the importance of the challenge of closer cooperation between representatives of historical and geographical science. It is obvious that strengthening the integration of historical and geographical knowledge will lead to a significant expansion of our understanding of those spatial and temporal processes that objectively took place at different stages of natural and social evolution in the most ancient city of Russia. Ultimately, this kind of integral knowledge of geographical space-time allows for a deeper and more accurate reconstruction of little-known pages of history.

Current efforts towards the creation of underwater parks and tourist diving routes in Derbent will fully contribute to expanding access to underwater cultural artifacts of the Caspian Sea.

Another important point is the involvement of local communities in the protection of underwater cultural heritage. Even if the locals were not involved at the beginning of the creation of an underwater park or underwater route, it is imperative that they be involved at a later stage.

Finally, a special program for the development of the Dagestan Cultural Heritage Protection Agency should be developed and implemented in public practice. It will be aimed at strengthening control over the preservation of underwater attractions in the coastal area of the southernmost region of Russia.

Author contributions: Conceptualization, EME and SMF; methodology, EME and SMF; software, EME; validation, SMF; formal analysis, SMF; investigation, SMF; resources, EME and SMF; data curation, SMF; writing—original draft preparation,

EME and SMF; writing—review and editing, EME and SMF; visualization, EME; supervision, SMF; project administration, SMF; funding acquisition, SMF. All authors have read and agreed to the published version of the manuscript.

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