

Report from Durrës after Earthquake Non-Normative Buildings

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Abstract

Durrës is a city of historical and economic importance. With an important geographical position, the city has a harmonious development in terms of culture, economy, and history, with an important port where the past lives with the present and develops the future. The city of Durrës has great architectural and urban values, consisting of a combination of squares of coastal space, monuments, galleries, museums, and buildings of architectural importance. This historical-cultural city was hit by a powerful earthquake recently, on November 26, 2019, which caused both physical and psychological hardships to all the residents. This article shows the emotional effect caused by the earthquake, and the consequences of the latter on the cultural heritage and contemporary built form of the city. Some buildings were destroyed, and others were deformed on the facades but not in the structure. This paper shows how Durrës, a historical city, is affected by and loses its original image because of a very harmful earthquake. The paper also proposes to rebuild it again and keep its identity.

Keywords

Durrës, Earthquake, Cultural Heritage, Buildings, Architecture

Introduction

Durrës is a coastal city that borders the Adriatic Sea. It is located in the plains and some hills surrounding the city. Light earthquake vibrations are often felt, until they reached their peak on November 26 with the 6.4 magnitude earthquake. Albania due to its location has always had strong earthquakes since historical times, where Durrës has been most affected since the earthquake of 1267, after which nothing remained.

Durrës is one of the oldest cities with thousands of stories hidden inside, turning it into a very important city. With its strategic position and trade routes, it became one of the most desired places since the old times. A country that hides enigmas, tragedies, and confrontations for power, which made Durrës one of the largest cities in the Mediterranean in ancient times. While more and more excavations are being carried out, traces of the past are being found, where the roots of this city emerge, as the old one was sunk during natural disasters. Durrës has always continued to repeat and recover after every tragedy. Raising everything on the foundations of its embedded buildings. The city enjoys a strategic position where it is a crossroads of the sea and land routes.

Geologically, Durrës is located between the seismic plate of Africa and the Euro-Asian plate, a position that makes Durrës prone to earthquakes. Topologically and naturally hills, swamps, plains, or sea have undergone numerous transformative actions, due to unstable clay geologies and numerous earthquakes.

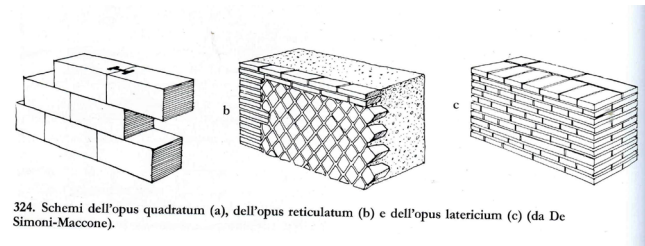
Typology of constructions

The strategic position oriented the city towards trade and handicrafts and turned it into a highly coveted place for politics and power. Many rulers from other civilizations have left their mark on the city of Durrës and influenced the image of the city. Archeological excavations in Durrës have discovered a hipodamic organization that was inherited from the Greek cities. In addition to the geometric plan, irregularly shaped residential blocks have been discovered that fit the hilly terrain on which they were built. These characteristics can be easily read in the city.

The building materials were mainly bricks, semi-bricks, stone blocks, river stones, and mortar. All are built with the Roman technique *opus quadratum* (figure 1,2). The foundation stone blocks were taken from the earliest Hellenistic buildings in the city and were reused in Roman times. The ancient houses were mostly built on two floors. The first floors are thought to have been inhabited by aristocratic strata because the first floors were built with more durable and resistant building materials. The doors and windows enabled the introduction of fresh air and light into the interior. Their roofs were built of wooden beams and baked clay tiles. Due to the high number of inhabitants, there was a need to build public spaces where various activities took place. Most importantly, the amphitheater, best displays the Roman technique.

Historic Earthquake

The first historical evidence of earthquakes in Durrës was from



324. Schemi dell'opus quadratum (a), dell'opus reticulatum (b) e dell'opus latericium (c) (da De Simoni-Maccone).

Figure 1. Construction techniques using bricks in the ancient Rome/ source romabella.com/



Figure 2. Durrës Amphitheater, Roman Brick technique/ source wikipedia



Figure 3. Building Construction after Earthquake/ source.bbc

the visit of the Roman philosopher and orator, Marcus Tullius Cicero. According to the description, Cicero had not yet stepped ashore when “an earthquake started accompanied by a strong sea turbulence”. According to historical sources, this was the first earthquake in the middle of the first century BC. Centuries later, in 345 BCE, another earthquake struck. Earthquakes in that era were thought of as acts caused by the gods, who punished the inhabitants. This appears from an anonymous work, belonging to the middle of the fourth century, which is the only notice of this earthquake.

“Dyrrahu because of the bad habits of its inhabitants was destroyed by the angry god, sank and did not appear anymore”, writes the anonymous treatise called “Description of the whole world and peoples” (*Descriptio totius Mundi et Gentium*). According to the scholar Moikom Zeqo, the destruction of the Illyrian city is explained as “a curse of the biblical type, of the

new worldview of the proto-Christians”.

A strong earthquake was that of in 1267, recounted by the historian George Pachymeres:

After some time, a pitiful and tearful event took place in Durrës. In July, unusual noises caused the earth to tremble continuously, noises which we would normally call a groaning. They portended that something dreadful was about to occur. One day, the din echoed more continuously and more forcefully than it had done previously. The fear which took hold of some people caused them to go and find shelter outside the city, as they were afraid that things would get worse. The houses and tall buildings, resisting not for a second, gave way and tumbled, burying their inhabitants within them. For there was nowhere for the people to escape because the buildings were constructed one beside the other.¹

This earthquake destroyed almost everything built in the city. The buildings that resisted were the amphitheater and the walls of the Castle, which were built by Emperor Anastasios and completed by Justinian I. Their construction was well thought out from an engineering point of view to withstand seismic shocks. These occasional blows have also brought about a change in the structure and image of the city. A new panoramic layer of the city was designed at the beginning of the 20th century, after the Independence of Albania in 1912. This layer respected the rules and historical layers. Durrës has been rebuilt with buildings of no more than two floors. They stood in line with the coastline and gave the city an identifying image with medium-sized buildings, roofs, and shores.

What is evident is that despite the strong earthquakes, Durrës has recovered again and is being built with different styles and standards. We need to learn from buildings that have withstood natural causes and time, and not because of fate, but from well-thought-out and detailed plans of their construction to be resilient despite everything. The constructions had the philosophy to serve the city and to create an identity in it, and not for benefit.



Figure 4. Seafront from the Old Town of Durrës/ source flickr

21st century earthquake

An earthquake is a phenomenon that occurs due to the discharge of accumulated energy, and it happens in seismic areas. Albania is a seismic country, but after the earthquake of the XIII century, there had not been another strong one in Durrës, until November 26th. This earthquake caused loss of human life, emotional and psychological hardships, and severe destruction of the built fabric. Since the city is built in different periods, its identity consists of multiple architectural styles. Time is what determines the events, time creates the image of a city and gives an identity.

In the event of the earthquake in the city of Durrës, time stopped for a moment, mercilessly destroying the traces accumulated over the years. Many buildings failed to resist, while some others struggled with the vibrations, which shows that they were powerful because they were built with love and care by people. These buildings had withstood every period by thus being an example to all the young architects and engineers that they must love their city and preserve its image by building with love. If we love our country and want to work to resist generation after generation and resist disasters, we must be careful. We should not think only aesthetically, but use materials suitable for a city with soft soil, be within the allowed standards and follow the rules for seismic areas.



Figure 5. The Castle Tower of Durrës after earthquake/ source by the author

21st century earthquake/Geological Aspects

The earthquake that occurred in Durrës on November 26, 2019, was a powerful earthquake that caused a lot of damage. The earthquake occurred on the surface and for this reason, the damage was greater. This event triggered the development of many studies in architecture, engineering, etc. Durrës is in an alluvial plain between tectonic plates belonging to the Ionian geotectonic unit. The central and western parts of the Ionian unit are composed of clays, conglomerates, and sandstones. Figures 6 and 7 below show data and statistics from “*Observations from the 26th November 2019 Albania earthquake: the earthquake engineering field investigation team (EEFIT) mission*”.

Ghost city

The city of Durrës already has a different look, after the earthquake. The atmosphere of the buildings was like a “halo” where at one point you see nothing and suddenly the city appears in another dimension, ruined and without hope. Frightened residents can no longer adapt to the present, and dream of the past.

The facades of buildings have broken up, and the apartment interiors and furniture are visible to everyone. There are not only

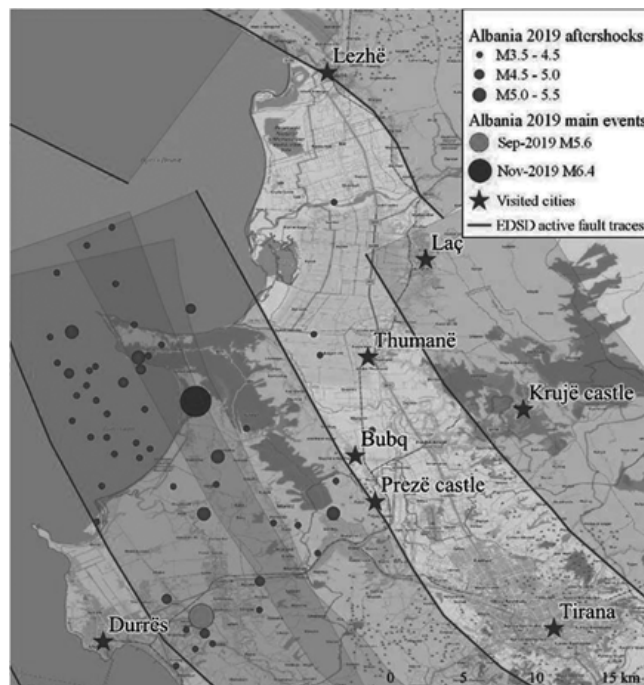


Figure 6. Albanian earthquake sequence of 2019 and visited locations during the EEFIT mission/ source springer.

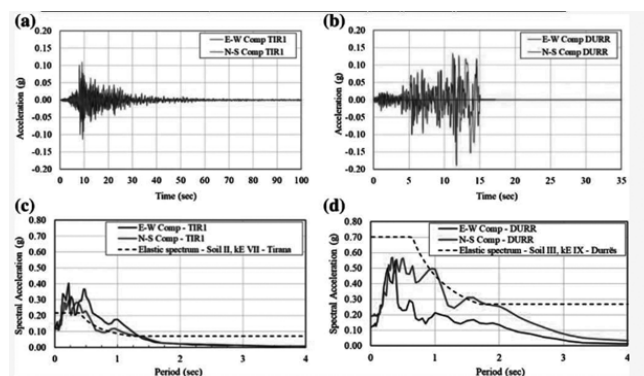


Figure 7. Earthquakes were recorded in a Tirana (TIR1 Station) and b Durrës/ source springer

facade cracks but also psychological ones, felt by the whole population of the city. In the central part of the city where history has left its roots, the earthquake did not even spare certain parts of the Durrës castle.

After the earthquake, most of the inhabitants had left the city, and at that moment it seemed as if the city's identity had disappeared. The city looked like a ghost, and this would not have happened had we been more responsible for where and how we build it. It was a strong earthquake, but if the constructions were built according to standards, then no one would have been harmed, neither the city nor its inhabitants.

Conclusion

The purpose of this paper was to reveal the persistence of the city, which over the years has created its cultural and historical stratification where everyone has left their mark. Starting from

the invasions which brought different urbanization and continuing further, with the constructions of different periods, as well as natural disasters at different times, they all gave a new image to the city. Durrës will always remain a city with overlapping periods, as well as one of the most notable cities of antiquity, the center of Byzantine rule. Everywhere you dig today, you'll find the old roots of the city.

This earthquake made us realize that we must build carefully to preserve the identity of the city which was affected deeply by the earthquake, and how important it is to be humane and preserve the city by building well and conscientiously. Despite the blows of nature and the invaders, this city will always remain a great and powerful crossroads that carry high cultural values in history.



Figure 8. The New Town of Durrës/ source stock.adobe

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