Underground Quarries of Gaziantep (Southeast Turkey)

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- **Abstract**

The city of Gaziantep, located in southwestern Turkey, is built entirely on a soft Upper - Middle Eocene aged limestone. This argillaceous and chalky limestone formation, which is fairly easy to carve into, has determined the city's development and character in many aspects. This stone has also affected local architecture as it was used as main building element by cutting. When a building was to be built, the soft rock area where the building was to be placed upon was cut out as blocks in depth, and the rock blocks obtained were used directly for the construction. The emptied area served as the basement of the building built on top. While initially fairly soft, this rock would soften and change color as it came in contact with air. On the other hand, in addition to the underground dwellings carved to provide stone for the buildings, Gaziantep hosts gigantic underground quarries caused by great amounts of rock being removed. These were used later on for a variety of purposes such as factory or hovels. Three of these underground quarries in Gaziantep have been explored and surveyed and their later uses are explained in detail in this article.

Keywords: Gaziantep, underground quarry

- **INTRODUCTION**

The Upper - Middle Eocene age [MTA, 1997] soft clay and chalk limestone formation on which the city of Gaziantep is located (Fig. 1) upon has determined the development and character of the city in many aspects. This stone was cut and used as the main building material to affect the local architecture, texture of neighborhood and the general ambiance. The soft rock area on which a building was to be constructed could be cut in blocks, and emptied to the sub-basement level; and the quarried rock blocks were directly used in the construction. As the emptied space would be used as the sub-basement floor (or cave) of the building, this was a two-birds-with-one-stone situation. The spaces that remained within the main rock formation under the building could also act as cold storage rooms for the buildings. In many cases, the wells dug to reach the deeper water channels that ensured water distribution were dug in these cavities [Bircan, 2007; Çanakçı, 2007].



Figure 1: Location map

Apart from these cavities dug for the individual use of houses and mansions, another type of cavity, unique to Gaziantep, should also be mentioned. These are gigantic underground structures, such as the structure below the City Cemetery. Some of these are thought to have emerged as large amounts of stone were quarried for the construction of the city buildings. However, once they emerged, they undertook many different roles. In many cases, these underground quarries were used as workshops, and even factories. Even today, some places serve this purpose. For example, the ability to obtain very high levels of humidity has provided these areas with an advantage that cannot be found elsewhere for special fields such as yarn manufacture. These majestic spaces are still partially used. While there are some serving the tourism industry as cafés, there are also some that are still used as yarn workshops. All of these underground structures have the potential to be used in a manner that will contribute much more to the current culture of Gaziantep: for instance, they could be used as concert halls, museums, galleries, exhibition areas, restaurants and touristic facilities. The three largest underground quarries of Gaziantep that are neither yet protected or used are described below.

- **UNDERGROUND QUARRIES OF GAZIANTEP**
- **Cemetery Caves**

The Gaziantep Cemetery was built upon the largest underground quarry of the region, or maybe even of Turkey, as a result of a terrible planning error. Although the entries to these caves were blocked during the leveling and landscaping works many years ago, the eight ventilation shafts that still exist should have given an idea about the cavities below. The consequences of this planning error became obvious, when a part of the cemetery collapsed on February 4, 2012 (Fig. 2). The investigation and survey that we conducted after the collapse has determined that an area below about 90.000 m^2 of the cemetery was riddled with cavities (Fig. 3). This system that basically consists of two large and one small cavities that are interconnected is the largest known ancient human-made underground structure in Turkey.



Figure 2. Cemetery Caves, collapsed part, roughly 35 meters in diameter (Photo A. Yamac)

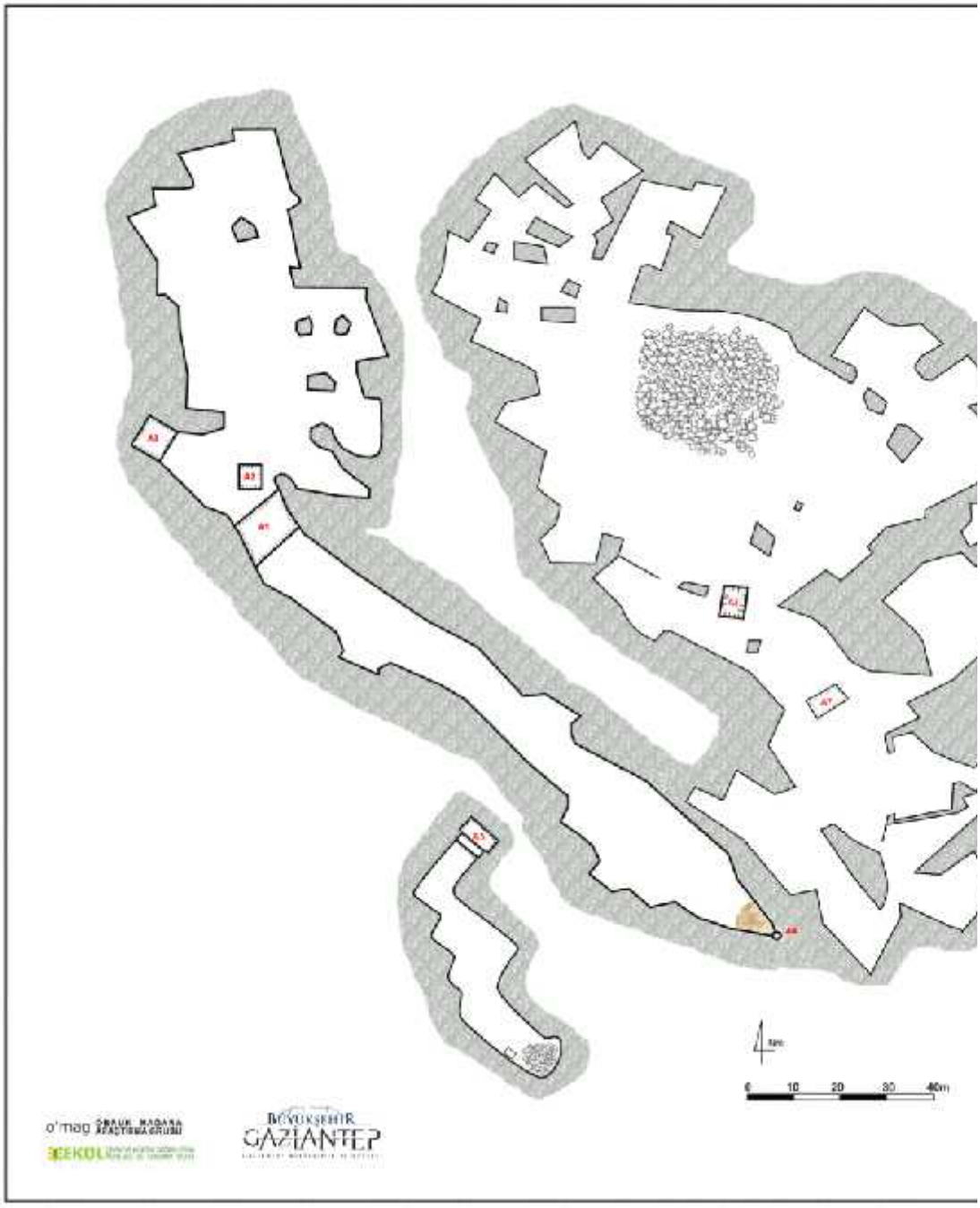


Figure 3. Plan of three separate caves under Gaziantep Cemetery. Collapsed part shown in the centre of the map with rubble (Drawing A. Yamac)

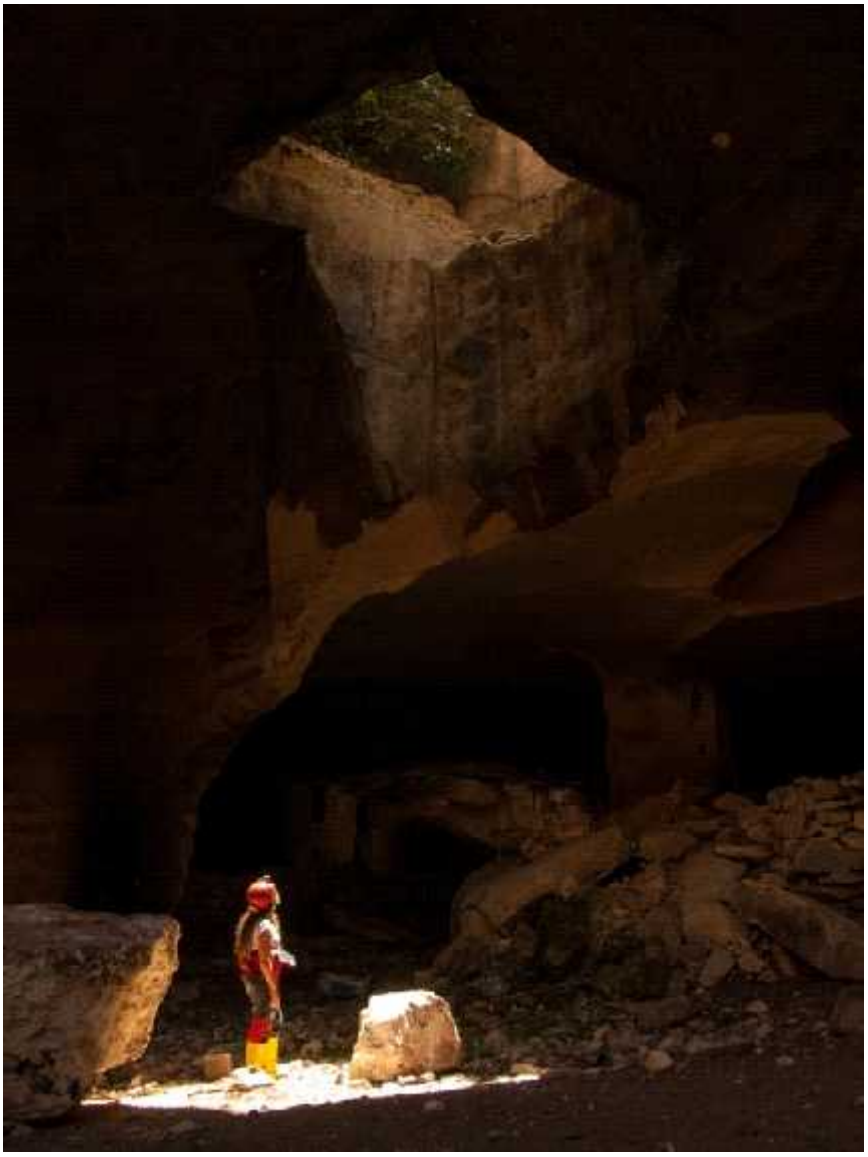


Figure 4. Cemetery Caves, below A8 ventilation shaft (Photo C. Cankirili)

The average height of all these cavities is around 6-9 meters (Fig. 4). The ceiling thickness varies between 4-7 meters, as much as it could be observed from the ventilation shafts used for the descent and from the collapsed area. It is thought that the cave entrances near the main road were filled with earth during the leveling of the cemetery. Only a single connection exists from a small cavity near the main road. Apart from this, there are 8 ventilation shafts inside the cemetery. We think that at least a part of the cave system was used as a barn or cowshed after being created as a quarry.

- **Akbulut Cave**

Akbulut Cave is located 7 km to the south of Gaziantep, on a rocky cliff, adjacent to the quarries near Akbulut (Fig. 5). This cavity consists of 4 interconnected sections, and it is obvious that they were opened as quarries, just like the quarries nearby. It was later used as a pottery factory for some time. The interior of the cavity is quite clean and the limestone within which it is carved is hard and is different from the geological formation inside Gaziantep. The ceiling height is on average 6-8 m, but exceeds 10 m at some points (Fig. 6). The measurements showed that the cavity is spread over an area of 8.500 square meters. This makes Akbulut Cave the second largest artificial cavity in Gaziantep after Cemetery Caves. Terracotta remains on the floor of a small part of the cavity suggests that it was used, at least for some time, as a ceramic atelier or a storage area after its use as a quarry.

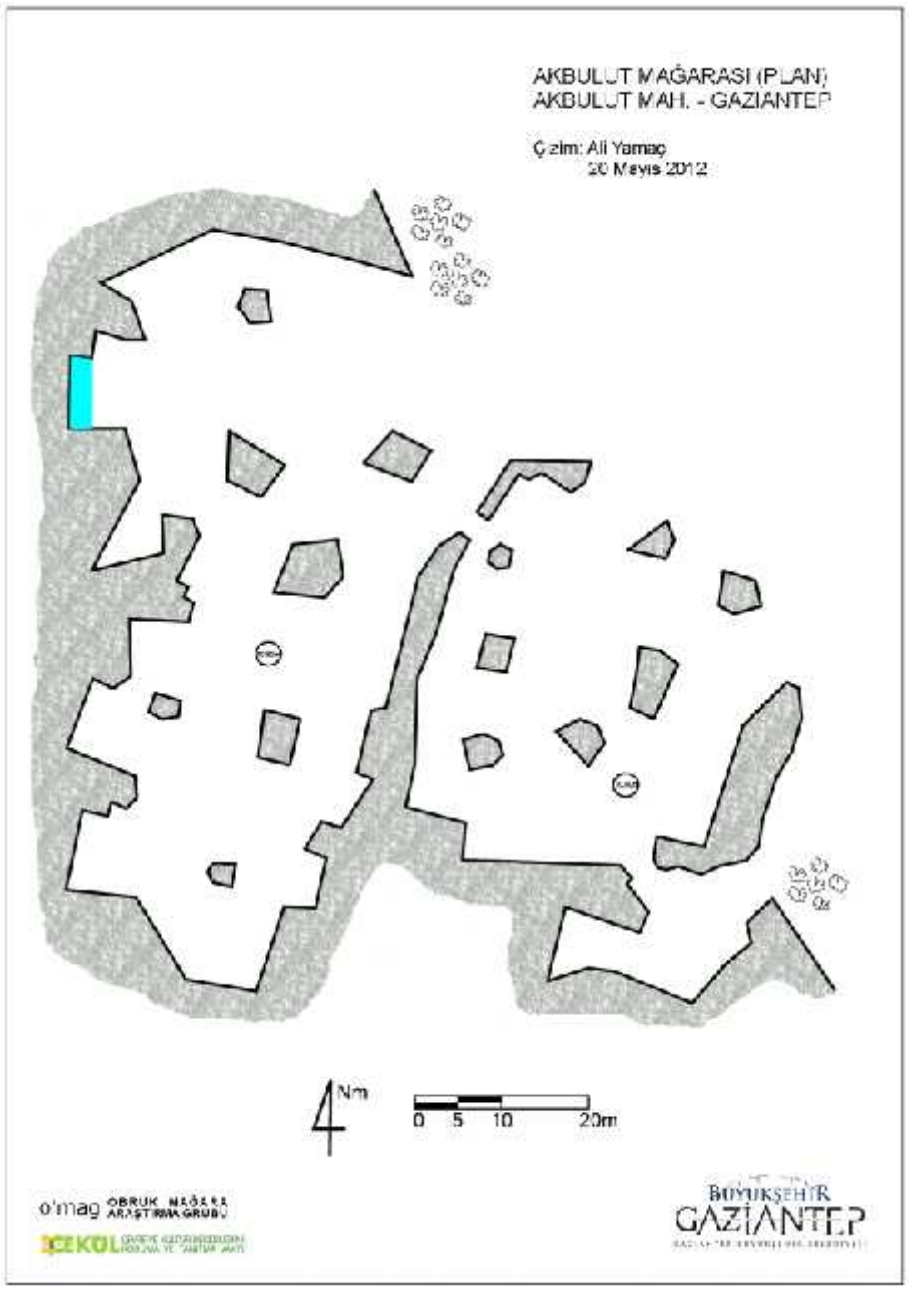


Figure 5. Plan of Akbulut Cave (Drawing A. Yamac)



Figure 6. Akbulut Cave, on the right of the photo middle wall separating two rooms (Photo A. E. Keskin)

- **Geneyik Village Caves**

This quarry, located 500 m from the Geneyik Village, to the south of Gaziantep, may be considered the third largest cavity in the area, after the Cemetery and Akbulut caves. There are two smaller underground quarries near the large cavity that has three different entrances. These artificial caves that spread over an area of 3.000 square meters and with ceiling heights that sometimes reach 6 m, are currently abandoned (Fig's. 7 and 8).

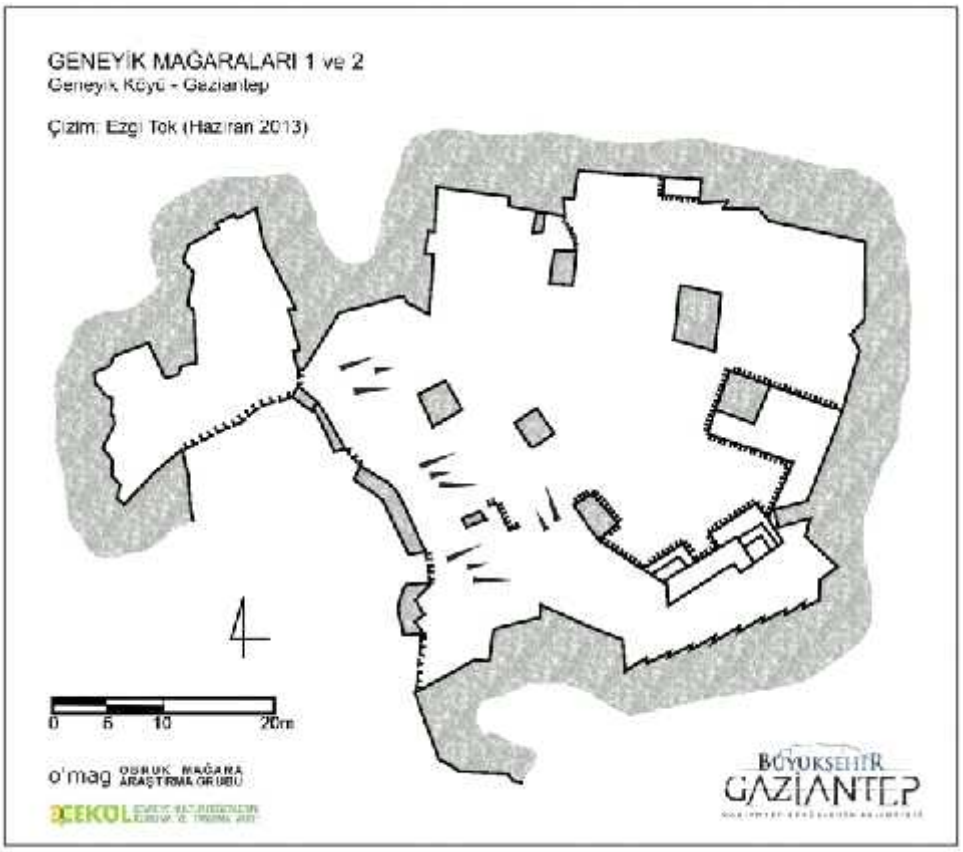


Figure 7. Plan of Geneyik Caves no 1 and 2 (Drawing E Tok)



3. CONCLUSION

As we mentioned above, some of these majestic underground spaces of Gaziantep are still being used today. While there are some serving the tourism industry as cafés, there are also some that are still used as yarn workshops. However, all of these spaces have the potential to be used in a manner that will

contribute much more to the current culture of Gaziantep. It is not difficult to imagine some of them as concert halls, museums, galleries, exhibition areas, restaurants and touristic facilities. Unfortunately, these spaces are also under the risk of destruction under the pressure of urban development. The Cemetery Caves which were filled with earth, after a collapse that happened during our study, is a current example of this phenomenon.

4. ACKNOWLEDGEMENTS

As the members of OBRUK Cave Research Group, we express our gratitude to Zafer Okuducu, Gaziantep Coordinator of CEKUL Foundation. This project could not be realized without his dedicated attitude and extraordinary efforts.

5. REFERENCES

Bircan A.E. 2007 - Stability Analysis of Caves in Gaziantep Region, Gaziantep University, Ph D Thesis, Gaziantep.

Çanakçı H. 2007 - Collapse of Caves at Shallow Depth in Gaziantep City Center, Turkey: A Case Study, *Environmental Geology*, Volume 53 (4), pp. 915-922, Heidelberg.

MTA (General Directorate of Mineral Research and Exploration) 1997 - Geological Map of Gaziantep - K24 Quadrangle, Ankara.

Figure 8. Geneyik Cave no 1 (Photo A. Yamac)