
Comments on the Influence of the Western Architectural Styles on the Ottoman Water Structures; Case study Sultan Mahmud II Dam

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ABSTRACT

Western architectural styles are introduced to the Ottoman architecture gradually starting with the beginning of the 18th century. These styles were accepted by the Ottoman society rapidly after the second half of the 18th century and the Western patterns were widely used in art and architecture. The most distinctive influence is observed on the water structures such as fountains and water conveyance structures. Ottomans welcomed the relationship of water and Baroque forms in their culture.

The Sultan Mahmud II Dam dating to 1839 is one of the three dams that were constructed in the Taksim water conveyance system that supplies water to the region where the non-Muslim Ottoman population and Westerners lived. This dam is the largest dam of the system and bears the most decorative curved Baroque forms. Although this dam was constructed very far away from the city within the Belgrade Forest its design and construction competes with the contemporary buildings in the city.

In this paper the function, architecture, architectural decoration of the Sultan Mahmud II Dam will be introduced and the perception of the Baroque style of the Ottoman architects will be emphasized by giving some other examples from the same period.

2. OTTOMAN ARCHITECTURE IN THE WESTERNIZATION PERIOD

After the 16th century when the Ottoman Empire reached its highest peak both politically and economically, there comes a recession period which lasted about 200 years, followed by a gradual decline which was marked by continuous defeats and loss of territory. Failures in domestic and foreign policies due to the weakness of the central authority towards the 18th century forced the Ottomans to turn their attention to the glorious Western world past the industrial revolution period followed by an age of enlightenment. The quick progression of relations with the Western world turned into a complex relationship as a result of the different expectations and policies of both parties. The Ottoman Empire did not live through the industrial revolution which was experienced in the western world, but was rapidly affected by the results of the revolution. Political, economical, and social reforms which were put into action under the term of 'Westernization' in the Ottoman Empire ended up in different forms due to the different perceptions of the population living in this geographical region. On the other hand, for the Western countries, the Ottoman Empire signified rich raw mineral deposits and new market opportunities with its crowded population.¹

Mutual relationship, though started on political and ideological basis, took speed and spread by the help of commerce. Among Western nations, especially France was the leading country which developed its relationship with the Ottoman Empire, and it was followed by others. Besides the diplomatic relationships built by the mutual embassies, cultural activities of artists and travelers also played an important role in the expansion Western lifestyle. From the Westerners point of view, these interactions experienced between the two cultures dated back to a much earlier period. In other words, the interest in Eastern culture emerged and initiated at a much earlier date in the Western culture. Naturally, this interest was not limited to the Ottoman Empire only. Contrary to the permanent missions opened in the capital city Istanbul notably by Venice and many other western countries such as Poland, Russia, France, England, Austria, the Ottoman residential embassies were sent abroad for the first time in 1792, and in 1835 the first Ottoman permanent embassy was

¹ Afife Batur, 'Batılılaşma Döneminde Osmanlı Mimarlığı', Tanzimattan Cumhuriyet'e Türkiye Ansiklopedisi, C 4, İletişim Yayınları İstanbul 1985, p.1038

opened.² Being aware of the advantages of having the upper hand in mutual political, social, economical, and cultural relations forced the Westerners to follow a conscious and systematized policy. Consequently, the desire to lead a life in accordance with Western norms in every aspect brought about the changes in the artistic and aesthetic perceptions of the Ottoman society. And architecture is one of the most important concrete means of expressing this change.

During the Westernization process, the initial architectural interactions were noticeable in the Tulip Period. The impressions of 28 Çelebi Mehmed Efendi who was sent to France as an ambassador of the Sultan Ahmed III, deeply affected the leading statesmen, particularly the Sultan and the grand vizier Nevşehirli Damat Ibrahim Pasha.³ The reports prepared within the context of diplomatic relationship with France, which gave the details of lifestyle of Western aristocracy, the gifts sent from France, and the visiting artists assigned by the French Embassy aroused a great curiosity and longing for the Western world. The impressive architecture of the French palaces, their fascinating landscape gardening and the waterworks which played an important role in changing the daily life in these residences into an extraordinary experience were initially reflected in the Kağıthane garden and water arrangements in the Ottoman capital city, Istanbul. Many palace and garden plans and descriptions which were brought from France were the sources of inspiration for this architectural arrangement. This arrangement which included the improvement of the surroundings of Kağıthane Stream and the construction of kiosks and mansions along the banks of the stream was actually the practice of traditional architectural designs with a different approach. In this arrangement, there was a limited interference to the stream which forms the main axis, and then again, the stream was restored to its natural flow. The artificial creations of French gardens and the perception of absolute symmetry in architecture were not applied in this arrangement. However, the way the architecture was associated with water makes it clear that the lifestyle it offers is closer to the Western norms than to the traditional.

It would be insufficient to evaluate the process of the Ottoman architecture in the 18th and 19th centuries by ignoring all the architectural tradition of the former times and by considering it solely as an imitation of the Western architecture. The architectural works of the Westernization period, especially the architectural arrangement in Kağıthane should be taken into account with all its components.

There is no doubt that the architectural change which started in the 18th century can not be limited to the example of the Kağıthane arrangement. The architectural works extending first along the banks of the Golden Horn and then marking their importance to a considerable part of Istanbul, are the examples of this change in architecture. In these examples it is commonly seen that traditional approach continues to survive in terms of plans, designing and space organization, while the building details, the façade arrangements, or other architectural elements such as the gates and windows bear the characteristics of Western ornamentation. In other words, it can be said that in the examples of early 18th century architecture change was realized in the architecture-related ornamentation patterns. This change is detected in almost all the typological examples of religious and profane architecture. Yet, waterworks such as the fountains and *sebils* (kiosks for the distribution of drinking water to the passers-by in cups) with their importance in the city life, and with their emphasis of a more worldly life with a diversion from the traditional constitute the most important structures of open space such as the streets, squares, excursion areas with their architectural and ornamental designs. These structures with their curves and breaks in the covering and mass formations and also with their elaborate elements on surfaces reflecting highly aesthetic effects were commonly built in the 18th century. The Ahmed III Fountain (1728), the Mehmed Emin Aga *Sebil* and Fountain (1740-41), Hasan Pasha *Sebil* (1745), and the Sultan Abdulhamid *Sebil* (1777) can be given as examples of waterworks of this period. Beginning at ground level, the composition created by columnettes on high pedestals with arches with concave and convex profiles placed between them, the wide undulating eave placed on the pilasters over the columnettes, the S and C meanders between these pilasters display that the Ottoman Baroque and Rococo style dominates the whole of the façade. These innovations in architecture were also used in the decoration

² ibid

³ Semavi Eyice, '19. Yüzyılda Batılı Yazarlar, Ressamlar, Mimarlar, Edebiyatçılar ve Müzisyenler', 19. Yüzyıl İstanbul'unda Sanat Ortamı, Sanat Tarihi Derneği Yayınları, İstanbul 1996, p.6

patterns in fountains and *sebils* as well as in kiosks and mansions. However, they were not used on other types of structures yet.⁴

It can be seen that at the beginning of the century Tulip Period style and Rococo style started to be practiced in the ornamentation patterns dominant in all the faces of a structure, and later, contrary to the process in the West, Baroque style began to be effective first in the architectural details and ornamentation, and gradually in the design of plan and mass in the late 18th century, and very original works were created. The best examples of this are Nuruosmaniye Complex and Laleli Complex.

The Nuruosmaniye Mosque, besides its traditional square-shaped layout in the enclosed volume, is one of the best examples of Ottoman Baroque with its thinner and longer colonnades and the U-plan of the yard which has no public fountain, notably for its arches on which the dome is situated and the plastic emphasis of the moldings enriched by profiles. Although the Laleli Mosque, contrary to the Nuruosmaniye Mosque, is a rather plain structure created by an Ottoman architect, it is still one of the most important works of the period because of the Baroque and Rococo effects it evokes with its interior and exterior space.

It is possible to see the original examples of the Ottoman Baroque and Rococo architecture in many building typologies towards the end of the century. However, though they generally remained loyal to the classical norms in terms of plan arrangements, the point where the Western approach diverges with the traditional approach is façade and inner space arrangements, ornamentation patterns and differences in proportions. The works produced during this period are not limited to the ones we mentioned above, or limited only to the capital city Istanbul. Works built by local artists and architects in many different places in Anatolia are an indication of the widespread practice of the architecture of this period.

In the history of arts, a period of serenity and soberness is usually followed by a period of gaiety and liveliness.⁵ We think this change of mood is also true for the history of Ottoman architecture.

The serene and plain manner of the classicism was followed by the lively and ostentatious manners of Baroque and Rococo, and finally, beginning in the early 19th century with a second round of classical approach from the West, a plain manner started to dominate in architecture. However, this time the classical approach is not the Ottoman classical architecture systematized by traditional norms, but an approach which aims to revive the forms of Greek and Roman architecture. This classical approach named as 'Empire' was imported from France during the Napoleon Period from 1804 to 1830. This term is also used for the buildings of the post-Tanzimat period, which show similar characteristics of the approach.⁶ A typical example of 'Empire' in the capital Istanbul is the Sultan Mahmud II Tomb and *Sebil* at Divanyolu. Nevertheless, it is clear that there was still a deeper appreciation for Baroque and Rococo since such buildings as the Nusretiye Mosque and Nakşidil Sultan Tomb in Fatih still carry the effect of Baroque architecture. 'Empire' approach lasted for a short time, and right after this period, works were built with an eclectic approach, where Baroque, Rococo, and Neoclassical approaches were used in a mixed manner.

The first step in the process of the Ottoman modernization at the beginning of the 19th century, Nizam al-Jadid (the New Regime), and then the Tanzimat Period, which is known with its extensive and satisfactory reforms, paved the way for many various construction activities in the field of architecture. During this period, mainly military buildings, factories, government buildings, palaces and kiosks, mosques, fountain and *sebils*, and dams were built. These structures were constructed with an eclectic approach where Baroque,

⁴ Afife Batur, 'Batılılaşma Döneminde Osmanlı Mimarlığı', Tanzimattan Cumhuriyet'e Türkiye Ansiklopedisi, C 4, İletişim Yayınları İstanbul 1985, p.1043

⁵ Doğan Kuban, 'Türk Barok Mimarisi Hakkında Bir Deneme', İstanbul Teknik Üniversitesi Mimarlık Fakültesi Yeterlilik Çalışması, İstanbul 1954, p.23.

⁶ Günkut Akın, 'Mahmud II Türbesi ve Sebili', Düünden Bugüne İstanbul Ansiklopedisi, c.:5 p.264, Kültür Bakanlığı ve Tarih Vakfı Yayını, İstanbul 1994; 'Tanzimat ve Bir Aydınlanma Simgesi', Osman Hamdi Bey ve Dönemi, Tarih Vakfı Yurt Yayınları, İstanbul 1993

Rococo, and Empire styles were used together, and thus making the forms of the structures quite different with respect to the older ones.

3 THE SULTAN MAHMUD II DAM

Istanbul has always had a shortage of water. Due to the reactions of people suffering from the shortage and also in accordance with the policy of the Empire, Ottoman sultans tried to do their best and endeavored to solve the problem. And of all the components of waterworks for the solution of this problem, 'dams' took an important place with their functionality and architecture.

This dam, which is also known as Bend-i Cedid was built during the reign of Sultan Mahmud II in 1839. Sultan Mahmud II Dam lies in Bahçeköy along the west tributary of Arabacı Mandırası Stream. It was the last of the three dams which belonged to the Taksim Water Systems.(Fig. 1) It was built in order to support the Taksim Water Systems, which failed to satisfy the need for water for the growing number of residents living in Taksim and Beyoğlu region. This dam is the second to the Grand Dam in terms of length, thickness, and number of nozzles. It is a masonry gravity dam, and its structure is reinforced by giving the main mass an arch form. The building structure of the dam shows similarities to those built contemporarily in Europe.⁷



Fig. 1: The Sultan Mahmud II Dam

The dam's hydraulic zone is 830.000 m²; its reservoir capacity is 343.325m³; and the impounding area is 49.000 m². Because the reservoir capacity is quite large, it does not fill fully on years when the rainfall is rather less so water is pumped from the Valide Dam.⁸ The building material for the dam is generally stone and marble. The width of the main wall, laid with regular cut stones with connected joints, is 9.40 m. at the base and 6 m. over the dam.⁹ The height of the wall from the downstream to the top of marble parapets is

⁷Kazım Çeçen, Taksim ve Hamidiye Suları, İstanbul 1992, p 57-61

⁸ ibid

⁹ Afife Batur, 'II. Mahmud Bendi', Dünden Bugüne İstanbul Ansiklopedisi, Kültür Bakanlığı ve Tarih Vakfı Yayını C.: 5, p. 260, İstanbul 1994

15.45 m. The curvilinear length of the dam wall in the arch form between two banks is 101.55m, the straight length is 94.19m.¹⁰

On top of the downstream-sloped dam wall with a thickness of 6 m., there is a passageway protected by different parapets on either side. The floor of this passageway is laid with big marble blocks. As an additional means of precaution, against the elevation of water to a dangerous extent on the reservoir side, there are parapets of marble plates, 16 cm. thick and 93 cm high. These plates are supported by extending shores on rectangular bases with marble buttresses from one direction. Iron railings in Empire style, on the downstream side, and have a geometrical composition consisting of circles and triangles intertwining into a spiral arrangement. These iron railings are attached to marble buttresses with square plan and lintels. With a rhythmic continuity along both sides of the fronts, iron railings emphasize the top end of the main wall, and enliven the massive and bulky appearance of substructure.

The inscription plate, right in the middle of the passageway over the dam wall, placed between the marble parapets on the reservoir side, is a typical example of Empire style effective on the reign of Sultan Mahmud II. (Fig. 2) The plate arranged with simple and classical elements, based on a low base and restricted with square columns, and covered with a large lintel surrounded by a cornice and profile mold. Inscriptions are written by the low relief technique, and have a neat workmanship. The inscription is composed of a eulogy of 13 couplets, and inscribed in two adjacent columns. The poem on the inscription belongs to Ziver, and the calligraphy belongs to Yezerizade Mustafa Izzet Efendi.¹¹ The oval shaped medallion over the inscription with its sun radiating arrangement is again an example of Turkish Empire style used during the reign of Sultan Mahmud II. This medallion looks similar to the one over the stone of Zübeyde Hanım Fountain dated 1850. The relief of Sultan Mahmud II signature on the medallion is in union with the calligraphy technique on the inscription.



Fig. 2: The Inscription plate of The Sultan Mahmud II Dam

¹⁰ Meliha Şimşek; Batılılaşma Sürecinde İstanbul'da II. Mahmud Dönemi İmar Faaliyetleri, Mimar Sinan Üniversitesi Soaoyal Bilimler Enstitüsü, Yayınlanmamış Doktora Tezi, İstanbul 1993, p. 403

¹¹ S. Nazım Nirven; İstanbul Suları 1946, p. 115-116, Naci Yüngül; Taksim Suyu Tesisleri, İstanbul, 1957, p.29.

On the downstream side of the structure, a protruding wide profiled cornice that extends the full length of the façade at the top end of the wall together with the railing over it lines off the plain and massive appearance of the structure with a horizontal highlight (Fig. 3). At the lower level, the one and probably only interesting element of the façade organization in addition to the plain molding that repeats the horizontal highlight of the top is the door opening to the valve room placed on the central axis. The classicist approach created with the simplicity of the architectural elements used on this door preserves the continuity of the Empire effect of the building in general. However, the monumental look of the door protruding volumetrically from the façade with rustic columns on high pedestals on each side and covered by a thick lintel creates an exaggerated visual effect far from being plain. Since the wide eave surrounding the lintel at the center is at the same level as the bottom molding surrounding the dam wall, it is perceived as the continuation of the molding from a distance. The vertical jambs with quadrate cross section and profiled capitals on either side of the entrance opening are joined with a semicircular arch at the top (Fig. 4). There is acanthus leaf motif on the large protruding key block of the arch. The interior of the arch and the wings of the door have iron lattice work with geometric motifs. This shows great similarity with the Tomb of Sultan Mahmud II which is an important Empire edifice of the period. In the lattice work of the arch, the bunch of rays formed with arrows extending and fanning out from the center is semicircular and bordered with a single line of adjacent circles placed right under the arch. The bunch of rays motif is the best known and most extensively used application of the Ottoman Empire style, is used in this structure both around the medallion on the inscription and under the door arch using different styles and materials.



Fig. 3: Downstream Façade of the Sultan Mahmud II Dam



Fig. 4: The Valve Room Door of the Sultan Mahmud II Dam

Inside the valve chamber which is in the dam wall, one notices that it is a circular plan room covered with a dome. The walls and the dome are laid with square cut stones. In the center of the dome, on the key block, there is a large stylized flower pattern made of marble, and surrounded with a profile curb. This circular planned relief is the only element of ornamentation in the cover, and in the center a metal hanger is fixed in order to hang a candle to lighten the room. (Fig. 5)

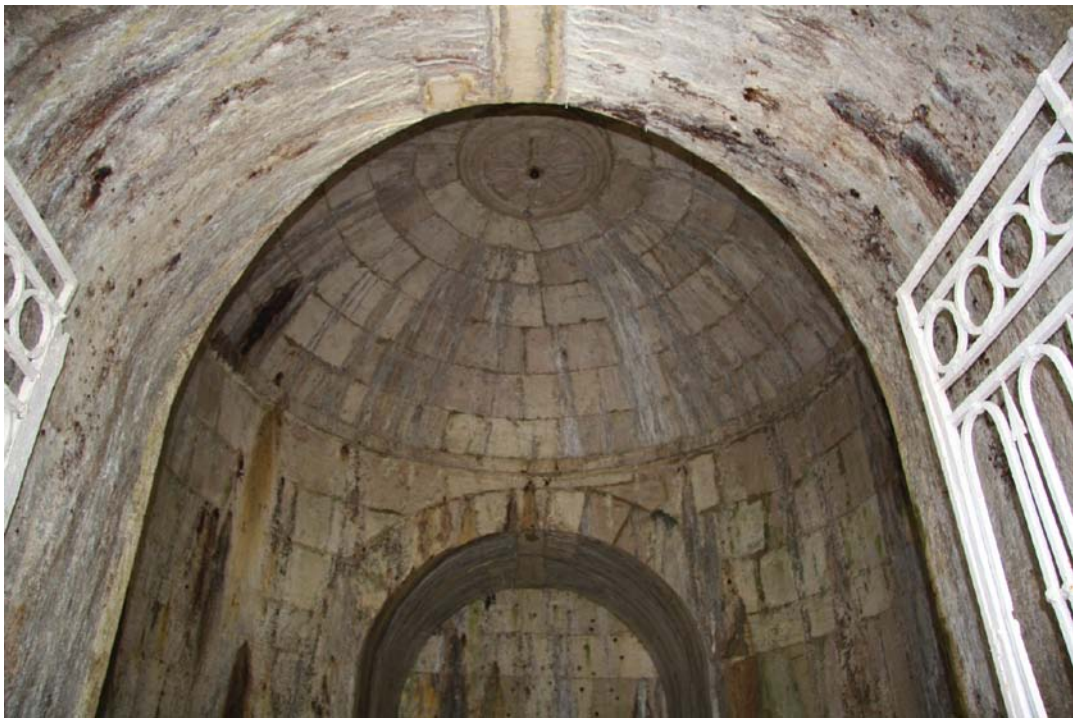


Fig. 5: The Dome of the Valve Chamber of the Sultan Mahmud II Dam

The body where the discharge measuring chest is placed opens to a domed iwan covered with a cradle vault. 11 nozzles are arranged symmetrically from the large to the small in the front face of the chest in front of the valve. From 1 nozzle having a discharge equal to 1 *lüle*, 1 nozzle having a discharge equal to 2 *lüles*, 4 nozzles each having a discharge equal to 5 *lüles*, 5 nozzles each having a discharge equal to 10 *lüles*, in total the dam has 73 *lüles* discharge capacity. When we consider that 1 *lüle* equals 36 lt/min, this means 52 m³/day. We can calculate that water discharge capacity of the dam is 3.796 m³ per day.¹² In front of the chest there is a reservoir for the water flowing from the nozzles. The marble set, which constitutes the front façade of the reservoir, has an oval protruding structure which, in a way, softens the sharp functional lines of the arrangement. (Fig. 6) On the front façade of this oval-shaped set, there is a plant relief in a cartouche, which we should point out is the most remarkable ornamentation element in the closed space. The composition of this ornament has many similarities with the plant-formed cartouches which are found on the dam constructor's tomb. These cartouches in the tomb are placed on the top in every façade of the polygonal front. Moreover, the flower motif relief in the middle of the cartouche carries the same lines as the flower motif in the key block of the dome in the valve room.

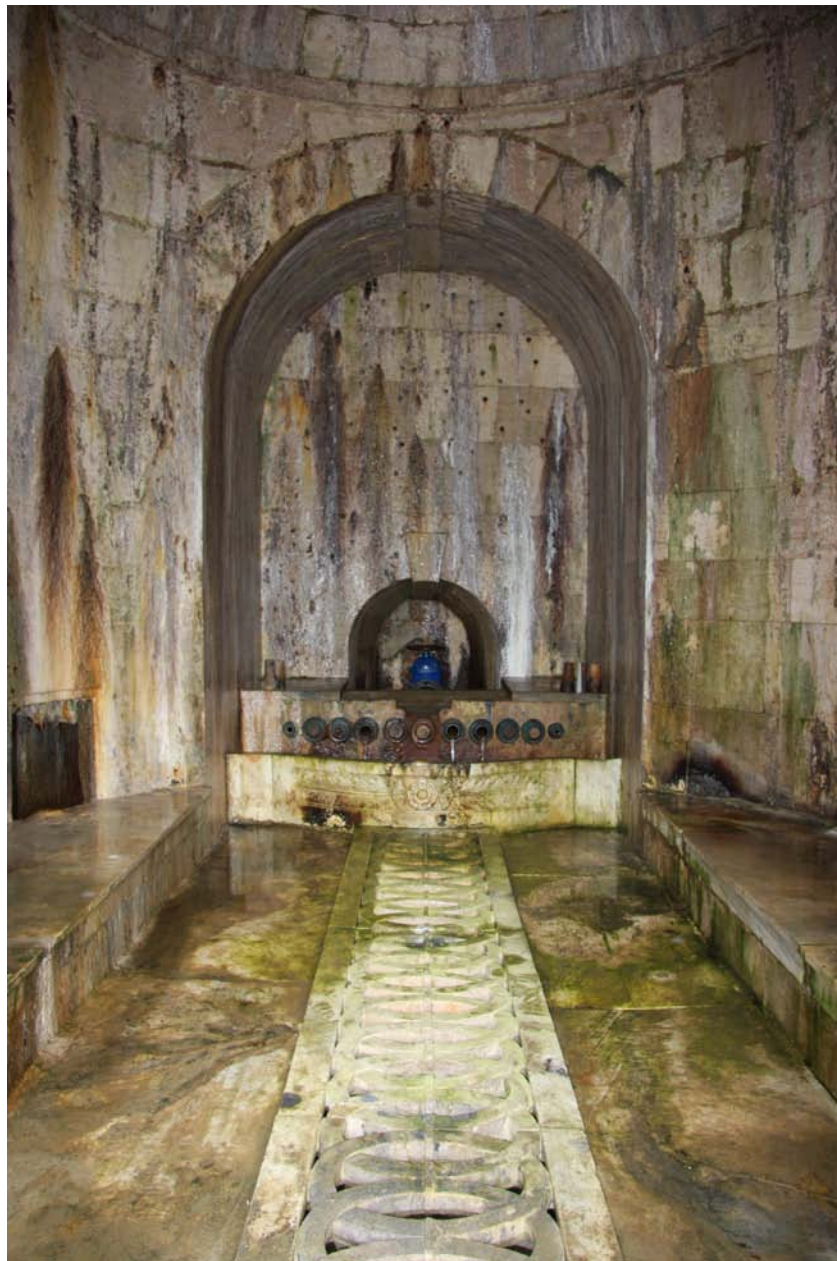


Fig. 6: The Discharge Measuring Chest and the Water Grill of the Valve Room

¹² Kazım Çeçen, İstanbul'un Osmanlı Dönemi Suyolları, İSKİ yayınları, İstanbul, 1999, p. 263.

The next architectural component in this central arrangement which is a result of the function of this place is the water grille. It lies from the very beginning of the set to the entrance. By means of this water grille, water coming from the reservoir and flowing from the valve, after the discharge measurement, leaves the room in a way inspection with the eye is still possible. The geometrical composition of circles one within the other in a single line in this ajour grille is, in a sense, a stylized repetition of the curves in the natural movement of the flowing water underneath the grille. This composition is exactly the same as the composition of the parapets which are found in the 3-unit entrance porch of the Nusretiye Mosque dated 1826.

The 'S' shaped gargoyles made of monobloc stone placed at either end of the parapets on the dam wall are Baroque elements of the ornamentation pattern of this structure. (Fig. 7) Though the ornamentation pattern in the structure appears plain at first sight, these elements which reflect the curves of the flowing water in a somewhat different manner here are the details of the richness of its style and form. Also, a view from above shows that with their ends like contours of a stylized tulip form and again with stylized rumi motifs which are placed at the sides, there is an inspiration from other natural elements in the construction of these gargoyles whose function is to discharge water.



Fig. 7: The 'S' shaped gargoyles of the Sultan Mahmud II Dam

The parapets of marble blocks on the reservoir side get curved on either side and attach with the retaining walls. (Fig. 8) The retaining walls make a protruding flange with a reverse curve to the dam wall at either end, and extend on both directions. (Fig. 1)



Fig. 8: The Parapets of the Sultan Mahmud II Dam

Two fountains close to the dam have Empire effects but have different arrangements. The fountain down the dam bears one plain alcove limited by two straight pilasters on both sides, and a rectangular lintel as a cover. (Fig. 9) There is the sultan's signature in an oval medallion in the middle of the lintel. Inside the alcove the rectangular fountain front is placed. The other fountain up on the spillway is destroyed and in a bad condition. This second fountain is smaller in size, and its non-ornamental stone is surrounded with 2 pilasters and a straight lintel. Contrary to these classicist elements, the fountain basin with its oval shape exhibits a real Baroque style. (Fig. 10)



Fig. 9: The Fountain Down the Sultan Mahmud II Dam



Fig. 10: The basin of The Fountain up on the Spillway

4. CONCLUSION

With respect to its engineering and architectural features, the Sultan Mahmud II Dam stands out as an advanced and an original example among the other dams constructed in the Ottoman Period.

The mystery of its impressive architecture results not from the magnificence of its size but from the manner the Baroque and Rococo elements in its ornamental pattern are given in the details of the dam structure without overshadowing its functionality.

Waterworks were always favored and built in the history of the Ottoman Empire. However, especially in the Westernization process, these structures were adopted as a lifestyle, and became the centers of the social life by possessing a role exceeding their functions. The fountains and *sebils* built especially in the city centers in the 19th century were ornamented with intense ornamentation patterns in the Baroque, Rococo and Empire style. Dams, though they were a part of waterworks, were built outside the city centers and were not as ornamental as fountains and *sebils*. In spite of the chaotic atmosphere created by the radical changes experienced in every field of life, the contribution of the Western effect on architecture was accomplished systematically in a wide range from the monumental mosques in the city centers to dams (especially the Sultan Mahmud Dam) built on the outer skirts of the city. It would not be wrong to say that this success was based on the tradition of thousands of years in the Ottoman architecture on one hand, and the acceptance of the actions taken for the sake of Westernization in all segments of the Ottoman society.

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