THE LEGACY OF THE HIPPODROME AT CONSTANTINOPLE
(VOLUME I: TEXT)

A THESIS PRESENTED BY GÜNDER VARİNLİOĞLU

TO

THE INSTITUTE OF

ECONOMICS AND SOCIAL SCIENCES

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS

FOR THE DEGREE OF MASTER OF

ARCHAEOLOGY AND HISTORY OF ART

BİLKENT UNIVERSITY

JUNE 1998

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I certify that I have read this thesis and in my opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts in the Department of Archaeology and History of Art

Dr. Julian BENNETT

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ABSTRACT

THE LEGACY OF THE HIPPODROME AT CONSTANTINOPLE

Varinlioğlu, Günder

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Supervisor: Dott. Alessandra Ricci

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Circuses were among the most popular Roman entertainment buildings from the early seventh century BC up to the sixth century AD. Although they were primarily designed for chariot races, circuses remained closely tied to the public life of a city by incorporating a number of religious, commercial and ceremonial functions. Their role in Roman daily and political life further increased in the late Empire and especially under the tetrarchy when the circus, which was by then physically connected to the imperial palace, has become the major arena for the visual and verbal contact between the emperor and the public, and a *sine qua non* component of tetrarchic centers.

The Hippodrome of Constantinople believed to be started by Septimius Severus at the end of the second century and completed by Constantine in 330 AD, had a peculiar place among Roman circuses, because it was the circus *par excellence* of the

Eastern Roman Empire. On the other hand, up to the twelfth century, it kept alive the tradition of chariot races which gradually became interwoven in imperial ceremonies. Furthermore, the Hippodrome adjunct to the Great Palace of the emperors, represented the fundamental public space of the city which was also a religious, administrative, commercial, ceremonial and entertainment center.

Today, the *Atmeydanı* (the place of horses), spanning almost half a kilometer from the Northwest to the Southeast between Sultan Ahmet Mosque and the Museum of Turkish and Islamic Arts (former İbrahim Paşa Palace), still recalls the memory of chariot races through its name. The site bears the surviving remains of the structure, limited to two obelisks and a column, namely the Theodosian Obelisk, the Serpent Column and the Column of Constantine Porphyrogenitus, located on the longitudinal middle axis of the arena and the monumental brick and rubble substructures of the semicircular southern end (sphendone) of the Hippodrome. Although such an important building has been continuously mentioned and described by writers and travelers throughout the centuries, neither the constructional history nor the architectural characteristics of the Hippodrome have been securely reconstructed.

This paper encounters two broad questions about the Hippodrome at Constantinople: First, it investigates the role of the Hippodrome in the public life of the city and in the urban memory, from its inauguration up to the twentieth century. This first study is based on the interpretation of the secondary sources, the accounts of ancient authors and chroniclers as well as the pictorial material (miniatures, engravings, maps, photographs etc.) that was handed over throughout centuries. Second, it attempts to locate the Hippodrome in the tradition of circus building through a comparative

analysis of the available data on a number of late Roman circuses. This second study consists of the evaluation of the archaeological excavations and surveys previously carried out on the site in comparison to the field survey and documentation work we have undertaken at the substructures of the *sphendone* in 1997, in order to discuss the earliest and subsequent building phases of the surviving remains and thus locate it in a building tradition.

Reassessing the urban and constructional value of the Hippodrome in the past and its legacy in the present, we aim at drawing attention to the urgent need of preservation and presentation of the remains to the general public.

Keywords: public space, entertainment, imperial ceremony, circus design, sphendone, brick, building tradition, urban memory.

ÖZ

İSTANBUL HİPODROMUNDAN GERİYE KALANLAR

Varinlioğlu, Günder

Yüksek Lisans, Arkeoloji ve Sanat Tarihi Bölümü

Tez Yöneticisi: Dott. Alessandra Ricci

Haziran 1998, cilt I: 197 sayfa, cilt II: 163 sayfa

Hipodromlar İ.ö. yedinci yüzyıldan İ.s. VI. yüzyıla değin Roma uygarlığının en sevilen eğlence yapıları arasında yer almıştır. Öncelikle atlı araba yarışları için tasarlanmışlarsa da, hipodromlar dinsel, tecimsel ve törensel işlevler de üstlenerek, kentin kamu yaşamıyla sıkı sıkıya ilintili olmuştur. Geç İmparatorluk ve özellikle de tetrarki dönemlerinde, Roma günlük ve politik yaşamında daha da önemli bir yer tutmuşlardır. Bu son dönemde, imparatorluk sarayıyla fiziksel olarak da ilişkilenen hipodromlar, imparator ve halk arasındaki görsel ve sözlü bağlantının gerçekleştiği ana mekan (uzam) görevini üstlenerek, tetraki merkezlerinin vazgeçilmez bir ögesi olmuştur.

İ.s. 196'da Septimius Severus'un yapımına başladığı ve İ.s.330 yılında Konstantin'in tamamladığı İstanbul hipodromunun, Roma hipodromları arasında özel bir yeri vardır. Bunun nedeni, Doğu Roma İmparatorluğunun simgesel hipodromu

olması, öte yandan, zaman içinde imparatorluk törenleriyle içiçe geçen atlı araba yarışları geleneğini onikinci yüzyıla değin sürdürmüş olmasıdır. Dahası, Büyük İmparatorluk Sarayına bitişik olan bu yapı, aynı zamanda dinsel, yönetsel, tecimsel, törensel ve eğlence merkezi olan, kentin ana kamu mekanını simgelemektedir.

Bugün Sultan Ahmet Camii ile Türk İslam Eserleri Müzesi arasında kuzeybatıdan güneydoğuya doğru yarım kilometrelik bir alanı kaplayan Atmeydanı, adında hâlâ araba yarışlarının izlerini taşımaktadır. Bu alanda hipodromdan geriye kalan anıtlar, yarış pistinin uzun orta ekseni üzerinde yer alan iki dikilitaş ve bir sütun (Thedosius obeliski veya dikilitaş, yılanlı sütun ve Konstantin Porfirogenitus sütunu) ile, yapının *sfendone* adlı yarım daire biçimli güney kesiminin, tuğla ve moloz taştan yapılmış anıtsal temelleridir. Bu denli önemli bir yapı, yüzyıllar boyunca yazarlarca ve gezginlerce betimlenmişse de, ne yapının yapım aşamaları ne de mimari özellikleri tam olarak saptanabilmektedir.

Bu çalışma, İstanbul hipodromuyla ilgili iki ana soruyu ele almaktadır. Öncelikle açılışından bugüne değin, hipodromun kamusal yaşam ve kent belleğindeki yeri irdelenmektedir. Bu inceleme ikinci el kaynakların, yazar ve gezginlerin notlarının ve yüzyıllar boyunca üretilmiş görsel gereçlerin (minyatürler, gravürler, haritalar, fotoğraflar) yorumlanması üzerine kuruludur. İkinci olarak, bu yapının Roma hipodrom tasarım geleneği içindeki yerini bulabilmek için geç Roma dönemi hipodromlarından elde edilmiş veriler karşılaştırılmalı biçimde incelenmektedir. Bu çalışma aynı zamanda daha önce yapının kalıntılarında yürütülmüş kazı ve yüzey araştırmalarının sonuçlarıyla, 1997 yılında sfendone'nin temellerinde yürüttüğümüz yüzey araştırması ve belgeleme çalışmasının değerlendirilmesinden oluşmaktadır. Böylece, ayakta kalmış

kalıntıların en erken ve ardıl yapı aşamalarının belirlenmesi çalışılarak, İstanbul hipodromunun ilişkin olduğu yapı geleneği tartışılmaktadır.

İstanbul hipodromunun geçmişteki kentsel ve mimari değerini ve bunların günümüze mirasını yeniden ele alırken, bir yandan kalıntıların ivedilikle korunmasına ve onarımına gereksinim duyulduğunu vurgulamanın, öte yandan bu denli önemli bir yapının halka ve ziyaretçilere en uygun biçimde tanıtılması gerektiğini belirtmeyi amaçlıyoruz.

Anahtar Sözcükler: kamu mekanı, eğlence, imparatorluk törenleri, hipodrom tasarımı, sfendone, tuğla, yapı geleneği, kentsel bellek.

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ABBREVIATIONS

Bsl	Byzantinoslavica
DOP	Dumbarton Oaks Papers
JDAI	Jahrbuch des Deutschen Archäologischen Instituts
JHS	Journal of Hellenic Studies
JRS	Journal of Roman Studies
REB	Revue des Etudes Byzantines
TTK	Türk Tarih Kurumu

INTRODUCTION: THE HIPPODROME IN THE PAST

The *Sultanahmet* district is one of the most important touristic, historical and religious spots of modern İstanbul, representing the long history of the city from the Byzantine empire to the Turkish Republic. The attention of the visitors focuses rather on the *Haghia Sophia* and *Sultanahmet* Mosque, which represent the two great empires that dominated the city, namely the Byzantine and the Ottoman empires. They also symbolize the transformation of the Christian Constantinople into Islamic İstanbul.[1]

A secondary, but not less significant focus in the area consist of three monuments. Two obelisks and a bronze column aligned parallel to the western minarets of *Sultanahmet* Mosque.[2] In the middle axis of a longitudinal open space spanning almost half a kilometer from the Northwest to the Southeast. These vertical free-standing monuments stand on

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[1] See Ahmet Çakmak and Robert Mark, *Haghia Sophia from the Age of Justinian to the Present* (Cambridge: Cambridge University Press, 1992); S. Vryonis, "Byzantine Constantinople and Ottoman Istanbul," in *The Ottoman City and Its Parts: Urban structure and Social Order*, eds I. Bierman, R.Abou-el-Haj, D.Preziosi (New York:1991); Zeynep Çelik, *Değişen İstanbul* (İstanbul: Tarih Vakfi Yurt Yayınları, 1996), 12-26.

[2] The northernmost monument on the *spina* is the Theodosian Obelisk, which was originally erected at Heliopolis in Lower Egypt for the honour of Thoutmes III. Thedosius I brought it to Constantinople in 390. The obelisk stands on four bronze pieces supported by a square stone pedestal decorated with reliefs on four sides, and two inscriptions, one in Greek , one in Latin. In the relifs, are depicted the emperor Theodosius and his family and the officials in the *kathisma*, while watching the races; musicians, the representatives of the defeated *barbarians*, chariot races themselves and the erection of the obelisk. To the south of the Theodosian obelisk is the Serpentine column (*Burmasütun*), brought to Constantinople by Constantine and which was originally erected in the temple of Apollo at Delphi, to commemorate the victory of the Greeks against the Persians, at Platea. The names of the 31 Greek *poleis* who fought in this battle are inscribed on the column. It used to be adorned with three serpent heads (the only surviving serpent head is in the Istanbul Museums of Archaeology) and a tripod supporting a golden vase. The southernmost obelisk, or the *colossus* of Constantine Porphyrogenitus is made of small stone blocks which used to be covered by gilded bronze sheets. The inscribed square stone supporting the obelisk informs us that Constantine VII Porphyrogenitus restored, and most probably ornamented the monument with gilded bronzes. The date of the construction of the monument is unknown. See Raymond Janin, *Constantinople Byzantin Développement Urbain et Répertoire Topographique* (Paris: Institut Français d'Etudes Byzantines, 1964),183-188.

bases almost three meters below the present ground level and are overwhelmed by the grandeur of the minarets of *Sultanahmet* Mosque. They are the remnants of the great Hippodrome of the Byzantine city, symbolizing the transformation of a small settlement into the capital of the Eastern Roman Empire.

The Hippodrome of Constantinople spanning over an area of ca. 12x470 m2 was an entertainment structure in which among other activities, chariot-races took place. These were one of the most popular forms of entertainment of the Late Antique period. Famous charioteers competing with each other in the name of four sporting teams or the so-called circus factions -namely the Blues, Greens, Reds and Whites- caused strong feelings of enjoyment as well as hatred among the fans of these factions, which also played an important role in the imperial ceremonial. However the significance of the Hippodrome in the history of Byzantine Constantinople transcended this primary function by far The Hippodrome has also been the arena where the emperor made himself visible to his public, where he was enthroned and dethroned, where imperial ceremonies were held, where criminals were executed, where military triumphs were celebrated and where public protests were pronounced.[3] Moreover, through the shopping facilities in the substructures it was also integrated into the commercial life of the center. This largest public space of the city has been not only the setting for imperial ceremonies and games but also the manifestation of the different phases of growth and decline of the Eastern Roman Empire In urban terms, it was a fundamental component of the religious, public, administrative and commercial center of Constantinople which included the *Haghia Sophia*, the *Augustaion*, the Baths of *Zeuxippos*, the Senate and the Great Palace.

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[3] Jean Ebersolt, *Constantinople Byzantin: Recueil d'Etudes d'Archéologie et d'Histoire* (Paris: Adrien Maisonneuve, 1951), 45-50, 84-91.

The history of the Hippodrome starts at the very end of the second century AD with the emperor Septimius Severus, who is given credit of initiating its construction. About a century later, Constantine the Great completed the structure unfinished by Septimius Severus and inaugurated it on May 11, 330 AD together with the city to which he gave his own name, *Constantinopolis* or the city of Constantine.[4] From this date up to the twelfth century, the role of the Hippodrome in the public and political life of the city was not eclipsed by any other structure or space; throughout centuries, it remained the public space *par excellence* of Constantinople. However, the Hippodrome entered into a process of gradual decline in the twelfth century, when the imperial family quit the Great Palace; and especially after 1204, when the Latin crusaders stripped off almost all the bronzes decorating the structure. After the conquest of Constantinople by the Ottomans in 1453, surviving marble elements were also removed in order to be used in the construction of several buildings. Moreover the site was extensively built over except for the great majority of the arena which is still preserved today as *Atmeydanı* or place of horses, recalling the distant memory of the chariot races.[5]

The Hippodrome consisted of an arena divided into two by the *spina (euripus)* on the Northwest-Southeast middle axis ornamented by a series of monuments and surrounded by seating rows on the two long eastern and western flanks joining one another at the South in a semi-circle called the *sphendone*. The North of the arena was limited by the *carceres*, the starting stalls for chariots, which also served as the main link to the city through its twelve gates. The eastern flank was characterized by the presence of the Great Palace of the

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[4] Rodolphe Guilland, "Les Hippodromes de Byzance. L'Hippodrome de Sévère et l'Hippodrome de Constantin le Grand," *Bsl* 31 (1970): 182-184.

[5] See Van der Vin, *Travellers to Greece and Constantinople: Ancient Monuments and Old Tradition in Medieval Travellers Tales* (Istanbul: Nederlands Historisch Archaeologisch Instituut, 1980), 266-269 and Cyril Mango, "The Development of Constantinople as an Urban Centre," in *Studies on Constantinople* (Brookfield: Variorum, 1980).

Byzantine emperors, which was physically joined to the Hippodrome by the *kathisma*, a two-storied structure protruding from the fortification wall of the palace.

Today the Hippodrome survives above ground level through the three monuments on the spina mentioned above and the massive substructures of the *sphendone* as well as a number of architectural pieces and decorative elements revealed during the excavations carried out at the site. Nothing is left from the *kathisma* due to the construction of the *Sultanahmet* Mosque (1609-1616) which occupies a great portion of the eastern flank Similarly the western flank is overbuilt by a number of buildings, among which the Ibrahim Paþa Palace of the sixteenth century (at present the Museum of Turkish and Islamic Arts) is the most reknowned. Above the substructures of the *sphendone* is *Sultanahmet Anadolu Endüstri Meslek Lisesi* and further in the arena is the Rectorate of Marmara University The substructures of the *sphendone*, built of brick and rubble, are the earliest structure of Constantinople surviving above the ground level.

The Hippodrome attracted the attention of scholars in the first half of the twentieth century, when the western seating tiers and parts of eastern ones were still not so extensively built over by modern roads and buildings, and the district had not yet become a crowded touristic centre. This was an opportunity to carry out a number of archaeological excavations that revealed some of the architectural and structural characteristics of the remains. The first comprehensive excavations were undertaken by the British Academy in 1927-1928 under the direction of Sir Hugh Casson, and with the collaboration of Talbot-Rice, Hudson and Jones. Unfortunately, the reports of these two seasons of work are limited in content. In 1932, Mamboury and Wiegand having surveyed the substructures of the *sphendone* and of the eastern flank, provided valuable drawings, photographs and verbal descriptions. Another important excavation at the northwestern flank by Rüstem Duyuran,

the director of İstanbul Museums of Archaeology in 1950, beside revealing a number of *in situ* seats, also contributed to the understanding of the plan of the structure. William MacDonald in his dissertation, "The Hippodrome at Constantinople", studied the remains unearthed by Duyuran and prepared the most extensive study of the Hippodrome in terms of emphasizing the previous and present archaeological evidence, and evaluating the Hippodrome in connection to its urban context and in comparison to other Roman circuses Unfortunately, this doctoral thesis submitted to the Department of Fine Arts at Harvard University in 1956 has not been published.[6] This work provided us with a detailed discussion of the architectural components and characteristics of the Hippodrome, some which are presented and commented in the second chapter of this paper, which is much less comprehensive than MacDonald's work, in terms of the discussion of the various architectural components of the building. In evaluating the interpretation of MacDonald, Guilland's and Vogt's studies on the architecture of the structure served as comparanda material.[7] However, MacDonald's studies are based on the previous excavation and survey reports; in other words he did not undetake, himself, any survey except for the site-study of Duyuran's excavation. His account on the sphendone consists of the presentation of the work carried out by the British Academy in 1927, and by Mamboury and Wiegand in 1932 In this respect, our survey inside and outside the substructures of the sphendone contributes

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[6] The reports of the excavations and surveys mentioned in this paragraph are respectively as follows: S Casson, David Talbot-Rice, G.F. Hudson and A.H.M Jones, *Preliminary Report upon the Excavations Carried out in the Hippodrome of Constantinople in 1927* (London: Oxford University Press, 1928) and *Second Report upon the Excavations Carried out in and near the Hippodrome of Constantinople in 1928* (London: Oxford University Press, 1929); Ernst Mamboury and Theodor Wiegand, *Die Kaiserpaläste von Konstantinopel Zwischen Hippodrom und Marmara-Meer* (Berlin und Leipzig: Walter de Gruyter, 1934); Rüstem Duyuran, "İstanbul Adalet Sarayi Inşaat Yerinde Yapılan Kazılar Hakkında İlk Rapor," *Istanbul Arkeoloji Müzeleri Yıllığı* 5 (1952): 24-32; William MacDonald "The Hippodrome at Constantinople" (Ph.D. diss., Harvard University, 1956).

[7] Rodolphe Guilland, *Etudes de Topographie de Constantinople Byzantin, I-II* (Berlin: 1969) and A. Vogt, "L'Hippodrome de Constantinople." *Byzantion* X (1935): 471-488.

to the further understanding of this semi-circular end of the Hippodrome, in terms of its overall architectural characteristics as well as building materials and techniques. Furthermore, this paper also differs from MacDonald's dissertation, in its inclusion of the ceremonial and public functions of the Hippodrome, and the analysis of the place of the structure and its site in the urban memory of the city, throughout the centuries.

Other scholars focused on the interpretation of the textual evidence for reconstructing the architectural, social and political history of the Hippodrome. Rodolphe Guilland made a thorough study of its architecture and functions based on primary sources. Raymond Janin's compilation of the textual and physical evidence to draw the architectural and urban topography of the city is another fundamental source about Byzantine Istanbul. Gilbert Dagron's studies serve as important guides in placing the Hippodrome in an historical and urban context. John Humphrey's compilation of textual, archaeological, artistic and epigraphic data about Roman circuses forms a comparanda database. Lastly, Alan Cameron's study of the social connotations of the Hippodrome and the dynamics between the public and the emperor contributed to the understanding of the activities taking place in the Hippodrome.[8]

Any study of late antique and Byzantine İstanbul does not go without mentioning the Hippodrome. As illustrated above, it attracted the attention of many scholars in the first half of the twentieth century. However this interest in the structure seems to have been fading away since the 1960s. The chances to reopen new trenches on the site are low because of the touristic character of the area as well as due to the extensive building over it

[8] These studies are respectively as follows: Rodolphe Guilland, *Etudes de Topographie de Constantinople Byzantin, I-II* (Berlin: 1969); Raymond Janin, *Constantinople Byzantin: Développement Urbain et Répertoire Topographique* (Paris: Institut Français d'Etudes Byzantines, 1964); Gilbert Dagron, *Naissance d'une Capitale* (Paris: Presses Universitaires de France, 1974) and *Constantinople Imaginaire* (Paris: Presses Universitaires de France, 1984); John Humphrey, *Roman Circuses* (Los Angeles: University of California Press, 1986); Alan Cameron, *Circus Factions* (Oxford: Clarendon Press, 1976).

It is fortunate that the substructures of the *sphendone* consisting of a series of concentric chambers and corridors, are still surviving; however these have not been yet the subject of a comprehensive study, although its exterior surface has been stripped since the 1970s, of the ancient houses that had been built adjacent to the façade.

Our interest in the structure started with a paper entitled *The Hippodrome of Constantinople* presented to Dott. Alessandra Ricci for the course *Byzantine Constantinople* offered in the fall of 1996, at the Department of Art and Archaeology at Bilkent University. A paper focusing on the architecture and urban connections of the Hippodrome revealed that although the Hippodrome of Constantinople was not an unexplored topic, there were a number of questions that remained unanswered or even not asked at all.

These questions were mainly related to its architectural and constructional characteristics, as well as to the evaluation of the building within a larger urban network and time period. In this respect, the method followed has been a combination of the architectural survey of the surviving remains and the analysis of the related literature including the accounts of ancient authors and travellers. The architectural survey aimed at the documentation of the surviving remains in the form of scaled plans and elevations, photographs and written building descriptions. The documentary work would possibly contribute to a further understanding of the different constructional phases, techniques and materials of the structure. Also, a comparison of the Hippodrome with late Roman circuses would help to describe more clearly the tradition of circus building in the Roman empire. The other branch of our study consisted of a further discussion of the urban and public character of the Hippodrome, from the late Antique period to the present in order to understand its impact n the urban memory of Byzantium, Constantinople and İstanbul. In conclusion our investigations focused on two major topics:

i. an analysis of the Hippodrome as a public space. This includes the discussion of its role and place in the public life of a city in general and of Constantinople in particular, from the late Antique period up to the present with a special emphasis on the Byzantine era.

ii. the analysis of the Hippodrome as an architectural entity. This included the study of its architectural characteristics and components in comparison to a number of relevant Roman circuses, and a thorough investigation of the building techniques and materials used at the substructures of the *sphendone*.

This thesis is structured in the following way:

(1) Chapter I examines the Hippodrome from a spatial and social point of view by presenting its urban connotations and analyzing its contribution to the public and political life of the city. Relationships between the public and the emperor, the public and the circus factions and the emperor and circus factions are also discussed in order to draw a clearer picture of the role of the Hippodrome in shaping social relationships in the city

(2) Chapter II, by considering the Hippodrome as an architectural entity, will help to see to which stage of the Roman tradition of building circuses it corresponds This chapter consists mainly of two parts:

i. a comparison with the earlier Roman circuses that could have constituted examples or a tradition for the builders of the Hippodrome at Constantinople

ii. the study of the plan, elevation, section and architectural components of the Hippodrome based on previous archaeological work undertaken at the site.

(3) Chapter III evaluates the remains of the *sphendone* in a narrow scope focusing on the building materials and techniques. This is the product of the survey carried out at the

remains in the summer and fall of 1997. Attached to this chapter is the visual documentation of the remains in the form of scaled elevations and photographs (volume II).This study aims at differentiating the earlier and later building phases as well as answering the question *who built the Hippodrome*.

(4) Chapter IV is an attempt to investigate the history of the Hippodrome starting with Septimius Severus up to the present. Here it is possible to find a tentative answer to the question *who built the Hippodrome* based on the material presented in the previous chapters

The Hippodrome of Constantinople is not a monument that can be analyzed as an isolated structure. On the contrary, its gearing position in the public life of the city requires that it is considered in relation to other spaces and structures that function together with it. In this thesis, attempts have been made to evaluate the physical evidence in a broader perspective in order to place the Hippodrome in its historical, social and spatial context.

CHAPTER I
HOW DOES THE HIPPODROME FUNCTION?

Public life in an antique settlement was very much centered around entertainment buildings such as theatres, amphitheatres, stadia and circuses which appear as dominant spots in the urban plan both by their large scale and their presence in every big Roman town in the East and in the West.[9] These four great public entertainment buildings coexisted quite rarely: all sizeable Roman towns had one or more theatres whereas only very large cities possessed both a stadium and a circus. Therefore it was a common practice to perform in an entertainment building the activities that it was not specifically designed for. For example a circus could serve as a stadium, or a theatre (after a number of adaptational changes) could be used for gladiatorial combats.[10]

Beside these fully-built structures in which the citizens participated in a collective activity, the fora connected by the streets bordered by porticoes and shops were the other architecturally defined urban public cores that played a crucial role in the Roman daily life The fora and the streets differed from the entertainment buildings primarily by the degree of the architectural definition: entertainment buildings, despite being very permeable at the

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[9] Baths are other important public buildings that will not be covered in this paper. For a discussion of the baths in Roman daily life, see Cyril Mango, "Daily Life in Byzantium" in *Byzantium and Its Image: History and Culture of the Byzantine Empire* (London: Weidenfeld and Nicolson, 1980); Florence Dupont, *Daily Life in Ancient Rome* (Oxford: Blackwell, 1992) and Fikret Yegül, *Baths and Bathing in Classical Antiquity* (New York: 1992).

[10] Balbura, Hierapolis and Laodicea are examples of cities possessing two theatres. At Thessalonike, there are both a stadium and a circus. (Humphrey, *Circuses*, 3 and A.J.Brothers "Buildings for Entertainment," in *Roman Public Buildings*, ed. I.M.Barton (Exeter: University of Exeter, 1989), 99, hereafter cited as Brothers). After the Roman conquest in the first century AD, many theatres in Greece and Asia Minor (such as the theatres at Ephesus, Sagalassus, Hierapolis, Selge, Aspendus, Perge, Nysa, Pergamum, Cyzicus etc.) were transformed to be used for gladiatorial combats, wild beast hunts and naval battles The first gladiatorial combats were held at Ephesus in 71-70 BC. See Daria de Bernardi Ferrero, *Batı Anadolu'nun Eski Çağ Tiyatroları*, trans. Erendiz Özbayoğlu (Ankara: İtalyan Kültür Heyeti Arkeoloji Araştırmaları Bölümü, 1990), 155-179 passim.

ground level, set a clear barrier between what was going on inside and outside. The interior space had its own rules, its own activities, its own life. By focusing the attention of the spectators at a certain point (or at a number of definite points), and through their interior arrangement and large capacity, these buildings concentrated the public activity in themselves. On the other hand, the fora and streets were neither totally closed nor open structures. The loose architectural definition acquired by means of porticos, columns, statues, steps etc. on the one hand converged the public activity, on the other hand, as they included many focus points and were continuously connected to each other throughout the city, they simultaneously diverged the converged public into the urban network.

Whether it took place in a theatre, amphitheatre, stadium, forum or circus, and whatever the spatial character of the structure, entertainment meant more than the gathering of people to share similar experience and to feel the sense of togetherness, collectivity or belonging to a city. The sponsoring and organization of the games and ceremonies were among the fundamental duties of the authority and the major expectation of the public from the authority. Therefore, beside distracting people from the problems of the daily life, the games were also used to release the social tension by giving the crowd an opportunity to express its needs, reactions and protests as well as to reassert the power of the emperor and the authority of the officials. Entertainment spaces were the places where men and women met each other, the citizens had the closest possible contact with the rulers, the victories of the empire were celebrated, gods and heroes were venerated, thus the social hierarchy and order was reaffirmed. [11]

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[11] Jo-Ann R. Shelton "Roman Spectacles," in R. Mellor ed. , *From Augustus to Nero*, 224-225 (hereafter cited as Shelton, "Spectacles") quotes Ovidius who talks about the reason why he attends chariot races "I'm not sitting here because of my enthusiasm for race horses; but I will pray that the chariot driver you favour may win. I am here, in fact, so that I might sit beside you and talk to you ....So, you watch the horses and I'll watch you ." (*Amores* 3.2.1-14, tr. Shelton)

1. What is a circus?

The theatre, amphitheatre, stadium and circus accommodated different types of Roman public entertainment. Theatres which were semicircular structures with a stage building on the line of the diameter, were designed primarily for plays, mimes and pantomimes, although aquatic games, and gladiatorial and animal combats could also be held with the provision of a number of additions and amendments. The existence of one or more theatres in almost all Roman towns point to the popularity of theatrical performances However compared to amphitheatres, stadia and circuses, theatres were much smaller structures, i.e., their capacity was low (fig.I.1.). On the other hand, the amphitheatres, as represented by the *Colosseum* in Rome (fig.I.2.), were designed for wild beast hunts (*venationes*) and gladiatorial combats (*munera*) which used to be held at the Circus Maximus or at the fora before the dedication of the Colosseum in AD 80. Some amphitheatres, such as the theatres, could be flooded to be used for naval battles (*naumachiae*). The elliptical *Colosseum* which was 188m long, 156m wide and 48 m high, with its arena measuring 86mx54m could accommodate 45,000-55,000 people Despite its large scale, its arena was still twelve times smaller than the arena of Circus Maximus [12]

The stadium, which was the structure closest in shape to the circus, was originally designed in Greece for athletic games. They were long and narrow structures with one or two semi-circular ends, but they were much smaller: the arena of a stadium measured about 180-200m by 30m whereas the arena of a circus was about 400-450 by 70-80m.[13] Therefore a circus could easily be used for athletic events. On the other hand, a stadium was too small for traditional Roman chariot races. The circus, characterized by its long flanks ending in a

[12] Humphrey, 1-9 and Brothers, 95-125.
[13] The stated dimensions of the arena vary. For a list of dimensions at a number of circuses see table I, also refer to Humprey, passim.

semicircular end, was the earliest, the greatest and the most crowded Roman entertainment building. Before the construction of amphitheatres and the introduction of stadia into the Roman world, the circus was also used for athletic, gladiatorial and equestrian events although it was designed specifically for chariot races. Among entertainment buildings, since it accommodated the greatest portion of the urban population, the circus enhanced a sense of urban identity and collectivity more than any other type.

A chariot race consisted of seven anti clock-wise laps around the arena in which four to twelve chariots with one driver and four horses (*quadriga*) competed.[14] The major concern in the design of the track was evidently the provision of a fair start and laps for all the charioteers. In other words, each chariot had to run the same distance from the start to the finish regardless of the stall from which it set out. Another concern was to provide the spectators with the best and the closest possible view of the races, which became particularly dangerous and excited at the turning points. The fulfilment of these requirements was possible through the adaptation of the Greek-type of a long narrow arena (such as at the stadia) to the necessities of the Roman game. The arena was divided into two by a low wall or just a line, the so-called *spina* or *euripus*, which was delimited at the ends by two turning posts around which the chariots turned (fig I.3). The race, which started from the right hand side of the track ended at the left-hand side after the seven laps At this point the critical factor would be the arrangement of the starting stalls in such a way that each chariot was given the same chance to get the position nearest to the *spina* as well as in a manner to diminish the accidents at the start due to the convergence of the teams towards this favourable position. The solution was the arrangement of the stalls along

[14] *biga* or two horsed chariot which was peculiar to Etruscan chariot racing was replaced by *quadriga* in the Roman empire.

a curve rather than a straight line, and the tilting of the spina and the flanks in a way to widen the right-hand side track at the start. In addition to these, the starting gates had to be provided with peculiar mechanisms so that they could all be opened simultaneously as soon as a magistrate gave the start by dropping the *mappa* (a napkin). In terms of dimensions, the distance between the stalls and the first turning post and the width of the arena at different parts of the track were the major concerns (fig.I.4). The major design requirements concerning the spectators were the provision of a sufficient number of gates for the entry and exit of the huge crowd, the construction of seating tiers with the right inclination and in appropriate dimensions, for the public and for the privileged, the design of the vertical circulation leading to the seating tiers.[15] The process leading to the fulfilment of these requirements took several centuries. Besides mathematical calculations, trial and error were the major method in the improvement of the circus design. The following chapter will partially illustrate this evolution of the circus design starting in the Etruscan times up to the construction of the Hippodrome at Constantinople.

The activities carried out at the Roman circuses were not limited to chariot races. As all other entertainment areas, circuses have been arenas for social contact among the citizens as well as between the ruler and the ruled. However, this contact was not necessarily a friendly one, hostile reactions and even bloody riots put their mark to the history of circuses. Therefore the functions of circuses ranged from the designed and desirable activities to undesirable and unexpected events. In this respect, the Hippodrome at Constantinople which was the setting of a myriad of sportive, social and political events, further represents the wide scale of functions that could be assigned to a circus. There, the public, the emperor and the circus factions all played a role in making a circus the public

[15] For a thorough discussion of the design requirements, see Humphrey, 18-24.

space *par excellence* of the city. Before analysing the array of functions and impacts of these groups thereupon, the place of the Hippodrome in the urban context of Constantinople need to be discussed.

2. Constantinopolitan public spaces

The *Notitia Urbis Constatinopolitanae*, dating to the reign of Theodosius II more precisely to ca. 430 AD- is the most ancient document presenting the general layout of the city of Constantinople. According to this document, in the fifth century AD, the city, which was divided into fourteen regions like Rome, was characterised by the major artery called the *Mese* (present *Divanyolu*) connecting the major public spaces of the city to the major gates on the fortification.[16] The *Mese* started at the *Milion*, located at the northwestern edge of the main public centre of Constantinople, which included the *Augustaion*, *Haghia Sophia*, the Senate, the Great Palace and the Hippodrome (fig.I.5).[17] Passing through the forum of Constantine and the forum of Theodosius I (*Forum Tauri*) it branched Northwest at

[16] This document prepared by an anonymous author in the second quarter of the fifth century gives a list of all the monuments and buildings (note the existence of a number of omissions) in the 14 regions of Constantinople. This is the Constantinopolitan counterpart of similar lists, namely the *Notitia* and *Curiosum* prepared for Rome. The regions were delimited according to some principles: ancient limits (e.g. Severan fortifications are the western limit of the fifth and Constantinian walls of the tenth, eleventh and twelfth regions), major fora (e.g. *Augusteon* was the convergence point of the first, second and fifth regions. forum of Theodosius was the end of the seventh, eighth and ninth regions) and major arteries such as the *Mese* (e.g. the section of the *Mese* between *Augusteon* and forum of Constantine separated the third region from the fifth) were used as reference points to draw the limits of the regions. See Janin, *Constantinople*, xvi, 49-64. The edition that is used in this thesis is Otto Seeck, *Notitia Dignitatum* (Berlin:1875, repr. Frankfurt: Minerva, 1962).

[17] The *Milion* built under Constantine was a tetrapylon supporting a dome. It was ornated with statues such as those of Constantine and Helena, the *Tyche* of the city etc. This structure indicated the starting point of the *Mese*. The surviving remains (one single vertical rectangular pier) can still be seen where the tramway curves at the South of *Yerebatan* Cistern. See Janin, *Constantinople*, 66. Fig.I.5. is a map of Constantinople, prepared by Cyril Mango. Although this work is much debated among scholars, it is valuable for our discussion, because it presents the places of major urban elements mentioned in this chapter.

the *Philadelphion*.[18] The Northern branch lead to the Adrianople gate on the landwalls of Theodosius II after passing by the church of the Holy Apostles near the fortification of Constantine.[19] The southern branch curved down towards the Golden Gate on the Theodosian walls where it connected to the *Via Egnatia*, the main road to the Balkans, after passing through the *Forum Amastrianum*, the *Forum Bovis* then by the Forum of Arcadius after which another branch to the west diverged towards the Selymbria gate [20]

The *Mese* and the fora in this urban network were bordered by porticoes having two storeys. The second storey which served as a promenoir could be reached through internal stairs. At the ground floor the colonnade was connected to a number of shops.[21] Although the circulation of people rather than their presence in a place were the dominant mode of public activity on these streets, they still acted as important spots for the gathering of people by the presence of shopping facilities as well as by the concentrating capacity achieved through porticos which turned the two dimensional streets into three dimensional spaces

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[18] The forum of Constantine which corresponds to present *Çemberlitaş* had probably an elliptical plan unlike Roman fora. It became the forum *par excellence*, it was simply called ὁ φόρος. It was marked by the central porphry column of Constantine bearing the statue of the emperor. North of the forum was a Senate, two temples, Southwest was a prison, facing the Senate a *nymphaeum*. Close by were a number of churches, a Basilica and many shops. Mango thinks that the forum of Constantine represents the *omphalos* of the city, because it had a similar location to the *forum romanum* which was located on the *Via Sacra* and it was surrounded by major public buildings such as the *forum romanum* The forum of Theodosius or *Forum Tauri* (present Beyazit square) inaugurated by Theodosius the Great in 393 was marked by his equestrian statue The *Philadelphion* was the place where the *Mese* branched into two, one branch leading to the Holy Apostles in the North, the other to the Golden Gate in the South-West. Its site is still a debated issue, it may correspond to the location of *Laleli* or *Şehzade* mosque. See ibid., 65-76 and Cyril Mango, *Le Développement Urbain de Constantinople (Ive-VIIe siecles)* (Paris: De Boccard, 1990), 23-36.

[19] Mango thinks that the church of the Holy Apostles built over by Fatih Camii was constructed under Constance II and Constantine had built a circular mausoleum similar to the mausoleum of Galerius at Thessalonike. It was an important imperial and ceremonial complex, because it constituted the final target of the imperial procession. Therefore it was also one of the major reference points of the city plan. See Mango, *Développement*, 27.

[20] The *Forum Amastrianum* (which may not have been a forum), and which was probably between the *Philadelphion* and the *Forum Bovis* (present *Aksaray*), is mentioned in connection with executions. Neither of these two fora are listed in the *Notitia*, therefore they must have been constructed after the mid-fifth century. The forum of Arcadius mentioned in the *Notitia*, is also called *Xerolophos* (the name of the hill on which it is located) or the Forum of Theodosius (Theodosius II undertook some constructional works there). At present the place of the base of the column of Arcadius marks its location. See Mango, *Développement*, 23-36 and Janin, *Constantinople*, 69-76.

[21] Janin, *Constantionople*, 37.

Constantinople did not lack the major types of Roman entertainment buildings mentioned above. According to the *Notitia*,[22] there was a *lusorium* in region I, a *theatrum minus* and an amphitheatre in region II, the great Hippodrome in region III, a stadium in region IV, a theatre in region XIII, and a theatre and a *lusorium* in region XIV [23] This indicates that the Hippodrome was not the only entertainment building of the city. However, theatres and amphitheatres are not mentioned in the textual evidence after the sixth century although theatre performances (mimes and pantomimes) were popular under Justinian.[24] The *Kynegion,* which was used for the execution of the criminals, continued to exist up to the end of the eighth century. Amphitheatres and wild animal fights which had never been very popular in the eastern provinces of the Roman Empire also stopped to function after the sixth century. On the other hand the Hippodrome appeared over and over in the records throughout centuries. In other words chariot races which were already the most popular public entertainment in the Roman world must have preserved their popularity and prominence over other games and performances in Constantinople.

The presence of other circuses beside the Circus Maximus in Rome would lead us to look for other circuses in Constantinople also. Indeed, ancient authors mention five others

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[22] Otto Seeck, ed., *Notitia Dignitatum* (Frankfurt: Minerva, 1962), 229-243.

[23] The meaning of the word *lusorium* is not certain, Janin thinks it corresponds to a theatre in which tragedy, comedy, mime and pantomime were displayed. See Janin, *Constantinople* ,190-1 Except for a couple of remains that may belong to some of these entertainment buildings, almost nothing survives from them. It is also very difficult to say when they were built up. The amphitheatre, the stadium and one of the theatres may have been built under Septimius Severus. Janin argues that the remains discovered in 1913 at the *Sarayburnu* might belong to Megarian *theatrum minus* and that the column of the Goths might be indicating its centre, an idea that Semavi Eyice disagreed with. On the other hand Mamboury argues that the column corresponded to the *theatrum majus*. According to Janin either *theatrum minus* or (and most probably) *theatrum majus* could be identified with *Kynegion* constructed by Septimius Severus for wild beast hunts and gladiatorial combats. But Mango thinks that *Kynegion* is an amphitheatre. In the excavations carried out at the second court of the Topkapi palace on the acropolis of Byzantium, 9 seats have been unearthed. Tezcan thinks that they may indicate the location of *theatrum majus* if they are indeed in situ. For more details, see Hülya Tezcan, *Topkapı Sarayı ve Çevresinin Bizans Devri Arkeolojisi* (İstanbul: Türkiye Turing ve Otomobil Kurumu, 1989), 120-125.

[24] Mango argues that the word Θεατρον might mean the Hippodrome, any kind of performance or the audience. Therefore the continuous use of the word does not necessarily point at the survival of the mimes and pantomimes in the Byzantine Middle Ages. See Mango, "Daily Life,", 342-345.

a "covered Hippodrome", the *Tzykanisterion*, one in the palace of Eleutherius (fifth century), a wooden one outside the city limits, and the Hippodrome of Saint-Mamas (second half of the fifth century).[25] Based on literary evidence, the "covered Hippodrome" seems to be a private arena similar to a Hippodrome in shape, but by being located in the palace complex, it was used by the imperial family and officials. In other words this was not part of the public life of Constantinople. The *Tyzkanisterion* (το Τζυκανιστηριον) of the Great Palace was built by Theodosius II in the first half of the fifth century and demolished in the second half of the ninth century by the emperor Basileus who ordered the construction of a new and larger *Tzykanisterion* further East. This was a private arena for the Persian polo game. Like the covered Hippodrome, this structure is not relevant in a discussion of the public spaces of the city. Similarly, the Hippodrome in the palace of Eleutherius must have accommodated private entertainment activities. The wooden circus or Χυλοτερχος which was situated outside the Theodosian walls, near Silivrikapı, must have been a temporary structure built under Constantine. In the mid-fifth century, there was still a wooden Hippodrome -probably at the same location- in the city. Although the Hippodrome of Saint-Mamas built by Leon I in the second half of the fifth century (in today's *Beşiktaş*) is known to have been open to public, it does not seem to have been a significant part of the urban activities. Like the theatres, amphitheatres and stadia, these Hippodromes were rarely mentioned by the Byzantine authors. Except for a number of remains which may belong to the theatres, no physical evidence either could survive from any of them.[26]

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[25] See Janin, *Constantinople*, 188-190.
[26] Tezcan, 120-125 and Janin, *Constantinople*, 188-191.

The literary and physical evidence in hand lead to the conclusion that, Constantinopolitan entertainment was centered on the Great Hippodrome. The uniqueness and peculiarity of the Constantinopolitan Hippodrome becomes clearer, when compared to Rome where public activity was not the exclusive monopoly of the Circus Maximus. But, despite the overwhelming popularity of chariot races, other Hippodromes, amphitheatres, theatres and fora (and especially the *forum romanum*) presented a variety of entertainment facilities to the population of Rome.

The principal public center of Rome was marked by the *forum romanum* which was referred as *the forum*, the center of Roman politics, religion, justice, trade and political life. In Constantinople these functions were gathered in the area delimited by the *Haghia Sophia*, the Great Palace, the Baths of *Zeuxippos* and the Hippodrome (fig.I.6.), located in the third and fourth regions. This public center remained at the southeastern extremity of the city of Constantinople, in other words it was not the physical center of the urban structure, neither within the walls of Theodosius II nor of Constantine; whereas it was both a public and physical center of the Severan city. This meant circulation of the population through the *Mese* in large numbers in order to participate in the activities going on in the center, especially on the festival days when races were held at the Hippodrome.

The major access to this public center was through the *Mese* which was bordered, from the forum of Constantine up to the *Milion*, by a number of shops among which the silversmiths seem to have constituted the majority. On the right hand side, a street, i.e. the porticoed semi-rotunda mentioned in the third region in the *Notitia*, branched southwards all along the western flank of the Hippodrome. This must have been an important public itinerary because beside connecting the *Mese* to the southern districts of the city and leading the crowd to the western entries of the Hippodrome, it also included shopping facilities and

a bath, which was probably part of the palace of Antiochos built in the first half of the fifth century. [27]

Northeast of the Hippodrome and of the porticoed semi-rotunda, was located the *diippion*, probably a kind of open-air vestibule connected both to the *Mese* and to the *carceres* (the starting gates) delimiting the Hippodrome on the North. The stables of the factions where the horses were kept the day before the race as well as during the races must have been part of the *diippion*.[28] A stoa leading to the eastern flank of the Hippodrome might have bordered the *diippion* on the Southeast. An important public building in this area was the Baths of *Zeuxippos* built by Septimius Severus in honour of the Thracian god Ζευς Ιππιος at the Southeast of the *diipion* and Northeast of the Hippodrome.[29] Beside the existence of bathing facilities which was an important component of the daily life, this area was made more public by the presence of porticoes connected to shops and surrounding the baths. One of these porticoes might have been connected to the portico running along the eastern flank of the Hippodrome. To the Northeast of the baths, ran the *Regia* or the imperial portico linking the *Chalke* gate to the forum of Constantine along the southern side of the Augustaion and passing through the *Milion*. [30]

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[27] MacDonald, "The Hippodrome," 111-112. Also see Ernst Mamboury, "Les Fouilles Byzantines à Istanbul et Ses Environs," Byzantium XXI (1951): 431-433, 455-459.

[28] The church of Saint John the Theologian dating to the seventh century was probably on the NorthWest side of the diippion, close to the *protothyron (porta pompa)* gate of the Hippodrome. See MacDonald, "The Hippodrome," 112-113; Cyril Mango, "Le Diippion: Etude Historique et Topographique," *Revue des Etudes Byzantines* VIII (1951): 153-4. Also in the Book of Ceremonies, the connection between the Hippodrome and the *diippion* is mentioned as follows: "Ensuite, l'une et l'autre faction amène les chevaux à l'Hippodrome, les font entrer par le Diippion et la prototyre et les exposent en public chantant les chants habituels jusqu'à la sphendone." Vogt, trans., *Livre des Cérémonies, Livre I*, 143.

[29] Justinian rebuilt the Baths of Zeuxippus which was burnt down in 532. It continued to function up to the eighth century after which it was transformed into a prison (the *Numera*). See Cyril Mango, *The Brazen House. A Study of the Vestibule of the Imperial Palace of Constantinople* (Cophenagen:1959), chapter II passim.

[30] *Chalke* was the main bronze gate and vestibule to the Great Palace. See Ibid.

To the North of the *Regia*, the *diippion* and the Baths of *Zeuxippos* was the *Augustaion*. This area corresponded to the major public space of Megarian and Severan Byzantium, the so-called *Tetrastoon*, which was transformed by the second quarter of the fifth century into the *Augustaion* occupying a smaller space at the Southeast of *Haghia Sophia*. It was surrounded by porticos which led to *Haghia Sophia* in the North, to the *Chalke* gate in the Southeast, to the baths of *Zeuxippos* in the South, to the Hippodrome along the *diippion* in the Southwest and to the *Mese* in the West. Such as many other public spaces and porticos in the city, the *Augustaion* included shopping facilities.[31] The existence of a basilica and a senate building in the region (although there is no substantial evidence about their functioning and connection to the other elements in the region) might further underline the multi-functional character of the district.

This section of the city provided the citizens with a variety of social activities ranging from shopping, bathing and watching races, to dealing with official issues. Primarily this was an administrative and imperial centre due to the existence of the Great Palace which was not only an imperial residence but also an imperial office building. The district also had very strong religious connotations both for pagans and Christians, because the hill where the Topkapi palace is located today, was the ancient acropolis which was then in a state of abandonment. Moreover *Haghia Sophia*, the church *par excellence* of Constantinople was also in this urban centre. The unity of the imperial and religious authority at this place thus made the surroundings the centre of the ceremonies. Even if the area were not frequently attended by the population, it would still attract the citizens on special ceremonial occasions.

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[31] For the discussion about the correspondence between the *Tetrastoon* and the *Augustaion* and the formation of the *Augustaion*, see, Mango, *Brazen*, chap.II passim and Janin, *Constantinople*, 22-24, 65-67.

It does not seem to have been a major commercial centre, since among the merchants and professions mentioned in the literary sources only the silversmiths, wax-candle shops and furriers seem to have been located in and near the area described above.[32] Still the existence of a number of shops might have been a distraction for the citizens attending the centre for this or that reason.

The last but not the least component of the area was the Great Hippodrome, the entertainment area *par excellence* of the city of Constantinople. Its contribution to the public character of the district was primarily bound to the frequency of chariot races on festival days, which covered 177 days of the year by the fourth century AD.[33] This means that at least on these days, this public centre would be full of people, chatting under the porticoes, buying and selling commodities, men bargaining with the prostitutes, children running all over the place, members of the factions preparing horses and chariots for the races, imperial guards ensuring security, imperial officials preparing for the distribution of gifts to the population in the Hippodrome, pickpockets benefiting from the crowd etc. Whereas some part of the population enjoyed this day off, some other part would be busy with supplying the demands of the crowd. Therefore the presence of the Hippodrome seems to have been the major factor attracting the majority of the population as well as fans of races from other cities, to the southeastern corner of the city, thus enhancing artisanal, commercial and social activity. Without the Hippodrome, one would doubt whether the shops, the Baths of *Zeuxippos*, the *Haghia Sophia* would be sufficient to make this place, which was not within an each reach for those inhabiting the other side of the city, the

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[32] Respectively *argentiers, ciriers, pelletiers* in French, see Janin, *Constantinople*, 65-67.

[33] During the reign of Augustus 77 days of the year were reserved to the public games, this number had reached 177 by the mid third century AD. In the early Roman history, triumphal games or *Ludi Romani* were held from September 5 to 19. The number of games celebrating victories increased in time. See Shelton, "Spectacles," 221 and J.E. Stambaugh, *The Ancient Roman City* (Baltimore:1988), 226.

major urban core of Constantinople. Without the Hippodrome, the area would probably become a more private and maybe secluded area due to the presence of the Great Palace, and would attract only those who had an administrative or judicial affair to pursue at the senate, basilica or the Great Palace. It is obvious that the Hippodrome has fuelled the development of its surroundings. Although the city extended to the Northwest getting further away from the Hippodrome, this area has remained still the most important section of the city. In Rambaud's words, "the Hippodrome was not only a circus, but also a forum, an agora, the center of the public life, the focus of troubles and agitations".

3.What is the significance of the Hippodrome?

3.1. The Ceremonial

Holding chariot races for the entertainment of the public has been the function *par excellence* of Roman circuses, hence the determinant factor in their design. The Hippodrome at Constantinople fulfilled primarily this duty of providing the citizens with exciting races. On the other hand literary sources largely describe a myriad of other activites. These range from imperial ceremonies such as the coronation of the emperors, the reception of foreign ambassadors, triumphal entry of the victorious emperors, the parade of war booty and captives, the execution of prisoners and usurpers and the public humiliation of guilty soldiers and monks; to public riots against the emperor and brutal fights between the fans of the sporting groups, namely the Blues and the Greens. Except for the riots and fights, the circus activities were closely interwoven in the imperial ceremonial. On special occasions, such as the anniversary of the birth, accession and marriage of the emperor, the celebration of the birth and baptism of his heir, the anniversary of the inauguration of the

city on May 11th 330 etc., [34] chariot races would be held at the Hippodrome where the emperor also distributed food to the public and money to the officials following the ancient Roman tradition of *panem et circenses.*[35]

Since the circus was the greatest semi-open public space of the city, i.e., the only place where the majority of the population could be accomodated, the emperors benefited from it to communicate to the public their authority, victories, successes and the well-being of the empire, thus to make their own propaganda. The use of the circus for ceremonial purposes was not an invention of the late Roman or Byzantine period. However the growth, sophistication as well as canonization of the ceremonial dated to Justinian's reign, during which the depiction of a number of ceremonies started to appear in literary and visual arts. It was also in the end of the fifth century that the circus factions which played a major role in the imperial ceremonies started to emerge in the accounts of the ancient authors.[36]

The peculiarity of the Hippodrome at Constantinople lay not only in the complexity and richness of the Byzantine ceremonial but also in its being the only space where the majority of the ceremonies were carried out. On the other hand, in Rome, beside the Circus Maximus, the Capitol, the *forum romanum*, theatres and amphitheatres also served for ceremonial purposes: theatrical performances started by wishing good health to the emperor, gifts or lottery tickets were distributed in the forum, the amphitheatre was the

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[34] Jean Ebersolt, *Constantinople Byzantin: Recueil d'Etudes d'Archéologie et d'Histoire* (Paris: Adrien Maisonneuve, 1951), 88.

[35] *Panem et circenses* referred to the construction of circuses and the provision of free bread. The emperor distributed some gifts (food or money) to the circus spectators. Paul Veyne calls the gift giving behaviour of the emperors and officials in the Hellenistic and Roman periods as *euergetism* which he defines as "the fact that communities (cities, collegia) expected the rich to contribute from their wealth to the public expenses...Their expenditure on behalf of the community was directed above all to entertainments in the circus or the arena, and, more broadly, to public pleasures (banquets) and the construction of public buildings," Paul Veyne, *Bread and Circuses* (England: Penguin Books, 1976), 10.

[36] Cameron, *Factions*, 156-251.

place of execution of the condemned people.[37] The public protested its grievances such as high corn prices, raising taxes, inefficient local officials etc. in the circus, in the theatre, in the amphitheatre, in other words wherever the emperor was present and accessible to the public.[38] In contrast, at Constantinople, other public entertainment buildings do not seem to have assumed ceremonial functions. Moreover they did not continue to survive throughout the Byzantine Middle Ages. On the other hand, the ceremonial extended outside the limits of the Hippodrome by the imperial procession, which advanced through the city, stopping at a number of points such as *Haghia Sophia*, the church of Holy Apostles and the Blachernae, where special ceremonial actions were performed.

In the Late Antique Period, three ceremonies had a significant place in the urban life *adventus*, the ceremony of welcoming the emperor arriving into the city, *consecratio*, the funeral ceremony following the death of the emperor and *accession*, the performances on the anniversary of the accession of the emperor to the throne.[39] Among these, the *adventus* has been the ceremony *par excellence* for many cities because of the growing mobility of the emperors before and during the tetrarchy. In very broad terms, a classical *adventus* ceremony had two dimensions: the arrival of the travelling emperor -mostly on a military campaign- into a city and the subsequent presence of the emperor in this city. Whereas the adventus of the emperor in Rome and then in Constantinople represented the culmination of the relationship between the emperor and the subjects, for other cities,

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[37] Veyne, 398-400.

[38] Theatre factions in Rome can be considered as the predecessor of the circus factions in Constantinople. This issue will not be dealt with in this study. For a thorough investigation of the relations between them. See Cameron, *Factions*, 157-168.

[39] The Capitol and *forum romanum* were the places where *adventus* ceremony was held in Rome. In this chapter only the ceremony of *adventus* in connection to accession will be treated. Other information about these ceremonies presented in the following paragraphs is based on ibid., 2-89.

> ...when a great king has entered some great city and dwelt in one of the houses in it, such a city is then greatly honoured and no longer does any enemy or bandit come against it, but rather it is treated with regard because of the king who has taken up residence in one of its houses.[40]

The boom in the construction of circuses in the tetrarchic centers is a clear indication of the growing frequency of the *adventus*, due to the temporary presence of the emperor at these places, where the circus served as the principal setting for the *adventus* ceremony. The tendancy of building an imperial residence adjacent or close to the circus seem to have risen from the need to enable the emperor to have easy access to the circus where he saluted the public who were supposed to respond with acclamations wishing him good health and long life. Under the tetrarchs, the second dimension of *adventus*, the presence of the emperor, gained prominence, since the emperors were then residents in tetrarchic centers for some time.[41]

The late fourth century marked a significant change in the nature of the *adventus* ceremony, because the emperors were no longer commanding the army in person on military campaigns. In these circumstances, the first dimension of the *adventus*, i.e. the arrival of the emperor to the city mostly after a military triumph, was overshadowed by the second dimension, i.e. the imperial presence, since the emperor had become a permanent resident of Constantinople by the sixth century AD. The *adventus* turned out to be the celebration of the arrival of the emperor to the palace, his appearance at the Hippodrome and the imperial procession throughout the city.[42] One of the most significant depictions of the new meaning that *adventus* acquired, can be observed at the reliefs on the base of the

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[40] Athanasius, *De Incarnatione* 9, ed. and tr. R.W. Thomson (1971), quoted in MacCormack, 17.

[41] Following the classical tradition, the tetrarchs were associated with Iuppiter and Hercules, which has been altered by Constantine who related himself to *Sol Apollo*. This was a means by which Constantine clearly distinguished himself from the tetrarchs. See MacCormack, 40.

[42] Ibid., 50-55.

Theodosian obelisk of the late fourth century AD, whose major theme is the presence of Theodosius, Valentinian II, Arcadius and the prince Honorius watching the chariot races, saluting the public, and receiving foreign embassies at the *kathisma* of the Hippodrome.[43] From the fifth century AD onwards, the emperors who rarely left Constantinople, made the Hippodrome the focus of the imperial ceremonial and of the public life of Constantinople. Nevertheless, although the Hippodrome was the only space where a full encounter between the emperor and the subjects took place, by the sixth century AD *Haghia Sophia* which gained an increasing importance in the ceremonies, became the focal point of the imperial ceremonial together with the Hippodrome.[44]

The tenth century *Book of Ceremonies* describes different stages of the imperial procession starting out from the Great Palace and going to a number of places such as the *Haghia Sophia*, the Holy Apostles, the Blachernae etc. as well as the ceremonies taking place in the Hippodrome.[45] Besides providing a detailed description of the ceremonies and acclamations, this text illustrates the fact that the Byzantine ceremonial was not a loosely defined spontaneous activity, but it rather had strict rules and a predetermined organizational plan.[46]

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[43] The first dimension of *adventus*, the arrival of the emperor is also depicted at the panels and more explicitely in the Latin inscription : the arrival of Theodosius in 389 after a military triumph against the *barbarians*. See MacCormack, 56-57.

[44] MacCormack, 56-79.

[45] The *Book of Ceremonies* is a tenth century compilation of anonymous texts (by Constantine VII Porphyrogenitus) written in different periods. It gives the most complete and detailed account of ceremonial activities. It explains the preparations for the procession to *Haghia Sophia* as follows: "Ils envoient des instructions au domestique des Noumeri, au comte des murs et, en un mot, avertissent du cortège tous les ordres de dignitaires et les bureaux de façon que chaque ordre et chaque bureau, selon son rang et son propre protocole, prenne ses dispositions. En outre, ils font savoir au préfet de la ville qu'il ait à orner et à nettoyer les abords du palais par où doivent sortir les souverains et toutes les avenues qui y aboutissent et par les quelles doivent passer les souverains, en y repandant de la sciure de bois et y disposant des décorations florales faites de lierre, de laurier, de myrte et de romarin et autres fleurs odorantes et variées, que comportera la saison," in Vogt, *Livre I*, 3-4.

[46] Cameron, *Factions*, 297.

One of the most important ceremonies and one that had the strongest urban connotations was the celebration each year of the anniversary of the inauguration of the city on May the 11th. The *Book of Ceremonies* gives a full account of the activities going on in and near the Hippodrome for the occasion.This account is significant both because it is the celebration of an urban affair and it is more or less a prototype of a traditional circus activity. The organizations started on May the 10th, after receiving the consent of the emperor for holding chariot races. The races being approved by the emperor, imperial officials responsible for the races started to prepare the Hippodrome while the factions decorated the horses with golden garments. On the same day, the horses were exposed to the public and to the emperor in the Hippodrome accompanied by the ceremonial songs and acclamations of the factions. On the following day, i.e.the 11th of May, the emperor in his palace passed to the *kathisma* where imperial officials ashlar him in his chlamyde and crown. The emperor in his imperial dress going to the tribunal in the *kathisma* blessed the public, as depicted on the Theodosian obelisk (fig.I.7.). The charioteers then advanced towards the *kathisma* to acclaim the emperor, after which they returned to the starting gates. The first half ended after four races were accomplished, the victorious charioteers received their prizes from officials sent by the emperor and the victorious faction celebrated their victory in the Hippodrome, then in the *Mese* with the permission of the emperor. As soon as the emperor stood up the public rushed to the *euripus* where vegetables and sweets were piled up for them. Also a chariot brought fish as an additional gift for the spectators. During the interval, the emperor had lunch in the *triclinium* and relaxed a little bit, waiting for the second half of the races. He then wore his *chamlyde* and crown with the help of officials such as he did in the morning, went to the tribunal, blessed three times the public

acclaiming him.After four other races were held in the manner described above, the celebrations came to an end and the emperor returned back to his palace.[47]

The original account in the *Book of Ceremonies* is much more complex and detailed than the summary presented above. It informs us about the titles of the officials involved in the ceremony, the different sections of the palace and *kathisma* through which the emperor passes, the movement of the charioteers in the Hippodrome, the acclamations of the officials and factions etc. Nevertheless, some parts of the ceremony are briefly mentioned telling that they are applied in the usual manner or as explained before, rather than being fully described. This is most probably an indication that the ceremonial was more or less standard whatever the occasion was. The imperial officials knew perfectly the rules of the ceremony and what they were supposed to do. The *Book of Ceremonies* was then a guidebook for ceremonies, focusing rather on the steps that had to be or that were traditionally followed so that the ceremony proceeded in an organized manner like the Christian liturgy, in contrast to the spontaneity and excitement of the races themselves. The preparation of the Hippodrome and the emperor for the encounter between the public and the ruler was a ritual that was repeated many times throughout the year and for generations.

Another striking fact in this account, is the lack of physical contact between the charioteers and the emperor. Rather than presenting the prizes to the charioteers himself, the emperor sends them with officials. In other words, even if an access from the *kathisma* to the arena may have been possible, this was not permitted even to the top charioteers, a fact that seemsto support the argument of MacCormack: " the Hippodrome, prevented

[47] Vogt, *Livre II*, 143-149.

any direct and personal encounter between emperor and subjects..."[48] The Hippodrome on the one hand, was the place where the emperor and the public had the closest relationship. Even though the public could see the emperor during the procession through the city, in the Hippodrome, the emperor and the public became part of one single activity. Moreover the emperor continuously communicated verbally and visually with the citizens. On the other hand, the emperor must have looked like an image rather than a living body for many citizens sitting far away from the *kathisma*. Here the close relationship between the ruler and the ruled must have been based on sharing similar feelings of excitement and enjoyment rather than on physical closeness. The participation of the emperor in an activity purely public made him part of the crowd in the Hippodrome despite his seclusion in the *kathisma*.

3.1. Circus Factions

The understanding of the relationship between the emperor and his public is closely related to an accurate evaluation of the character of circus factions, which continuously existed from the fifth century to the twelfth century when the Hippodrome ceased to function. Many scholars have been arguing that the factions, which were associations primarily responsible for putting on races in Rome, acted as political parties in Constantinople, leading and organising the public in expressing their needs, demands, reactions as well as their content through acclamations and sometimes through riots, thus

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[48] MacCormack, 83, and Geanakoplos in Deno John Geanakoplos, Byzantium: *Church, Society, and Civilization Seen Through Contemporary Eyes* (Chicago: The University of Chicago Press, 1984), 25 quotes from Liudprand, *Antapodosis*, MPL, vol. 136, col. 795 "When the soldiers had gone away, the emperor called out to his jailer, "Phile mou, do you know the emperor Leo?" "How could I know him," the man responded, "a man I do not remember having seen? Certainly, on public occasions when he passes by, I have seen him from a distance (for I was unable to get close), but I felt I was looking at a marvel and not a man". The confession of the man illustrate that the visual encounter between the emperor and the public in the Hippodrome or during the processions was a restricted and distant one.

defending the rights of the public towards the emperor. [49] In this perspective, the factions appeared as a kind of *democratic* institution setting up games as well as public upheavals in the Hippodrome. Thus the emperor becomes the guest of the public through the factions and the games a kind of parliament session during which the policy and decisions of the emperor were evaluated and even changed. Would the emperor, the *Sol Invictus* resign himself to such a situation? If the answer is yes, what could be the reasons behind it?[50] In order to answer these questions, the nature of the factions should be analysed in greater detail.

There are basically two different kinds of approach to the issue of the circus factions. The first and traditional one seems to have been shared by the majority of the Byzantine scholars working on this topic. The second approach has been more recently developed by Alan Cameron in his work *Circus Factions*, where he rejected almost all the major tenets of the traditional view. The four factions, the Blues, Greens, Whites and Reds, referred as δημοι in the Byzantine sources have long been considered as corresponding to distinct quarters of the city and representing different social classes and religious groups as well as acting as a civic guard which protected the city when the army was away.[51] According to the traditional view, the Blues were associated with the aristocrats and Christian orthodoxy, favoured by most emperors, whereas the Greens were associated with lower classes such as workers and craftsmen, and belonging to the Monophysite sect.

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[49] Among the scholars who see the factions as political parties are Louis Bréhier, *Les Institutions de L'Empire Byzantin* (Paris: Editions Albin Michel, 1949),192-197; Guilland, *Etudes*, 420-441 and also Manojlovic and Upenskij as explained in Cameron, *Factions*, 44-45. On the other hand Cameron informs us that under the early Principate the masters of the factions or *domini factionum* were private citizens whose duty was to hire out horses, personnel and equipment for the games. Hence factions were profit-making organisations. However by the fourth century they became dependant on the emperor. See Cameron, *Factions*, 6-23.

[50] Late Roman Emperors, and especially Constantine, associated themselves with *Sol Invictus* or the Invincible Sun who was their protector and official image. See Krautheimer, *Three Christian Capitals*, Berkeley, L.A., London:1983), 63.

[51] Guilland, *Etudes*, 411-441 and Bréhier, *Institutions*, 192-197.

supported only by a few emperors. Accordingly, the Blues were seen as loyal to the throne, whereas the Greens represented the opposition to it. The two other factions were rarely mentioned in the primary sources, and whenever they were, the Blues (οἱ Βενετοι) appeared together with the Whites, and the Greens (οἱ Πρασινοι) with the Reds.[52] As a result, the Blues and Greens were the dominant and rival factions as opposed to the Whites and Reds

Cameron presented a totally different way of approaching the factions by stripping from them their regional, military, social, religious and political associations. In his interpretation, the factions appear as sporting clubs also responsible for the ceremonial in the palace, in the Hippodrome and throughout the city. Rather than provoking public riots, they were loyal imperial officials -regardless of who the emperor was- under the control of the crown. In this model, the emperor appointed a high official, such as a consul, to sponsor one of the games, or he himself supplied funds. The organization of the games, the recruitment and firing of the staff and charioteers, the procurement and training of horses would be administered by professional people from the factions, responsible to the emperor himself.[53] Cameron does not see public riots as political upheavals but as mere hooliganism of the partisans supporting the Blues or the Greens. He explains severe and bloody riots such as the Nika Riot which shook the throne of Justinian, as a special case which broke out due to sportive fanatism, but which turned into a revolt against Justinian.[54] In other words

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[52] "La le démarque des Bleus avec le dème des Blancs les reçoît, c"est-à-dire que l"ordre habituel se déroule selon le cérémonial de la réception. Ensuite, un peu plus loin, les reçoît le démarque des Verts avec le dème des Rouges et les choses se passent, pour le reste, selon le cérémonial de la réception", Vogt, Livre I, 25-26.

[53] The traditional view sees the rise of the Blues and Greens as a development of the Late Empire, but Cameron argues that this was already present in the Early Principate. Cameron, Factions, 7-19, 53.

[54] Justinian refused the demand of the Blues and the Greens who asked him to pardon one member of the Blues and one of the Greens in prison. The two factions joining their forces started to burn and loot the city and the Hippodrome. Finally when they took Hypatius to the Hippodrome to be crowned, Justinian's commander Belisarius crushed the crowd in the circus. The revolt cost 30,000 deads. For further informaton see Bury, "The Nika Riot," *JHS* XVII (1897): 92-119; Cameron, *Factions*, 278-280 and Procopius, *History of the Persian Wars* (London: 1914), 223-29 and 233-37 in Geanakoplos, 258.

the riots are interpreted as an outcome of social, religious, political and economic factors inflamed by the high emotions due to the deliberate efforts of the factions. He argues that small scale hooliganism could even serve to calm down the population: "...Even when faction riots coincided with moments of famine or political uncertainty, more often than not they probably served to diminish rather than heighten the social and political tensions of the situation."[55]

The account of Procopius seems to support Cameron's interpretation of factional riots as an indication of hooliganism than political uprisings:

> There arises in them an endless and unreasoning hatred against their fellow men, respecting neither marriage nor kinship nor bonds of friendship, even if those who support different colours might be brothers or some other kind of relatives. Neither human nor divine affairs matter to them compared to winning these (street) fights.[56]

Although Procopius here describes the fanatic illogical behaviour of the supporters of the different colors, hooliganism combined with social or economic problems does not suffice to explain the role of the factions in large scale riots leading to the massacre of the population or to the dethronement of the emperor. The factions may not have acted as political parties, nevertheless they certainly played a role in the politics of the city by maybe provoking riots. Again, Procopius, in another account, underlines that political concerns could overcome hooligan hostility at times:

> At that time the civil officials who were in charge of the population in Byzantium led away for execution some of the rioters. But rioters of the factions, coming together and making peace with each other, seized the prisoners and went directly to the public jail where they freed all who were imprisoned for rioting or any other illegal act.[57]

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[55] Cameron, *Factions*, 296.
[56] Procopius, *Wars*, in Geanakoplos, 254
[57] Ibid., 258.

The traditional view seems to go a bit too far by giving so many responsibilities to the factions such as organising the games and the ceremonies, acting as urban militia, representing districts of the city, directing the political decisions of the empire. On the other hand, stripping them from all their political connotations make the explanation of circus riots problematic. These organizations which were close both to the emperor and imperial officials, and to the public, would certainly use their power by acting as intermediaries or as a buffer group between the ruler and the ruled. Hooliganism may have been produced by the laymen supporting the Blue or the Green charioteer, however politically, religiously or economically oriented riots were probably the design of the members of the factions who knew very well how to manipulate both the ruler and the ruled.

The two perspectives about the circus factions lead us to draw different pictures of the Byzantine political and social system. However what is important to discuss here is not to choose necessarily one side or the other, but to try to evaluate how these perspectives shape the understanding of the function of the Hippodrome at Constantinople. Whether the factions had a semi-independent political role or were imperial agents merely responsible for the games and the ceremonial, whether the riots aimed at intervening in the decision-making process or were the product of hooliganism; it can with certainty be stated that the Hippodrome was the arena where social tensions or harmony, the problems or the well-being of the empire, the content or discontent of the public was explicitly pronounced Although the relationship between the population at large and the emperor himself was to a great extent geared by a set of prescribed acclamations and behavioural patterns, the public also had the opportunity to break the cycle of the ceremonial through verbal or physical reactions. Moreover the frequency of the games ensured at least a visual contact between the emperor and the people, for the emperor this would be a method for evaluating

the mood of the population, for the population this was an occasion to see to what extent the emperor was concerned with the welfare and demands of its population.

The existence of circus factions up to the twelfth century, indicates on the one hand, the continuity of the circus games and ceremonies, thus of the encounter between the ruler and the ruled, on the other hand the close interconnection between the factions and the Hippodrome activities. Such as the earlier Roman emperors did, the emperors of *Nea Roma* fulfilled their traditional role of providing *panem et circenses* in order to reassert their power as well as the strength and prosperity of the empire. However this means much more than imperial propaganda, it is significant because as long as the circus games continued to be held, the sense of belonging to Constantinople, the sense of being a Roman citizen, hence the sense of collectivity was kept alive. Even today, the celebration of the days which are significant in the history of the state is a duty that the state cannot discard by any means. We do not need as many festivals and games as the Romans did, because the media, even when it severely criticises the policy of the government, enhances our sense of collectivity.As one of the Turkish TV channels repeatsevery night, we are watching their channel in order *to share our life with other citizens.*

There is no single answer to the question how the Hippodrome of Constantinople functioned. As discussed throughout this chapter, circus activities are numerous in number and various in character. Although the chariot races remained the principal function of the Hippodrome, it surved as a multi-purpose space from the very start to the end. The Hippodrome at Constantinople was the abstraction of the city itself. It included men and women, the rich and the poor, the ruler and the ruled. It reflected social tensions, political decisions, imperial victories, economic prosperity, cultural characteristics, artistic virtuosity

It started to fully function when Constantinople started to exist and it stopped to function when the emperors left the glorious Great Palace in the twelfth century. In other words the life of the Hippodrome proceeded parallel to the life of the city. That is maybe the reason why the activities and the architecture of the Hippodrome still attract the attention of many students of the late Roman and Byzantine Empire.

CHAPTER II
HIPPODROME AS A BUILDING TYPE

1. Roman circuses versus the Hippodrome at Constantinople

By the the first half of the fourth century, when Constantine started to transform Byzantium into Constantinople, the complex consisting of the circus, imperial palace, mausoleum and public baths was already considered as the *sine qua non* elements of an imperial centre. In the region of Constantinople, Nicomedia, the chief residence of Diocletian, Thessalonike, the chief residence of Galerius and Constantine, and maybe also Nicaea and Heraclea Perinthus, each had a monumental Hippodrome constructed during the tetrarchy. The hippodrome at Nicaea is not discovered, yet since the charioteer Uranius who lived in the fifth century originates from Nicaea, there should have been a hippodrome at the city. Similarly equestrian races are recorded at Heraclea-Perinthus in AD 617or 623.[1] In the Eastern provinces chariot races were already well-known due to the Greek tradition of Olympic games, before these circuses were built. Nevertheless, the distribution of the known Hippodromes in the Eastern provinces (fig.II.1.) illustrate the fact that whereas there was a substantial number of monumental Hippodromes in the Eastern Mediterranean; Asia Minor and Greece are represented only by the circuses at Thessalonike, Nicomedia and Constantinople. Moreover the Eastern Hippodromes were much closer in design to the Roman Circus Maximus rather than to the Greek Hippodrome at Olympia, and they were built in the second and third centuries AD, at the same period

[1] See Humphrey, 635. Nuşin Asgari, who undertook archaeological excavations at Perinthus, thinks that some of the remains may belong to a hippodrome.

when monumental circuses were being constructed in the Western provinces.[2] In Asia Minor, despite the wide-spread vogue of building circuses in the Roman world, the tradition of Greek games seems not to have particularly led to the popularity of chariot races since the great urban centres like Ephesus, Aphrodisias, Pergamum, Sardis, Xanthos etc. had stadia for athletic events rather than Hippodromes for chariot races.[3]

In this case, Asia Minor and Greece do not provide any substantial material that can be used for comparison. The circuses in the Eastern Mediterranean may be helpful since they belong to the Roman tradition in terms of architectural design; however on the other hand they do not show similar characteristics in building techniques and materials since the Eastern Mediterranean is far away from Constantinople not only in distance but also in terms of craftsmanship, available materials and constructional traditions. In this respect, the circus that are likely to show similar constructional characteristics with the Hippodrome at Constantinople are those in Thessalonike, Nicomedia and the assumed structures at Nicaea and Heraclea Perinthus. Unfortunately, among these only the circus in Thessalonike has been unearthed.[4]

On the other hand in terms of design, there are a number of circuses that may give a clue about the architectural tradition that the Hippodrome at Constantinople belongs to. The Circus Maximus which reached its final *canonical* form before other Roman circuses were built, is comparative material on its own for the Hippodrome at Constantinople as

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[2] The earliest races at Circus Maximus are dated to the seventh century B.C., and the stadium of Olympia was probably functioning back in the Mycenean periods. However, during these early stages, there were neither a built up circus nor a stadium. The hippodromes of Antioch, Laodicea, Beirut, Tyre, Caesarea, Bostra, Gerasa, Alexandria, Antinoopolis, Cyrene and Gortyn are discussed in Humphrey, 438-539.

[3] Humphrey explains this by the lack of a distinct architectural pattern for Greek hippodromes as opposed to uniform and quite standardized architecture of Roman circuses. Also he argues that the influence of Greek games have not been permanent in the Eastern Mediterranean. Ibid, p.439-441

[4] M. Vickers, "The Hippodrome at Thessaloniki," *JRS* 62 (1972).

for others. The significance of the Circus Maximus in our discussion of the Hippodrome of Constantinople is increased by the statement of Pseudo-Codinus in the tenth century, claiming that the Hippodrome of Constantinople was shaped on the Circus Maximus.[5] Does it mean that the master workers aimed at reproducing the Circus Maximus at Constantinople, or would there be an allowance to play with its form provided that they preserved the *sine qua non* architectural features such as an imperial box, *carceres*, a fixed range of dimensions for the arena, turning posts etc.? In order to answer these questions, the architectural evolution of Circus Maximus and of the Hippodrome at Constantinople need to be further analysed.

Likewise, the early third century Sessorian complex at Rome, which is likely to have been the predecessor of the circuses built in the so-called tetrarchic capitals (Trier, Aquileia, Antioch, Sirmium, Milan, Thessalonike) and the tetrarchic circuses themselves may help to illuminate the existing architectural tradition at the time when the Hippodrome at Constantinople was completed.[6] Therefore the comparative analysis in this chapter consists of three parts: a basic comparison of a Roman circus and a Greek Hippodrome, the presentation of the architecture of the Circus Maximus; and the description of the Sessorian complex in relation to the tetrarchic circuses. Finally, an analysis of the architectural components of the Hippodrome at Constantinople will help to underline its traditional versus peculiar features.

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[5] κατα μιμησιν της Ρωμης, Vogt, "L'Hippodrome de Constantinople," *Byzantion* X (1935): 471.

[6] It should be kept in mind that the chronology of the different construction phases of the hippodrome at Constantinople cannot be securely determined. In this discussion, we assume that Septimius Severus started the construction and Constantine completed it without discussing which parts are attributed to which emperor.

1.1. Greek tradition versus Roman tradition

The Crown games and the Olympic games of ancient Greece constituted a long-lasting tradition of mass sports and entertainment in Greece and Asia Minor. The earliest races were held at Olympia probably as early as in the Mycenaean times. Nevertheless the organisation, the types of sportive events as well as the space allocated to these were quite different in Greece and in Rome.[7] The Circus Maximus, as the representative and to some extent the model for Roman circuses will be dealt with in the following section. What about the architectural features and components of a Greek Hippodrome as exemplified by the Hippodrome at Olympia?

The Greek games consisted of a number of athletic events such as boxing and wrestling, etc. in addition to the equestrian activities such as races for ridden horses, ridden colts, and two or four-colt chariots. The stadium which was a building type common in the cities of Greece and Asia Minor, was designed for athletic events and was not suitable for Roman style chariot races, since the arena was about 180-200 m long, and 30m wide, i.e. both dimensions are about the half of the corresponding dimensions of a Hippodrome. To accommodate equestrian events, the Greek tradition did not develop a canonized building type. Since Homeric times, a level field preferably surrounded on one or two sides by shallow hills where the spectators would sit, served as an appropriate place for

[7] There are a number of differences between Greek and Roman style of chariot racing: i. In Greece private owners, in Rome circus factions organised the games; ii. many chariots could participate to the Greek style race whereas Roman races were designed for 12 chariots; iii. whereas horse riding races were popular in the Greek world from early periods onwards, *bigae* races appeared at Olympia only in the late fifth century; iv. The Greek hippodrome was not a fully built-up structure, a temporary provision for a racing-track and seats for spectators would be sufficient. For further details see Humphrey, 5-11 and Cameron, *Factions* passim.

Greek games. The arena would be prepared for the races by placing temporary turning posts and drawing the lanes on the soil.[8]

The Hippodrome at Olympia represents the most built-up state of a Greek Hippodrome (fig.II.2.) with its two turning posts, starting gates, mechanical equipment for indicating the start of the race, a circular altar near the turn and banks enclosing some parts of the arena.[9] The Greek Hippodromes did not have elaborate substructures carrying the seating tiers (stone or wood) into which shopping facilities could be accommodated, the stoa leading the movement of people in and out the Hippodrome, sculptures and obelisks decorating the structure or a box for the prominent people etc., all of which were common architectural components of a Roman circus. Despite the importance of the Olympic games, the physical and literary evidence in hand indicate that the Greek Hippodromes never became architectural entities.

The introduction of the Roman chariot races together with Roman circuses to the Eastern provinces did not change the situation. Neither in the Classical and Hellenistic periods, nor in the Roman period, by which chariot races had become a popular and wide-spread public entertainment, were there fully built structures for the chariot races in Greece and Asia Minor. The dearth of Roman inscriptions about equestrian events and charioteers from Asia Minor further indicates that the tradition of Greek games did not let chariot racing become the most popular activity in Greece and Asia Minor as opposed to other Roman territories.[10] Likewise, it also implies that providing the cities with an

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[8] Chariot racing with *quadriga* (four horse chariot) became part of the Olympic games in 680 BC, the first ridden horse race is dated to 648 BC and *biga* (two horse chariot) races are recorded first in 408 BC. The first chariot race is mentioned by Homer in Book 23 of the *Iliad*. This was part of the funeral games of Patroclus. For further details see Humphrey, 3-7 and 439.

[9] The starting gates were designed in the fifth century BC. See Ibid., 8.

[10] Ibid, 7, 525.

architecturally defined and completed structure where chariot races, athletic and other equestrian events would be accommodated did not become a necessity in this part of the Roman world.

1.2. The Circus Maximus as a model for Roman circuses

The Circus Maximus (fig.II.3.), or the great circus of Rome, with overall dimensions of 620x140 m2, surpassing the *Colosseum* by far (188x166 m2), was the largest and longest-lived entertainment space in Rome. It was located in a Northwest-Southeast orientation in the valley between the Palatine and the Aventine (fig.II.4.). Unlike other Roman circuses, the history of Circus Maximus dates back to 600 BC when Etruscan kings were reigning in Rome. From this period up to AD 549 when the last games were held, its form has been continuously altered by additions, repairs and reconstructions. Trajan's reconstruction work on the circus seems to indicate the final stage of its design which served as a model or predecessor for the Roman circuses built up all around the Roman world.[11]

When the races started to be held between the Palatine and the Aventine, the Circus Maximus looked rather like the Greek Hippodromes or Etruscan sports arenas, which did not possess any permanent structure except for a couple of wooden seats towards the center of the arena. The circus was not solely a sports field, but it also had strong religious connotations represented by the shrines, altars and other commemorative elements of the divine beings. The shrines to the Sun and the Moon were particularly

[11] Hearsey, 2-3 and 56-131

important because their attributes were respectively the *quadriga* and *biga*.[12] The existence of many religious elements in the circus gave it a dual character: a public entertainment space on the one hand and an open-air cult center on the other hand. Therefore the transformation of this open space into a structure was not only an architectural evolution but it also meant a shift from rural to urban in which process the relationship between the public and the circus also became more geared to the entertainment rather than to the religious purposes.[13]

The first stage of the transformation of the open circus area into a building was completed by 7 BC with the completion of the work of Julius Caesar, Agrippa and Augustus, who mentioned it in his *Res Gestae*.[14] The Circus Maximus had become one of the most outstanding buildings of Rome, with its seating tiers on three sides (two third of these were wooden, whereas the stone seats were located next to the arena); an *euripus* dividing the arena into two; promenoirs at the level of the third storey; and *pulvinar* erected by Augustus. Among these, the *pulvinar* (fig.II.5.) from which Augustus and his successors watched the races, has a particular place, because it was the precursor of the

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[12] The cult of the Sun and the Moon was already existent in the site before the circus. Ancient sources tell that the Circus as a whole was dedicated to the Sun, hence the word circus was a derivative of *Circe*, the daughter of the Sun. The obelisk, the symbol of Egyptian sun-worship, the Sun-god depicted in his chariot like a victorious charioteer and the cult of Sol *Invictus* under the Late Empire are elements linking the circus and the Sun worship together. Besides, the circus had strong connotations related to agriculture and the underworld, as exemplified by the altars, shrines and temples dedicated to *Consus* (associated with the storing of harvest, with the underworld through *Poseidon Seisichthon*, and with horses through *Poseidon Hippios*), to the goddess *Murcia*, to the old Italic deities related to agriculture, to *Ceres, Magna Mater, Apollo, Hercules Invictus* etc. The place of these as well as a detailed analysis of their characteristics are presented in detail in Humphrey, 60-95.

[13] From 600 BC to the third century BC it seems that the Romans did not feel the need to transform this open space into a structure. The only change is the construction of wooden starting gates and the provision of special seats (*sella curulis*) for the magistrates, senators. The gates may have been built up under the influence of Olympia which possessed sophisticated gates in this period. In 194 or 191 BC, a law separating the seats of senators from the common people was implemented. Ibid.

[14] This date corresponds to the last visit of Dionysus of Halicarnassus to Rome. Humphrey, 74.

imperial box, and the physical connection between the circus and the palace.[15] It is known that the *cubicula* or *cenacula,* which were the apartments on the Palatine with a view of the valley, were also frequently used by the emperors.

The following stage in the evolution of the Circus Maximus is represented by the reconstruction of Trajan. What he ordered was the reconstruction of all parts in brick faced concrete and stone; the extension of the seats towards the arena (thus reducing the width of the arena); the construction of shops and entrances (fig.II.6.) into the substructures and increasing the steepness and the height of the seats. Among these, the function of the substructures for shopping activities added another major public function to the circus, by allowing the use of both the interior and exterior of the structure, thus linking it to an urban movement/activity through shops and additional porticoes at the ground level. In other words the ground level of the circus was turned into a porticoed street, a common character of the major arteries in the Roman world.

Caracalla, Alexander Severus, Diocletian and Maxentius are known to have carried out some building activities in and near the circus.[16] Under Constantine, various sections of the circus such as the *spina* were lavishly decorated and seating tiers were further extended. None of these altered the overall and fundamental design of the circus as completed in AD 103 under Trajan. Therefore in talking about the influence of the Circus Maximus upon other Roman circuses, the architectural features that would be considered for comparative purposes are basically those belonging to the Trajanic reconstruction. However this does not mean that further work was not taken into account by the master

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[15] In Etruscan times, statues of gods and their attributes were placed on the *pulvinar*, which thus had a religious function. See Humphrey, 78-83.

[16] Between Augustus and Trajan, Claudius, Nero and Domitian should also be noted for their interest in the circus. Ibid., 76.

workers. It is clear that those involved in building circuses were closely interested both in the existing elements of Circus Maximus and in any additions or alterations (fig.II.7.).

After the reconstruction of Trajan, the arena of the Circus Maximus measured c.580x79 m2 and its overall dimensions reached 620x140 m2. Its capacity after the enlargement of seats in this period is estimated to be about 150,000, a capacity that can be approached only by the circuses at Carthage, Antioch and Constantinople, built later than Circus Maximus.[17] The left flank angled in the line of the finish, it is possible that the right flank had a double-kink (fig.II.8.). The *spina* also angled in towards the left flank. The monumental arch of Titus in the middle of the *sphendone*, the *pulvinar*, the finishing box, the turning posts, the 12 starting gates and the towers at the end of two flanks, were then permanent elements of the Circus Maximus.

By AD 103, the circus had become an important part of the urban life of Rome with its shops aligned with porticoed streets and the movement of people in and out the building. However despite the fact that Circus Maximus was the greatest public space of Rome, and despite the continuous flow of people through the numerous entrances to the building, the Circus Maximus was not the public space *par excellence* of the city of Rome. Because in the capital of the Roman empire, public activity was going on in more than one urban core. The citizens had choices among a variety of entertainment possibilities although chariot races remained still very popular.

[17] Antioch had a circus as early as 67 BC, Carthage circus was built in the early second century AD and Constantinople circus was completed in 330. See ibid., 126-129, 297-306, 44-461.

1.3. The Sessorian Complex and the tetrarchic circuses

Rome was the only capital of the Roman Empire. No emperor could think of settling permanently in a city other than Rome. However under the late Empire the military concerns forced the emperors to pass most of their time at the command of their troops. The mobility of the emperors meant the shift of the center together with him, which lead to the emergence of certain cities as imperial centers if not capitals. The establishment of the tetrarchy under Diocletian (284-305) completed this process and the emperors started to be identified with a city as their chief residence. Although Rome remained the capital of the empire, these new centers were subject to major urbanization activities in order to make them *like* Rome. This included a boom in the construction of circuses which had become closely associated with the emperor by the second half of the third century. From Diocletian to Constantine all the *augusti* built a circus at their principal city.[18] The primary source of inspiration for the builders of these circuses was probably the Circus Maximus, the great circus of the great capital.

In addition to the Circus Maximus, another circus located at the southeastern extremity of Rome is particularly important in the later development of circuses because it represents an intermediary stage between the Circus Maximus and the tetrarchic circuses. This is the Circus Varianus, built in the early third century AD, whose peculiarity lay in the immediate proximity of the Sessorian palace or villa, connected to the circus by a 300 m long, 14.45 wide vaulted corridor ending in the imperial box. The circus was also oriented in a Northwest-Southeast orientation, the starting gates being at the North West. These two characteristics have become almost a standard of the tetrarchic circuses. The

[18] Fergus Millar, *The Emperor in the Roman World* (Cornell University Press, 1977), 43-45.

Sessorian complex is significant in the discussion of the Hippodrome of Constantinople, because it is dated to the Severan period and to the reign of Elagabalus (218-22), a period during which the construction of the Hippodrome at Byzantium might have started.[19]

The Circus Varianus measured c.565m x 115-125m., longer than the Hippodrome at Constantinople (455-475 m.) but smaller than Circus Maximus (580 m.). The presence of an obelisk on the *spina* was a common feature of the Circus Maximus and tetrarchic circuses as well as of the Constantinopolitan Hippodrome. The kink(s) on the right flank, or the angled left flank, features observed in the Circus Maximus and the Circus Maxentius cannot be determined at the Circus Varianus due to the lack of preciseness of the published plans (Fig.II.9). The Circus Varianus does not seem to represent a further stage in the evolution of circuses in terms of innovating the design of the circus itself, but by making the physical connection between the circus and the imperial residence possible, it inserts the circus into a larger complex. Therefore when Septimius Severus gave the start for the construction of the Hippodrome at Constantinople, and when tetrarchic circuses started to emerge from the late third century AD onwards, the access of the emperor to the circus directly from his residence had already become a concern -minor or major- for the designers of the circus. With the tetrarchy this concern was added to the major design requirements for a circus.

In the process of circus construction under the tetrarchy, three phases of construction can be discerned: The first phase covers Nicomedia, Milan, Aquileia and the palace quarter in Antioch, the second, Thessalonike, Trier and the circus of Maxentius; and

[19] The ambition of Caracalla and Elagabalus for watching and participating to chariot races are well-known, ibid., 552-557.

the last phase includes Sirmium and the completion of the Hippodrome of Constantinople. Among the cities mentioned above, only Trier, Antioch and Constantinople had a pre-tetrarchic circus. Rather than analysing these circuses one by one, it would be more beneficial to see in what respects they are similar to or different from each other (fig.II.10.):[20]

1. The tetrarchic circuses were oriented in the North-South or Northwest-Southeast direction, the *sphendone* remaining at the Southeast. The exception to this character was Antioch and Trier circuses which were oriented North-South with the *sphendone* being at the North. The Sessorian complex and Circus Maximus were oriented like the majority of tetrarchic circuses (fig.II.11.).
2. Tetrarchic circuses were part of the palace complex which was not itself necessarily adjunct to one of the flanks but there was always a physical connection between the two. The imperial box where the imperial family watched the race and which connected the circus to the palace was located either on the right or left flank.[21] At the Sessorian complex, Sirmium, Milan, Antioch and Thessalonike, the palace was on the right flank, whereas at Aquileia, the Circus of Maxentius and Constantinople, the palace lay on the left-hand side.[22]

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[20] Ibid., 579-638

[21] The right and left hand side are determined by facing the *sphendone* and *carceres* remaining at the back.

[22] The existence of a palace complex connected to the circuses at Milan and Sirmium is not very clear. Humphrey thinks that the long apsidal structures adjunct to the right flank and which served as a lodge for the emperor imply the existence of an imperial residence at this location. At the circuses, there had to be a finishing box which could be the same or different from the imperial box which connected the circus to the palace and which could be located on either sides. At Thessalonike where the palace has been discovered, there is a similar long apsidal structure against the circus on the side of the palace. The location of the palace at Aquileia is not certain, Humphrey argues that the remains seem to indicate the left-hand side of

3. Different than earlier circuses which were built outside the city, tetrarchic circuses were within the city walls though at the extremity of the city thus close to the city limits.[23] This may be related to the close physical relationship they had gained with the imperial residence which had to be well-protected. The circus determined the location of the palace rather than the other way round, because it was more difficult to find a suitable and sufficiently large space for a circus than for an imperial residence.[24] The Circus Maxentius on the *Via Appia*, outside the city walls, constitutes an exception to this pattern.[25] At Aquileia, the city wall is adjunct to the right flank and at Milan it runs along the right side leaving a space for an apsidal intermediary structure that can also be observed at Sirmium and Thessalonike.
4. The dimensions of the arena were usually 450 x 67-79 m2. The length of the arenas of Circus Maxentius (503 x 75-79 m2), Antioch (492.5 x 70-75 m2) and Thessalonike (400 x 73-74 m2) do no fit in this pattern.
5. Tetrarchic circuses did not have large seating capacity (about 10,000 people). In other words the depth of the seating tiers were little (eg. 5.25 at the Circus

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the circus. At Trier the palace is in close proximity of the circus rather than being adjunct to it. See ibid., 579-638.

[23] To clear out space for a circus, the old quarters were frequently demolished.

[24] This becomes more apparent when a circus has already been constructed before the building of an imperial residence such as the cases of Antioch, Trier and Constantinople illustrate

[25] Frazer argues that, in choosing a site outside the city walls for his circus, imperial palace and mausoleum, the major concern of Maxentius was the mandatory requirement of placing the tomb, i.e. the mausoleum beyond the city frontiers. Also, he thinks that the purpose of building his own circus within this complex, rather than using the Circus Maximus, is closely related to the imperial cult in which the emperor would be acclaimed by the public both alive and dead. See Alfred Frazer, "The Iconography of the Emperor Maxentius' Buildings in Via Appia," *Art Bulletin* XLVIII(1966): 385-392.

of Maxentius and 6.5 at Sirmium). The Circus Maximus, Antioch and Constantinople had larger capacities (80,000-100,000).

6. Tetrarchic circuses had kink (s) on the left or/and right.[26]
7. The monumental or triumphal arch in the middle of the *sphendone* is present at the Circus Maxentius and at Sirmium.[27]
8. The construction technique is usually concrete-like mortared rubble faced with small local stones, alternating with brick courses.[28]

Although a substantial number of similarities can been detected as listed above (Table 1), it seems that the topography, the chosen or cleared out site, the existing urban pattern, the available materials and local building traditions and factors peculiar to each tetrarchic capital contributed a lot to the architectural plan and elevation of circuses. In other words, rather than following mot-à-mot a standard circus design in which the place of the imperial box, the number and the slope of seats, the exterior and interior outlook, the connection between the palace and the circus etc. were strictly determined, the master workers, with the consent of the *augusti*, seem to have erected their own Hippodrome designs fitting into the existing physical context. Did they take the Circus Maximus as a model? Certainly, such an impressive and significant building served them as a guide, but this does not mean that the Circus Maximus dictated every single detail of a certain architecture upon the master workers. When the circus at Sirmium started, what would be

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[26] Circus Maximus has two kinks on the right. Constantinople will be discussed in the following section Although the plans provided by Humphrey rarely illustrate these kinks, further analysis and excavations seem to indicate their existence. The fact that earlier circuses such as at Antioch, in Italy or provinces do not have kinks may be the indication that kinks were a tetrarchic refinement.

[27] Circus Maximus has such a monumental arch, the arch of Titus dedicated in 80-81 AD.

[28] A detailed analysis of constructional techniques and materials are not provided in Humphrey.

more natural for the master workers to do than considering the designs and constructional systems of the circuses of Nicomedia, Trier, Milan, Aquileia, Thessalonike, Antioch and even maybe Constantinople. Solutions to architectural, topographical and constructional problems would be sought in the existing circuses of the Roman world.

For this reason, the exceptions to the rule are as significant as the similarities themselves. The Hippodrome at Constantinople corresponding both to a tradition before the tetrarchy and to its last stage, is born out of a tradition starting with the Circus Maximus, continuing with the Sessorian complex and ending in tetrarchic circuses. Therefore, it is important to understand how and why the Constantinopolitan Hippodrome fits into the tradition described above or differs from it. Before making such a comparative analysis, its architectural components as revealed in the primary sources as well as by the surveys and excavations carried out at the site, have to be presented in the first place.

2. The major architectural components of the Hippodrome at Constantinople

In the first half of the twentieth century, a number of archaeological surveys and excavations were carried out in order to be able to reconstruct the Hippodrome at Constantinople. The trenches excavated by Casson and Rice at the northwestern flank in 1927, the survey of Mamboury and Wiegand at the southeastern flank in 1932, Mamboury's survey at the nothernmost end (at the region of the *carceres*), the salvage excavation of Rüstem Duyuran further at the northwestern flank in 1950 and the survey by William MacDonald in 1955 contributed to the understanding of the plan and structure of the building. These studies enabled scholars to reach a number of reconstructions -

controversial though- of the western flank in relation to the *sphendone.* However the eastern flank, together with the *kathisma,* which remained under Sultan Ahmet Mosque, did not yield a sufficient amount of data that could lead to a more or less secure reconstruction. Therefore any discussion related to the eastern flank is based on literary evidence and comparative analysis of other Roman circuses. The *carceres* or the starting stalls could not be unearthed either; for its reconstruction, the literary evidence is supported by the description of travellers who saw it partially standing.

In this paper, the overall design, orientation, dimensions of the Hippodrome and architectural elements like the seating tiers, starting gates, *kathisma* and the gates will be presented.

2.1.Form, orientation, and dimensions

It can be without doubt stated that the Hippodrome at Constantinople does not have a symmetrical plan. The excavations revealed that the *spina*, the *sphendone* and different sections of the seating tiers each had their own axis: [29] from the North to the Southeast, the spina, the southern portion of the western flank and of the eastern flank make respectively angles of 38° 30'; 36° and 36° 30' from the North. While the two flanks diverge 30° from

[29]The *spina* or *euripus* which divided the arena into two seven laned tracks was tilted towards the eastern flank. The line of the *spina* is securely determined due to the surviving monuments on this axis: the obelisk of Theodosius, the spiral column and the obelisk of Constantine Porphyrigenitus (counting from north towards south). Literally, the *euripus* was a large pit filled with water to protect spectators from wild animals during wild animal games of Roman times. It also indicates a canal where fruits or other goods could be accumulated to be distributed to the spectators. The athletes might have used water in the *euripus* to refresh themselves (Vogt, "L'Hippodrome," 473-476; Janin, *Constantinople*, 177-188). The excavations by Casson and Rice in 1927 revealed that the *spina* was marked by a water conduit rather than low wall. For detailed discussions of the surviving and non-surviving monuments on the spina see Sarah Guberti Bassett, "The Antiquities in the Hippodrome of Constantinople", *DOP* 45(1991). The monuments and their symbolism will not be treated in this paper. Similarly the discussions that arose due to the use of *spina* and *euripus* interchangeably by literary texts can be read in Guilland, *Etudes*, 442-7.

the *sphendone*, the western flank seems to have double-kinks. MacDonald proposes three alternatives for the reconstruction of the plan (fig.II.12.): [30]

1. The eastern flank does not have a kink, the western flank breaks at F and continues eastwards with an angle of 2° 30'.
2. The eastern flank does not have a kink. Western flank breaks at E northwards, at F it has another kink eastwards.[31]
3. The eastern flank has a kink at an unknown point. There is one or two breaks on the western flank.

The existence of kinks conforms with other late Roman circuses at which kinks on either sides are almost a rule. Similarly, as a common feature of Roman circuses, the *spina* of the Hippodrome of Constantinople is tilted towards the left-hand track (here eastern), thus the arena becomes larger at the start on the right-hand side (here western).[32] However with the physical evidence in hand, there is no way to assess which one of the three proposals is correct. In order to reconstruct the plan of the Hippodrome, more trenches have to be opened both on the western and eastern flanks.

The dimensions of the Hippodrome is another controversial topic for similar reasons: the asymmetric plan and the lack of evidence on the eastern flank result in a number of different and uncertain measurements of the width. When it comes to the length, the difficulty in determining the place of the northern starting gates constitutes the core of the problem since the southern end of the Hippodrome is marked by the surviving

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[30] MacDonald, "L'Hippodrome," 2, 23-25.

[31] Aerial photographs of the Hippodrome, the existence of two breaks at Circus Maximus (remember that the hippodrome of Constantinople is known to have been modelled on it) and the archaeological evidence seem to support the double-kink. Ibid., 34-35.

[32] The arena opens up towards the starting gates, thus all charioteers have more or less equal chance in the race regardless of the stall from which they start off. See ibid., 26-27 and Humphrey, 19-24.

substructures of the *sphendone*. The diameter of the *sphendone* has been calculated as 117.5 m. by Casson and Rice and 120.4 by Mamboury and Wiegand. Our measurements indicated an approximate diameter of 117.5-120 m.[33] The diameter of the *sphendone* equal to the width of the Hippodrome only at the two ends of the semi-circle. Due to the divergence of the flanks, the existence of kinks and seating tiers in different dimensions, the width changes along the flanks towards North[34]. In average, the overall width of the Hippodrome seems to be about 120 m. with the track measuring about 77 m, i.e. 20 m. narrower than Circus Maximus.

There are also a number of proposals for the overall length of the Hippodrome. Mamboury estimated the length to be c. 450 meters which meant that it ended almost 30 meters before the line of the *Mese*. However it should be noted that he could not find any trace of the *carceres* during his investigations. The latest excavations carried out by Duyuran in 1950 revealed the remains indicated with G on the plan prepared by MacDonald (fig.II.13.). If these are considered to be the northernmost seating tiers, the minimum length of the arena is calculated as 421 meters and its maximum length can be approximately 442 meters since it is limited by the baths of *Zeuxippos*. With the addition of the width of the *carceres* and of the seating tiers on the *sphendone*, the overall length of

[33] Casson and Rice reached that number by multiplying by two the distance from the outer supporting wall to the axis of the spina. They assumed that the flanks were parallel to each other But since the central axis of the sphendone is not the same as the axis of the spina, this results in an error of 4 00 m as calculated by MacDonald, "L'Hippodrome," 37.

[34] It is possible to find a very detailed explanation of the calculation of the width in ibid., 36-44. In his work there is a comparison of dimensions as calculated and measured by Casson and Rice, Mamboury and Wiegand and also of Hero of Byzantium (10th century AD) who used the Hippodrome as an example for his problems about proportionate angles in his *Geodesy*. . His third question is about calculating the width of the sphendone. The table provided by MacDonald is included at the end of this paper as Table 2.

the Hippodrome is calculated as 455 meters.[35] In a second proposal, the length is estimated to be about 475-480 m., which means that the *carceres* open on the *Mese*. It should be remembered that the starting gates were also the main entrances for the processions, horses, chariots and factions as well as the public. Such a big crowd would require a forecourt between the *Mese* and the *carceres*, where they could gather, waiting their turn to enter through the gates. In this respect, although this cannot be proved by the physical evidence at hand, it seems logical that the Hippodrome was not directly giving on the *Mese* which was only about six meters wide (thus cannot be 475-480 m. long). So the length of the Hippodrome must be smaller than 475 m. (see table 2).

2.2. Seating tiers and the *carceres*

Seats surrounded the Hippodrome except above the *carceres*. Excavations have revealed substructures in different widths: 23.91 meters at C,23.4 meters at E, 21.28 meters at G The flanks from inside to outside, consisted of a balustrade separating the seating tiers from the arena; then a *loggia* 1-1.5 m. wide in front of the seats for horizontal circulation, the seats themselves; and a second *loggia* which may have been surrounded by an arcade.[36] Stairs lead from the arena to the *loggia*, then to the seats. Probably, there were also stairs leading from the substructures to the lower loggia (fig.II.14.). Thus the

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[35] MacDonald takes the width of the carceres at Circus Maximus, i.e., 16.30. He estimates the width of the sphendone 22.65 m. For a detailed discussion of the length as well as the width of the Hippodrome, see ibid., 42-44; Rodolphe Guilland, "Les Dimensions de l'Hippodrome," *Bsl XXXI* (1970): 1-1; Vogt, "L'Hippodrome," 471-88.

[36] Another question about the seating sections of the Hippodrome is about the possible presence of a colonnaded promenade surrounding the uppermost seating tiers. The sixteenth century drawing of Panvinio, the 37 sphendone columns by Clavijo in the thirteenth century and again seventeen white marble columns of the sphendone depicted by Pierre Gilles in the sixteenth century seem to support the reconstruction of the Hippodrome with an upper-story promenoir. See MacDonald, "L'Hippodrome," 61-72.

substructures of the seats on the flanks allowed communication between the arena and the seating tiers and the exterior. The minimum number of rows was probably around 25; if Robert of Clari, who came to the city with the Latin Crusaders, is correct, 30-40 ranges were still standing in 1204.[37] On the other hand, the slope of the seating tiers unearthed at G is calculated as 28° 35'.[38]

Some of the seats, especially those reserved for the religious or court officials and members of the factions, were certainly of stone, whereas there might have been wooden seats at the upper portions to diminish the overall weight. Fires in 406, 491, 498, 507 and 532 AD (the *Nika* riot) report certain damage at the Hippodrome which may correspond to the burning down of these wooden seats. Similarly Justinian's restoration project may have included the replacement of some wooden stairs by stone ones.[39] Rüstem Duyuran discovered, 21 marble slabs at G as well as the balustrade of the stairs leading to the seats (fig.II.15). Also a stone seat (190 cm long, 70 cm wide, 84 cm high), has been unearthed in the garden of *Sultanahmet* Mosque (fig.II.16). These finds do not discard the possible existence of wooden seats but there is no way to estimate the proportion of the stone seats to the wooden ones. With these data in hand and excluding the wooden seats, as well as the possibility that spectators would either stand or sit on the stairs, William MacDonald calculated the capacity of the Hippodrome as 51,126.[40]

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[37] Guilland, *Etudes*, 373.

[38] There is no physical evidence about the seating tiers at the sphendone. However literary sources refer to spectators sitting at the sphendone. For a thorough discussion of the seating sections, see Guilland, *Etudes*, 373-378 and MacDonald, "L'Hippodrome," 41-60.

[39] Guilland mentions a restoration work undertaken by Justinian I, but he does not provide any further information or reference. See Guilland, "Les Hippodromes de Byzance," 184. On the other hand, in the tenth century under Romanus I Lecapenus, some seating tiers collapsed and were probably restored afterwards since the hippodrome continued to function up to the twelfth century. See MacDonald, "The Hippodrome," 103-104.

[40] The first literary evidence about stone seats comes from Leo the Grammarian in the 10th century, who referred to the seats as τα μαρμαρα. MacDonald, "L'Hippodrome," 49-56. MacDonald does not explain how he calculated the seating capacity of the hippodrome. A very simplistic calculation based on the overall

The *carceres* or the structure including the starting gates for the chariots constituted the northernmost limit of the Hippodrome. However its exact location as well as its dimensions are unknown. It must have been located along a curve aiming at the right-hand side (here the western) track according to functional design requirements for a circus.[41] The *carceres* are referred to as a two-storeyed structure, with a 20 meter high central tower adorned by a gilded *quadriga,* and where the flag announcing the games was hung.[42] It is not known whether there were two towers on both sides of the *carceres* as in the Circus Maxentius (fig.II.17.). The northern façade of the building as depicted in Panvinio's drawing (fig.II.18.) was still standing when Bouondelmonti visited Constantinople in the fifteenth century. Charles Texier saw its ruins on the ground in the nineteenth century and finally Mamboury searched for its traces in vain in the first half of the twentieth century.[43]

The *rez-de-chaussée* of the structure served as the main link with the city through its gates and as the processional entry through the *porta pompa or* πρωτωθυρον which was probably the large arched passage beneath the central tower. The stalls at the arena level, probably opened to the stables in the *diippion* to the Northeast of the Hippodrome. The gates of the stalls usually used by the horses and charioteers might have been open when races were not hold to allow further communication of the Hippodrome with the city. Therefore to the North of the *carceres* there should have been a large open space including the *diippion* and serving as a vestibule between the *Mese* and the Hippodrome.

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dimensions of the hippodrome, the dimensions of the seat discovered in the garden of Sultan Ahmet Mosque and the account of Robert de Clari who recorded 30-40 ranges, gives a number around 40,000-50,000 in case all the seats are in stone. Therefore MacDonald's proposal might indicate a possible minimum capacity for the hippodrome.

[41] Humphrey, 19-24.

[42] The bronze horses of this quadriga are today in St.Marco in Venice.

[43] Vogt, "L'Hippodrome,"; Guilland, *Etudes*, 379-99 and MacDonald, "L'Hippodrome," 56, 78

It was long argued that the emperor and his entourage gave the start of the races and watched them sitting in the second storey of the *carceres*, in other words the *kathisma* was thought to be located above the starting stalls. Guilland proposed another function for the second storey of the *carceres*: cloakrooms and similar chambers for the members of the factions as well as for the charioteers. At present, scholars agree on placing the *Kathisma* on the eastern flank thus the secondary storey of the *carceres* may be closer in function to Guilland's proposal.[44]

2.3. The connection to the city versus the Great palace: the gates and the *kathisma*

A chariot race at the Hippodrome of Constantinople meant the rush of 50,000-80,000 people to the gates of the structure. It is probable that the majority of this crowd would approach the Hippodrome from the North, ie. from the *Mese* (fig.I.6.) which was the main artery of the city. Since the eastern flank was connected to the Great Palace, the crowd would probably not be encouraged to rush at the eastern entrances. How was then the horizontal circulation solved at the Hippodrome?

Guilland proposed three categories of gates: the gates of the *carceres*, two gates on the West and two on the East.[45] On the west, literary sources mention the *Antiochos* gate on the axis of the northern turning post and *Nekra* gate in the axis of the southern turning post. On the East, the *Karea* gate faced the *Antiochos* gate whereas the southern *Sphendone* gate was across from the Nekra gate. The *Karea* gate opening to the *Daphne*

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[44] Guilland, *Etudes*, 476-480. The number of stalls is another controversial issue about the *carceres*. The proposed numbers in literary and pictorial evidence are nine, ten and six. For further details see MacDonald, "L'Hippodrome," 82-84.

[45] Guilland, *Etudes*, 509-541.

court of the Great Palace was considered to be a ceremonial passage for officials, whereas the so-called *Sphendone* gate was an ordinary entrance to the Hippodrome.[46] To the North, the *porta pompa* (προτωθυρον), the arched passageway at the center of the *carceres*, was the processional way to the arena. The starting gates on either side of the *porta pompa* might have been opened to public for exit purposes after the charioteers and the horses quit the building (fig.II.19.).[47]

Would these gates be sufficient for the rapid entrance and exit of ten thousands of people, in other words were these really the only gates of the Hippodrome? The Hippodrome is known to have been surrounded by a περιστος, or porticos such as many other buildings in Constantinople.[48] The western flank seems to have been an important thoroughfare linking the Antiochos district to the North to Hormisdas district to the South. The excavations by Mamboury revealed the existence of markets and a semi-public bath of the palace of Lausos and Antiochos, in the immediate western vicinity of the Hippodrome. The physical and literary evidence seem to indicate that the western flank, rather than setting a barrier between the arena and the street, was permeable at the ground level, it provided shelter and shopping facilities to the passers-by.[49]

The substructures of the seats being thus accessible, it is very probable that there were many successive gates leading to the arena or even to the lower loggia (fig.II.13).Thus the two gates mentioned in the primary sources, the *Antiochos* and *Nekra* gate were probably major and larger entrances to the Hippodrome whereas a number of

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[46] The *Karea* gate may be the gate depicted on the obelisk of Theodosius.
[47] MacDonald locates the *porta pompa* conjecturally at the western end of the carceres. We think that a central location in the middle of the *carceres* is more adequate for a triumphal entry.
[48] MacDonald, "L'Hippodrome," 57.
[49] Guilland, *Etudes*, 509-30.

other small gates enabled the crowd to gain their seats easily before the race and exit the building without delay.[50] The surviving substructures of the Circus Maximus in which every third chamber had a stair which led to the seating tiers are a clear evidence that such large entertainment buildings had to possess numerous entrances all around their periphery (fig. I.2, fig. II.6).

The gates on the eastern flank are more obscure due to the dearth of physical evidence as well as the presence of the Great Palace which required a high degree of seclusion. The Great Palace had its own fortification wall, separating it from the outer wall of the Hippodrome and this was pierced only by the *Karea* gate leading to the *Daphne* court.[51] The eastern flank may not have been as open to public as the western flank. Although the literary evidence refers to a *dark stoa* along the wall of the Great Palace, this and the substructures of the western seats might have been reserved to the usage of the imperial officials.[52] In such circumstances, the number of entries on this side must have been limited. The "dark stoa", which may have been so-called because of the wall of the Great Palace cutting off the sunlight, may have reached the baths of *Zeuxippos* in the

[50] MacDonald also thinks in the same way "these colonnaded and arcaded walks served to connect the structure with the city and this perhaps explains why so few Hippodrome gates are mentioned in the sources and those infrequently." He further argues that the remains unearthed at G indicate the connection between the inner corridor, the loggia and the arena: "that the outer corridor or peripatos communicated with the inner corridor between the first and second walls, and thence to both the track and the loggia or terrace above, is certain from the nature and use of the building", MacDonald, "L'Hippodrome," 57 and 58 respectively, also see 57-60.

[51] According to MacDonald "Two gates at least communicated between the Palace and the Hippodrome, the *Karea* (perhaps that below the *kathisma*), and the *Skyla*, to the southwest". The *Karea* probably lead to the iron door of the *Daphne* Palace, the *Skyla* to the *Justinianos* Gallery.", MacDonald, "L'Hippodrome," 56. However according to Guilland, "La porte de bronze des Skyla, qui faisait communiquer l'Hippodrome couvert avec le vestibule des Skyla, par lequel on entrait dans le tricline de Justinien", *Etudes*, 518. If we are to follow Guilland's interpretation, the *Skyla* do not have a direct connection with the hippodrome. So we are left with the *Karea* gate which seems to be the only entrance to the great palace from the side of the hippodrome except the secret entry of the emperor through the wooden staircase called *kochlias* to the imperial box.

[52] Mesarites in the twelfth century talks about a dark stoa, see MacDonald, "L'Hippodrome," 57.

North, but its continuation southwards along the *sphendone* is unknown.[53] Whether the public was allowed to use the interval between the Great Palace and the Hippodrome is another unanswered question.

Neither the literary nor the physical evidence let us know whether these gates possessed closing mechanisms. Guilland argues that if there existed some sort of metal gates, these would have been stripped during the Latin invasion in 1204 and this would not escape the notice of historians or travellers.[54] Also the emperor would close the doors during riots and this also would surely be mentioned in the texts. Guilland's reasoning seems to be convincing. Moreover, as explained above, most probably the Hippodrome had various other minor gates along the flanks, in this respect in order to ban the entry to the Hippodrome, all entries had to be closed. One would expect to find that kind of closing system (including the gates, closing-opening hours and days) in the literary evidence. Using an argument *ex silentio*, it may be concluded that the hours and days when the Hippodrome was opened and closed would certainly be mentioned if such a thing existed. The continuous openness of the Hippodrome indeed enhances its quality as a public space.

The eastern flank is characterized by the presence of the official connection between the Hippodrome and the Great Palace, namely the *kathisma*, the counterpart of the *pulvinar* in Circus Maximus.[55] This structure consisted of a *rez-de-chaussée* and two floors linked by an internal stone staircase which was probably well-protected against possible

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[53] A couple of trenches beneath the footings of the *sphendone* would give valuable data.
[54] Guilland, *Etudes*, 509-30.
[55] As stated under the discussion on the *carceres* , many scholars argued that the *kathisma* was above the *carceres*. For a thorough discussion of the location of the *kathisma*, see MacDonald, "L'Hippodrome," 86-87.

attacks from the Hippodrome. The *rez-de-chaussée* which was at the same level as the racetrack and the *Daphne* court, the first court between the Hippodrome and the palace, probably had many chambers used as archives. The central doorway as depicted on the reliefs of the obelisk of Theodosius and the new base of the monument of Porphyrius found in Istanbul (fig.II.20) must indicate the door leading from the arena to the *Daphne* court and to the internal stone staircase.[56]

The first floor comprised a reception hall, chambers, vestibules and the imperial box which was secluded from other chambers by bronze gates. To get from the Great Palace to the imperial box, there was a secret spiral stair called κοχλίας which must have opened to the imperial box and to the palace only. Other chambers were vertically connected to each other and to the *Daphne* court by a staircase of stone. The second floor was reserved as the personal lodge of the emperor for watching preparations before going to his tribune or imperial box where he made himself visible to his public. There were also grilled lodges for women, princesses and wives of important people accompanied by servants and eunuches.[57] The best view of the races and the best protection against potential attacks seem to be the basic criteria for the design of the *kathisma*.

This general verbal reconstruction of the *kathisma* is all that the scholars can get out of the limited data in hand. Unless new pictorial, literary or evidence is discovered archaeological (which is not likely at all) it seems that the connections between the Hippodrome, the city and the palace will remain an unresolved problem. Scholars are left with scarce literary and pictorial evidence.

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[56] Guilland, Etudes, 462-88 and Vogt, Byzantion X(1935) and ibid., 86-88.
[57] Clavijo locates the imperial box opposite the obelisk of Theodosius, see MacDonald, "L'Hippodrome,"86.

3. Is the Hippodrome at Constantinople a canonical structure?

In order to answer the question whether the Hippodrome at Constantinople is a canonical structure, a number of other questions have to be discussed. In the first place, was there a certain circus which represented the final and 'perfect' design that was to be repeated all over the Roman world or did each circus constitute a further step or peculiar example in circus design? If we are to search for a canonical circus that served as a model for other circuses, the first candidate is the Circus Maximus at Rome. The Pseudo-Codinus informs us that the Hippodrome of Constantinople was shaped after the Circus Maximus. In 310 Constantine refers to the Hippodrome of Trier as "I see a Circus Maximus, the rival, I believe, of that in Rome..."[58] There is no doubt that the Circus Maximus has been very influential upon the master workers who were involved in the construction of circuses. First of all, this was the first Roman circus and it was the greatest circus in the capital of the Roman Empire. Moreover throughout its history, it had been subject to many adjustments, trials and errors based on the requirements of the chariot races as well as the demands of the spectators representing the Roman society.

The requirements for the construction of a circus were complex: an arena suitable for chariots and horses and conforming to the rules of the race in terms of dimensions and form, starting gates designed in such a way that chariots were given an equal chance in the race, a sufficient number of entries, seats differentiated according to social classes; and a private entry and lodge for the emperor and his entourage with the best view of the races. In addition to these, the constructional problems of such a huge and heavy building had to be resolved. This complexity lead to a design in which function and form were closely

[58] Quoted in Millar, *Emperor*, 45.

tied together, if the first does not determine the latter . William MacDonald refers to the design of circuses as follows:

> It does appear, however, that there was a more or less canonical general design developed for Hippodromes when Roman and provincial circuses were reconstructed in permanent materials and the ritual and tradition surrounding the races had assumed permanent form.[59]

The Circus Maximus thus represented a standing solution to the design and constructional problems of a circus. It was an indispensable reference that master workers of other Roman circuses would consult while they were trying to resolve the common and particular problems related to their circus that they worked on. At this point it is necessary to remember that architectural creation in Antiquity is totally different from the one in the twentieth century. The novelties in architecture could only emerge through the perfect application of rules and learned traditions. This coupled with the strict requirements of a chariot race, leads us to look for differences in the details rather than in the overall form and plan of the circuses.

In our discussion on the tetrarchic circuses, the common characteristics of these buildings versus the exceptions to the rules revealed that factors like the particular topography, the available space and urban setting, materials and workers in hand at different tetrarchic capitals resulted in structures looking like Circus Maximus, but not being identical to it . In other words, each circus represented the Roman tradition of circus plus its own solution to the requirements of its individual site. Table 1 reveals that there was degree of freedom about the application of the canon: the exceptions to the rule are as significant as the similarities themselves. In this respect to answer the question

[59] MacDonald, "L'Hippodrome," 35-36.

raised at the start, it may be tentatively concluded that if we are to look for a canon, this is best exemplified by the Circus Maximus.[60] Each circus represented a peculiarity within the confines of this canon which dictated the overall form of the arena and the basic architectural components that had to be present in a circus so that the building fulfilled its functions.

Where does the Hippodrome of Constantinople stand? Due to the dearth of physical evidence which make even the reconstruction of the plan speculative, and the inability of establishing an exact chronology, it is quite difficult to judge whether the Hippodrome was indeed shaped in μίμησιν of the Circus Maximus. Nevertheless, using the data in hand as well as the proposals of a number of scholars as presented above, the Hippodrome of Constantinople shows two clear differences from the Circus Maximus in terms of its architecture.

The first striking difference is related to the dimensions of the arena which is expected to be the element that is supposed to fit the most to a canon due to the requirements of the race.[61] The width of the Hippodrome at Constantinople can be considered to be close to the width of the arena of Circus Maximus (76.95-78.32 m at Constantinople 79 m at Rome) whereas its length is about 140-160 meters shorter. In

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[60] Humphrey and MacDonald consider the Circus Maxentius as the final stage in the evolution of the Roman circus design. According to Humphrey: "Because it is so well known, the Circus Maxentius has rightly become the standard against which other late Roman circuses must be compared. For many indeed, it serves as the model for all Roman circuses. I hope, however, that earlier chapters have shown that most if not all circuses built before the late Empire did not possess all aspects of the sophisticated design present here and arguably present in the other circuses of this general date. This circus represents the final development of Roman circus design in its most streamlined form" (Humphrey, 586). The reason why we consider the Circus Maximus rather than the Circus Maxentius as the fundamental comparanda material is mostly due to the claim of Pseudo-Codinus. We believe that the refinements of design are observed at all circuses built after the Circus Maximus, therefore the Circus Maxentius is part of this group and the Circus Maximus is the primary prototype of Roman circuses.

[61] It should be noted that the charioteers were travelling in the Roman world, to participate to races in different cities. So there should have been standards about the track so that these charioteers could have no problems of adaptation. See Humphrey, passim.

terms of length the Hippodrome at Constantinople is closer to the tetrarchic circuses. The Trier circus that Constantine saw as a rival to Circus Maximus also has a smaller arena measuring 440x77-78 m2. The Sessorian complex, Circus Maxentius and the circus at Antioch are much more similar to Circus Maximus in this respect.[62] So if there is a modelling on Circus Maximus, the dimensions are not necessarily a primary indication of μίμησις.

Another striking difference lies in the absence of a monumental arch at the *sphendone* of the Constantinopolitan Hippodrome whereas the Circus Maximus, the Circus Maxentius and the circus at Sirmium had such arches. Although this was not a ceremonial or processional entry, its depiction on a number of coins (fig.II.21.) indicate that it was indeed an important architectural component of the great circus. This arch is not a common feature of many tetrarchic circuses either. At Constantinople, it is clear that the steep topography in the Southeast would not allow the construction of a monumental arch. If this were a *sine qua non* component of a circus, Septimius Severus would have chosen another site for the Hippodrome.[63] So the monumental arch either is not necessarily a primary indication of μίμησις.

In other respects such as the orientation, the kinks, the placement of the palace complex, the seating capacity, the Hippodrome of Constantinople is like Circus Maximus. However the existence of one or double kinks on the right and/or on the left flank and the orientation roughly from the North to the South with the *sphendone* at the South are two

[62] The arena of the Sessorian complex, Circus Maxentius and Antioch circus are respectively as follows: 565x115-125, 503x75-79, 492.5x70-75 m2.

[63] For the purposes of this chapter, we do not take into account the controversy about different building phases of the hippodrome. We assume that Septimius Severus started the construction and Constantine completed the building.

characteristics that bind all the late Roman circuses together. The exceptions are not sufficient to change the general scheme. Provided that the circus had a connection with an imperial residence, the place of it does not seem to matter. When it comes to the seating capacity, the Hippodrome of Constantinople has much larger seating tiers than tetrarchic circuses as revealed by the excavations . This is the indication that the city of Constantinople was or would become more populous than other tetrarchic centers. The width of the seating tiers however do not effect the overall shape of the Hippodrome since they follow the shape of the arena. Moreover it is not possible to reconstruct with certainty the wooden seating tiers that have been destroyed through time.

So what does μιμησις mean, in other words, in what respects did the Hippodrome at Constantinople resemble Circus Maximus? It is clear that the fundamental architectural elements were inherited from both the Circus Maximus and other Roman circuses. The standards that would lead to a fair game for the charioteers and an enjoyable spectacle for the population were applied with small changes due to the difficult topography of the site and the existing urban setting.

We believe that the similarity between two great circuses rather lie in the grandeur of the activities going on in the racetrack. By the 10th century when Pseudo-Codinus pronounced this sentence, the most fascinating and exciting races were being held in Constantinople, such as it had been in the Circus Maximus once. Its decoration was as expensive and impressive as the Circus Maximus. As with the Circus Maximus during imperial times, the booties, spolias brought from the Roman world were exhibited in Constantinopolitan Hippodrome. If we are to search a place for it in the tradition of circus building, the Hippodrome is neither behind or ahead of the time in which it was

constructed. For the master workers of Septimius Severus, the canon would be represented by the Circus Maximus, but for Constantine, in addition to the Circus Maximus, the experiences and architectural solutions represented by other Roman circuses built since then would be potential sources of inspiration and reference. In other words the Hippodrome at Constantinople is not more canonical than tetrarchic circuses. They all have their peculiarities within the confines of the tradition represented primarily by the Circus Maximus and all other circuses that had been built up to then.

CHAPTER III
THE *SPHENDONE*

1. The *sphendone* and the history of its study

The *sphendone* is the semi-circular southern extremity of the Hippodrome whose substructures have survived in a good state of preservation. These substructures and ten inner rooms under the seating tiers on the eastern flank are the only surviving architectural components of the Hippodrome at Constantinople. The monument delimits the southern edge of the first degree *Cankurtaran sit alanı* (fig.III.1.).

The common approach to the *sphendone* is from the southeastern end of Atmeydanı along *Nakilbent* street which curves down southwards to join *Kasap Osman* street surrounding the *sphendone* up to *Demirci Reşit* street which ends in a small cul-de-sac in front of arch 24. After this point, in order to reach the *sphendone* at arch 27 one has to g round the housing island masking the structure. *Üçler Hamamı* street runs northwards along the western curve of the *sphendone* and leads to *Şehit Mehmet Paşa* street where the gate of *Sultanahmet Endüstri Meslek Lisesi* superimposed on the substructures, is located. As shown on the cadastral map, there are a number of other approaches from the South as well (fig.III.2.).

As illustrated on a photo dating to the end of the nineteenth century wooden houses used to adjoin to the exterior façade of the *sphendone* (fig.III.3.a. and fig.III.4) until the 1980s, when Eminönü Municipality decided to tear them down in order to transform the

expropriated lots into a public park and a parking lot. At present, except for a couple of arches at the southwestern curve, the façade is completely visible and accessible (fig.III.3.b.).

Although the Hippodrome is preserved in the urban memory as *Atmeydanı*, well-known by the citizens of İstanbul, very few citizens are aware that the place used to be a Hippodrome. The three extant monuments located on the spina are visited by foreign as well as Turkish tourists. However despite the interest in the monuments and the existence of many easy approaches to the *sphendone*, the usual crowd around the Theodosian obelisk never gathers around the substructures. The inhabitants of the surrounding houses, judging from the massive outlook of the remains, think that this is part of the fortifications of İstanbul. The students and professors of the *Sultanahmet Endüstri Meslek Lisesi* simply call it *sarnıç*, i.e. the cistern, which is another indication that the use of the substructures as a cistern for 1300-1500 years has been preserved in the urban memory.

On the other hand, in the accounts of travellers who visited Constantinople, the remains of the Hippodrome are usually mentioned though not fully described.[1] Pierre Gilles who visited Constantinople twice in the sixteenth century provides a relatively comprehensive description of the *Sphendone*:

[1] The travellers describing the Hippodrome at Constantinople can be the subject of another study. For this reason, only the travellers who extensively describe the *sphendone* will be mentioned in this thesis. For further information see Jean Ebersolt, *Constantinople Byzantine et Les Voyageurs du Levant* (Paris: 1918); George P. Majeska, *Russian Travellers to Constantinople in the Fourteenth and Fifteenth Centuries* (Washington: DOP, 1984); Van der Vin, *Ancient Monuments and Old Traditions in Medieval Travellers Tales*, (Istanbul: Nederlands Historisch Archaeologisch Instituut, 1980); Stephane Yerasimos, *Les Voyageurs dans l'Empire Ottoman (XIVe-XVIe siècles)* (Ankara: TTK, 1991).

> The whole façade of the Hippodrome is built on arches, which makes it stand on a level table and entertains the spectator with a very delectable view of the Propontis, so that you may not only see man sailing to and fro before you, but you may also see the dolphins frequently tumbling about in the waters.[2]

Even today, standing in the courtyard of the *Sultanahmet Endüstri Meslek Lisesi*, instead of fishermen and dolphins, it is possible to see the big ships approaching the Bosphorus and the seabuses travelling between Eminönü and Ataköy.

In Antiquity, looking in the opposite direction, towards the north, the seats on the *Sphendone* were facing the south turning post around which chariots turned and where accidents were most likely to occur, therefore watching the races from the *Sphendone* must have been exciting, although not as favourable as the eastern and western flanks where the competition between charioteers could be better observed. According to Guilland, these seating tiers on the *Sphendone* were reserved for the lower classes who were extremely interested in such dangerous events, as well as in the executions on the *sphendone*, probably on the semi-circular part of the arena. [3]

Beside describing the vista, Gilles also mentions the seventeen white marble pillars on the south west with Corinthian capitals and which were taken down by Kanuni Sultan Süleyman to be used in the construction of a hospital before the second visit of Gilles.[4]

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[2] Pierre Gilles, *The Antiquities of Constantinople*, trans. J.Ball (New York:1988), Book I, 25.

[3] Guilland's idea is based on the fact that the course of the race could be followed with difficulty from the *sphendone* and that cruel executions were held there. Otherwise, he does not present any physical or textual evidence mentioning such a segregation. We may think that some of the seats along the centre were reserved to higher classes, and for the rest, those who came first would probably occupy the most favourable of the free seats. So the *sphendone* would be occupied the last. This reminds today's use of football stadia where the seats behind the goal are the cheapest. For example in Inönü stadium in Beþiktaþ, the northern curvilinear extremity offers a beautiful view of the Bosphorus to those more interested in the vista than in the football match. See Guilland, *Etudes*, 375-376.

[4] "The pedestal of each of them is two feets and ten digits high. All of them are supported by arched foundations that lie level with the plain of the Hippodrome but rise above the ground to a height of fifty feet. They are all placed on a little wall, which projects two steps, or on square plinths, the lowermost of

Although it is not clear whether these pillars belonged to the *sphendone* or the western flank, these must be the type of elements used around the seating tiers on the *sphendone*. The Hippodrome has also been the subject of a number of visual depictions: Panvinio's engraving of the sixteenth century, is the oldest and best visual document about the structure (fig.II.18.).[5] Here beside the substructures of the *sphendone*, an arcaded wall standing on the upper periphery of the substructures is clearly seen. The absence of seating tiers is probably the indication that these were destroyed by the time Panvinio visited Constantinople. A similar colonnade, reminding one of the seventeen white marble pillars described by Gilles are depicted in a number of miniatures and engravings (fig.III.5.).[6]

When it comes to the archaeological investigations of the *sphendone*, until the excavations by the British Academy under the direction of H.Casson in 1927-1928, the substructures seem not to have attracted the attention of the westerners whereas the monuments on the *spina* have been the elements of interest.[7] P.Forscheimer is the first

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which is a foot and a digit high. The upper is a foot and six digits high and projects beyond the pedestal eight digits. Their pedestals are five feet square and seven inches high. Their lowest projections, which are placed there for tores and other modules, are six and a half digits high, the upper projections the same height; the plinth of the cornice is eleven digits thick; the lower tore seven and a half digits; the scotia four digits; the upper tore six digits; the stone that supports the shaft is five digits high; and the shafts themselves three feet, five digits in diameter and twenty-eight feet in height", from Gilles, Book II. 84 See also Casson et al., *Preliminary*, 19-20.

[5] Panvinio produced a series of drawings of Hippodromes, including some of the Circus Maximus. These are published in *De Ludis Circencibus* in 1600 in Venice. Panvinio's drawing is considered to be the most informative visual document about the Hippodrome at Constantinople.

[6] Pieter Koeck van Aalst drew the parade of horsemen through the Hippodrome and included some columns as well as the Theodosian obelisk in the background. However as Wiegand underlined, the architectural elements might have been used to enrich the drawing, in other words these elements do not necessarily belong to the Hippodrome. See Casson et al., *Preliminary*, 2.

[7] The first excavation at the Hippodrome was carried out in 1855-1856 in order to verify whether the names of 31 Greek cities who fought in Persian wars were engraved on the Serpent Column. In 1865 C.T Newton opened a small trench around the Serpent column. For more information, see Ernst Mamboury, "Les Fouilles Byzantines à İstanbul et ses Environs," *Byzantion* XXI (1936):455-459.

person to carry out a survey at the *sphendone* in 1893. However his work remained confined to three chambers. [8]

The British excavations under the direction of H.Casson in 1927 aimed at determining the emplacement of the Hippodrome. Beside the analysis of the three extant monuments on the spina, the study of pottery, inscriptions and coins, the team produced the first scaled plan and section of the remains (fig.III.6.). [9] Although their report is quite comprehensive, the architectural study of the structure does not include the constructional details such as the dimensions and physical properties of materials. Moreover the published photographs are very few in number. Although a comparison between the data gathered then and at present is not very easy, the report is still valuable, especially because the trenches have been filled and another excavation does not seem to be likely since the area has become a touristic centre.

In 1932, M.Th. Wiegand and E. Mamboury worked at the *sphendone* and added more chambers to the plan of the eastern flank (fig.III.7). In addition to the drawings of the sections and elevations of some parts of the inner corridor and chambers, as well as the outer elevation of one of the great arches, they also produced a hypothetical reconstruction of the Hippodrome (fig.III.8.). Although their study did not include the comprehensive and detailed analysis of techniques and materials, it contributed to the study of the *sphendone* especially by multiplying the number and variety of scaled drawings which were the product and expression of a careful analysis of the structural properties and different building phases of the substructures.

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[8] Casson et al., *Preliminary Report*, 16.

[9] Our measurements with the total station proved that this plan is accurate.

Between 1948-1951, before the construction of the new Palace of Justice, an excavation was undertaken on the western flank of the Hippodrome by Rüstem Duyuran, the director of the İstanbul Museum of Archaeology and Ernst Mamboury. They revealed *in situ* steps and substructures of the seating tiers which enabled them to determine the slope of the seats. Unfortunately the report of the excavation is quite limited and the published photographs are not very helpful. Like previous archaeological studies, this excavation also did not concentrate sufficiently on the building materials and techniques.

However William MacDonald, preparing his doctoral thesis entitled "The Hippodrome at Constantinople", carefully investigated these remains excavated by Duyuran and presented both all the previous studies and his own observations in his dissertation which is the most comprehensive study of the overall building in terms of understanding its architectural and structural characteristics. However he does not seem to have carried out any additional survey at the *sphendone* because his account consists mostly of the evaluation of the data gathered by Mamboury and Wiegand in comparison to the results of the excavations by the British Academy in 1927-28.[10]

With the destruction of the houses adjoining the *sphendone* by the Eminönü Municipality in 1980s, the exterior façade of the structure became accessible. However scholars seem to have lost their interest in the surviving building since no significant

[10] Unfortunately, MacDonald repeated the mistakes of Mamboury and Wiegand. According to Mamboury and Wiegand the dimensions of Dressed blocks are quite regular (40x65 cm2 projecting 8 cm from the surface). But these blocks are quite irregular in size, their length vary between 35-153 and the width between 30-50 cm. Some of them project from the surface but some others do not. The width of the brick voussoirs of arches are measured at 95 cm by these scholars, whereas our survey yielded a width of 75-83 cm (note that at arches 11-29 no dimensions could be measured). More importantly these scholars wrote that the walling-up of arches were made of 31 x 5 cm2 bricks and the original wall of 39 x 5 cm bricks set in 5-6 cm. thick mortar, but the reality is just the opposite. See MacDonald, "The Hippodrome," 4-22 and Mamboury and Wiegand, *Kaiserpaläste*, 40-43.

survey or archaeological work is noted in the record. Indeed, since the survey by MacDonald, the iron gate opening to the substructures (fig.III.9), which was so well-known to the scholars who lived in the first half of the twentieth century seems not to have been opened to archaeological surveys since 1932 Mamboury and Wiegand's survey in the interior.[11]

2. The survey carried out at the *sphendone* in 1997

With the permission of the General Directorate of Monuments of Museums, Eminönü Directorate of National Education and the Prefecture of İstanbul, we carried out a survey both inside and outside the surviving structure in the summer and fall of 1997.[12] As a starting point, the archaeological studies of the British Academy and Mamboury and Wiegand guided us in our survey, whose goal was to make a more comprehensive analysis of the building techniques and materials; and to prepare a full documentation of the exterior façade in comparison to the interior by means of scaled drawings, photographs and verbal description. Beside these, we also attempted to distinguish and date different building phases which will be thoroughly discussed in the following chapter. The extent and phases of our survey can be presented as follows:

a. The survey of the exterior façade: After a careful visual analysis of the façade and physical analysis of the topography and present street patterns, the starting point was the sketching of the exterior elevation in order to prepare a basis for future scaled drawings

[11] As Erol Çeliker, the director of the Sultanahmet Endüstri Meslek Lisesi informed us, a Japanese team entered the substructures a few years ago. However this was a one-day-visit rather than being a survey.
[12] This second permit was sent to Erol Çeliker, the director of the *Sultanahmet Endüstri Meslek Lisesi*, who is responsible for the substructures and who very kindly helped us in our survey inside the *sphendone*.

based on measurements with the total station and steel tapes (fig.III.10). The arches have been enumerated from 1 to 33, proceeding from the East to the West. At the second stage, the dimensions of brick, mortar, rubble stone and Dressed blocks at each arch and at the piers between the arches have been measured; their properties such as colour, location, level of preservation and the building techniques within which they were used, have been recorded and photographed. Black and white was preferred for the general outlook of the arches whereas coloured photographs were reserved to the documentation of constructional details. Especially coloured photographs of higher levels taken with a zoom camera proved to be crucial for a more accurate building description as well as for the drawings in scale, since these sections were hardly visible from the ground level.

In November and December 1997, our team, consisting of Ass.Tevfik Özlüdemir, Bihter Özöner, Caner Güner and Dr. Dursun Şeker from the Department of Geodesy and Photogrammetry at İstanbul Technical University, Murat Çavdar from Sadberk Hanım Museum and Günder Varinlioğlu from the Department of Archaeology and History of Art at Bilkent University, measured the exterior façade with the total station (fig.III.11). However at arches 12-26, anything above 4 m. could not be measured.[13] The products of this process have been:[14]

i. a scaled drawing of the exterior elevation of the *sphendone*

ii. a scaled plan of the *sphendone* that could be compared with the earlier plans (fig.III.12).

iii. a thorough photographic documentation

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[13] to compensate for this, a basic photogrammetric proportioning on the photographs has been done.

[14] All the sketch and scaled drawings of this survey are made by Günder Varinlioğlu.

iv. a description of the present condition of the façade (erosion, damage, interventions, repairs, traces of houses etc.)

v. a detailed analysis of building techniques

vi. a classification and catalogue of building materials

b. the survey in the substructures: As the chambers beyond chamber 4 were very difficult to work in, due to the muddy floor and cold and unhealthy stagnant water, we decided to limit our study to the sections on the West of the staircase leading to the cistern. Thus we studied the parts corresponding to the interior of arches 30-33. After all since the rest of the substructures were transformed into a cistern, the materials were not visible due to the hydraulic plaster applied up to the level of the ventilation windows at the infills (fig.III.13.).

At present, the air in the substructure is quite dense and humid, but still breathable due to a few open ventilation windows of the infills which also let sunlight in. Nevertheless, powerful torches are still necessary especially for the study of the chambers. Fortunately the school provided us an electric plug that we used for lightening the interior corridor and feeding the photographic lights which enabled us to take the black and white photographs. Sketching of this section has been the starting point as usual, however we did not have a chance to use the total station.[15] Therefore here the traditional techniques of triangulation and consecutive measurement with steel tape were applied. The

[15] ITU team could provide the total station only on two Sundays during which we completed the measurements outside. Also on Sundays, since *the Sultan Ahmet Endüstri Meslek Lisesi* was closed, we were not allowed to get into the substructures.

necessary data for determining the building techniques, materials, their dimensions and types were recorded to be used as a comparanda material for the data on the exterior façade. At this section only black-and-white photographs were preferred since the coloured photograph were not likely to reflect the true colours. The product of the survey in the substructures were:

a. a classification and catalogue of building materials

b. a detailed analysis of building techniques

c. a thorough photographic documentation

d. a sketch plan and elevations

Our survey in the interior of the substructures is in no way complete. Especially the interior of the substructures need to be measured more accurately, preferably with the total station. The inner chambers of the cistern and those beyond the wall in the inner corridor, where arch 15 is located, also could be more carefully investigated. We did not have access into the chambers under the eastern flank whose drawings and description are fully made by Mamboury and Wiegand. On the other hand, in terms of the characteristics of the materials, an analysis of mortar samples taken both from outside and inside would be very helpful in producing more accurate mortar types. We believe that thereafter any survey would be more beneficial if it is combined with archaeological excavations in which trenches would be opened to reveal the invisible characteristics of the structure that may provide valuable data about the history of the Hippodrome.

3. Building materials and techniques used at the substructures of the *sphendone*

3.1. General Description of the Structure

The substructures of the *sphendone* consist of subsequent barrel vaulted trapezoidal chambers (920x300 cm2) opening onto a barrel vaulted peripheral ambulatory corridor (270-414 cm wide) whose outer wall, which is the exterior wall of the *sphendone*, is made of a series of large arched openings blocked by brickwork. At some arches, the blocking wall has a small arched window allowing the air circulation. The façade that is described and analysed in this study is the exterior façade of the outer wall enclosing the corridor (fig.III.14-15). Due to the declivity of the terrain, the height of the surviving remains ranges from 4 meters, at arch 33 to 16 meters, at arch 16.

The piers of the arches consist of squared as well as amorphous rubble stones set in thick lime mortar, in irregular courses. This mortared rubble core has the appearance of a compact and massive bulk and it was faced with the same type of squared rubble stones but more regular in shape and dimensions. However, even at the facing, the courses and the rubble stones are not very regular and the dimensions vary, which may be the indication of later repairs. This mortared rubble is arranged in bands of different widths which alternate with courses of brick acting as bonding and leveling layers. The brick courses above the arches and those intersecting the arches right below the crown, almost always consist of four courses, whereas the number of courses increase to eight and more towards the lower levels.

The brick voussoirs of the arches 11 to 25 are made of two rings of radially laid bricks bound with lime mortar, the outer layer is one brick wide (30-32 cm.). [16] whereas the inner layer, larger than the outer one, is made of one brick and one-half brick.[17] The brick voussoirs of arches 1 to 10 which are smaller in height seem to consist of two equal rings of radially laid bricks, but since they are extremely damaged, it is not possible to see clearly the original construction.

The structure which must have been affected by earthquakes, has undergone a number of interventions. The crowns of the big arches (10-25) were repaired, the arches were bricked-up, and secondary walls and buttresses were built in the interior corridor to reinforce the structure. The arches of the secondary wall adjacent to the interior surface of the exterior wall of the *sphendone* are all made of three or more concentric rings because of the fragility of the summit of arches which had to support and distribute the weight of the structure above. Therefore the number of rings at the arches vary according to what statics necessitates, and are not merely for stylistic concerns.

Above each big arch, there is one shallow niche in brick that used to end in semi-domes among which only the one above arch 18 almost fully survives. At the bottom and towards the top of the niches, run two bands of bricks consisting of four courses. Wiegand and Mamboury, who measured these niches as 190 cm high and 100 cm wide, concluded that they were wide and high enough to house life-size statues.[18] MacDonald argues that

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[16] Arches 26-33 are masked by repairs, surface cladding and traces of once adjoining houses. The last arch upon which a niche is barely visible is arch 27. It is not possible to say whether arches 28- 33 originally had niches.

[17] It should be noted that starting with arch 12 the dimensions of the bricks of the voussoirs as well as any building material and component 2-3m or more above the ground level up could not be measured. Therefore the dimensions are based on the dimensions that have been taken at arches 10, 27-33

[18] Mamboury and Wiegand, *Kaiserpaläste*, 41.

statues in the niches would be "underscaled compared to the cliff of masonry..."[19] Such niches on the two sides of the southern gate of the Diocletianic fortifications of Hissar (Diocletianopolis) are also considered to have housed colossal statues (fig.III.16). [20] However for the *sphendone*, MacDonald's argument seems to be more plausible These niches are very shallow to safely house such colossal statues and even a life-size statue would disappear in the overwhelming brick and rubble surface. These niches must have been decorative undulations on the surface.

The legs of the great arches stand on two courses of large pieces of dressed limestone (60-120 x 40-50 cm). How these stones are bound together cannot be told by visual observation. Due to the topography, the courses are visible only at arches 13 to 20, the others must be buried under the earth. The third bottom course of dressed blocks as drawn by Mamboury and Wiegand in 1937 cannot be seen at present (fig.III.17). Some of them project about 40 cm from the surface, but this is not the rule. In some cases, the projecting stones have been carved out to extract stone pieces for reuse. Below the courses of dressed limestone, the core consist of rubble stone set in mortar in a very irregular layout in combination with a few brick courses that appear randomly here and there. Therefore, the courses of dressed limestone clearly correspond to the foundation level.

Over all the façade the traces of the now destroyed houses can be observed. Some of these are only traces of the roofs, but at some sections there is still faience tile cladding of bathrooms, traces of plaster and even paint (fig.III.18). The rectangular niches of

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[19] MacDonald, "The Hippodrome," 7.

[20] "Dans sa façe intérieure sont conservée la forme traditionelle fondamentale des portes romaines classiques... Dans les deux côtés de l'arc frontal qui réunit les deux piliers sont construites deux niches voûtées demi-circulaires.", Madzarov, *Dioklecianopol*, (1993), 206.

varying dimensions have been carved out by the inhabitants of these houses. All the interventions mentioned have severely damaged the surface as well as the core of the exterior wall at a considerable depth in some cases. Together with weathering and erosion due to particles and rainwater brought by the southwestern breeze, this has made the surface materials completely *illegible* at some sections.

3.2. Classification of building materials

Since the beginning of its construction, the *sphendone* has undergone several construction phases. The materials observed in the interior and exterior façade, as well as inside the substructures indicate the continuous use of the building throughout the ages. Together with the building techniques, the characteristics of these can be used in tracing different construction phases and interventions to the structure. Brick, lime mortar, rubble and Dressed stone are the basic and original materials used for the construction of the *sphendone*. For the repairs and reinforcements made in the Byzantine period, the materials remained the same, while their dimensions and compositions slightly changed. In the nineteenth and twentieth century, with the construction of houses adjoined to the *sphendone*, wood, iron, cement, aluminium, faience and modern brick became part of the structure. During our survey two marble architectural pieces were discovered: one was an architectural moulding thrown away in the interior corridor, the other was an Ottoman column capital inserted next to the steps leading to the house no.53 on *Kasap Osman* street and a similar Ottoman capital is also used in the construction of *Sultanahmet Endüstri Meslek Lisesi.* (fig.III.19.)

The classification of the building materials of the surviving substructures of the *sphendone* does not include wood, iron, cement bricks and faience that were inserted into the structure in the past 100-150 years. Brick, lime mortar, rubble stone and Dressed stone which are the original building materials, form the basis of the classification. Nonetheless modern kiln-baked bricks and cement mortar are incorporated in the catalogue (table 3) as they are the dominant materials used for repair at some sections of the structure. All other interventions, repairs, claddings etc are described under corresponding arches instead of being mentioned in the catalogue. Types of building materials and their characteristics that will appear throughout this paper are as follows:

BRICK

B1: These are kiln-baked square[21] bricks (fig.III.20), dark orange-red in colour.[22] They measure 29-31 x 4-5 cm2. Bricks measuring 29 cm. and 4 cm. thick are very rare. These dimensions may correspond to erosion or misproduction. The great majority of the bricks in this category measure 31 x 4.5-5 cm 2. 30 and 31 cm. long bricks are included in the same category for convenience, because they exist side by side and often bricks measure between 30 and 31 cm. Judging from their locations they seem to be contemporaneous.

[21] Judging from i. the traditional square Roman bricks, ii. whole bricks found in the interior corridor, iii. the bricks whose length and width are exposed at the interior ring of the non-filled arches, it may be securely concluded that the bricks are square.

[22] There are occasionally yellowish bricks of type B1 and B2. The yellow colour is due to sulphur that could not be sufficiently released during the firing of the bricks. These exceptions will be underlined under corresponding arches.

B2: These are kiln-baked square bricks, dark orange-red in colour. Their dimensions vary between 32-33 x 4.5-5 cm2. In some cases it is possible to find 31 cm. bricks side by side with 33 cm. bricks or even 32 cm. bricks with 35 cm. ones. Despite these variations which are not worthy of being placed under separate categories, the standard seems to be 33 x 5 cm2. Smaller thicknesses may be due to erosion or misproduction. This may be the indication of the reuse of ancient bricks as well as of different brick ateliers.[23] The larger dimensions such as 34 and 35 are present only at the arches 29-30 which have undergone many repairs and since they are still masked to a great extent, these dimensions were measured with little precision. For this reason, those bricks should not be taken as a basis for this category, they probably correspond to later repairs.

B3: These are kiln-baked square bricks, dark orange-red in colour. Their dimensions are 35-40 x 4.5-5.5 cm2. The standard and the most common dimension is 38 x 5 cm 2. 20-35 cm bricks used in combination with larger ones are most probably broken or reused bricks of earlier periods. The bricks in this category are found at the infill of the arches, at the buttresses and secondary reinforcement wall in the interior corridor (fig.III.20). Therefore they must be later than B1 and B2.

B4: These are kiln-baked rectangular bricks, red in colour. Their dimensions are 22.5 x 11 x 7 cm 3. These modern bricks are used for repairs and as surface cladding material at arches 26-33.

B5: These are modern kiln-baked rectangular bricks, orange in colour and which

[23] See chapter IV 1.2. for a more detailed discussion of the chronology of the bricks

measure 24-27.5 cm x 2.5-3 cm. They are only found at arch 28. Other isolated examples of modern bricks may be included in this category.

B6: These bricks measuring 29 x 2.5 cm 2 are only found at the tertiary reinforcement on the interior façade of arch 31.

MORTAR

M1: This is a lime mortar with an aggregate of lime, river sand, pebbles, gravel, crushed brick and a little powdered brick It is a greyish cream colour in which the grey may be due to air pollution or crust formation. The cream colour originates from the amount of lime exceeding the amount of powdered brick. It is used in binding the bricks of the arches and of the leveling courses. Its thickness varies between 4-6 cm.

M1a: This is a lime mortar with an aggregate of lime, sea sand, pebbles, gravel, a little powdered brick and big lumps of broken brick. Its cream colour resembles M1; on the other hand the big lumps of brick give a close impression to M2. Otherwise, its composition is closer to M1 than M2. It is only used in binding the rubble stones and bricks below the courses of dressed stones at the foundation level of arches 14 to 18. Judging from its appearance, it must have been produced more carelessly than M1 type mortar.

M2: This is a lime mortar with an aggregate of lime, pebbles, gravel, powdered and crushed brick. It is rather light pink-orange in colour, similar to *Horasan* mortar, due to the large amount of powdered brick. It contains larger lumps of brick pieces when compared to M1. Its thickness varies between 4.5-9 cm with an average thickness of 7 cm.

It is used at the brickwork of the walling up of the arches and of buttresses and secondary reinforcing walls in the interior corridor.

M3: This is modern cement mortar used at the repairs. It is dark grey colour with an aggregate of cement, sand and gravel.

M4: This is hydraulic limemortar applied over the surfaces of the interior corridor and chambers up to the level of the ventilation windows of the infill. This is found only at the sections used as a cistern (arches 21-28). During our survey, it has not been possible to pass over the wall built between arches 20-21; however hydraulic plaster probably also covers the interior surfaces at the arches 11-21, which must correspond to the second cistern mentioned by Guilland.[24]

STONE

MS1: This is dressed metamorphosed limestone, greyish white in colour, which also forms the basis of the M1, M1a and M2 and maybe also M4 type lime mortars. This must be the "grey tertiary limestone" quarried in Bakırköy, whose original colour is light cream and buff. It is found under the brick piers of the arches, at the foundation level, acting as footings for the structure above.[25]

MS2: These are rubble limestones greyish-white in colour. Their provenance must be the same as MS1, i.e. Bakırköy quarries. Small amorphous rubble stones are used together with larger slightly squared rubble stones. They are also reused in later periods for

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[24] Guilland, *Etudes*, 376.

[25] J.B. Ward-Perkins, "Notes on the Structure and Building Methods of Early Byzantine Architecture," in David Talbot-Rice, ed., *The Great Palace of the Byzantine Emperors (1958),* 54 based on Van Millingen, *Byzantine Constantinople* (1899).

repairs. Since this category is present all over structure, it is not part repeated all over table IV. Under the description of the arches, wherever rubble stone masonry alternating with brick courses is mentioned, this belongs to MS2.

3.3. The inner substructure and its function

The substructures of the *sphendone* and of the flanks are free-standing buildings consisting of numerous chambers connected to one another through a corridor running all along the outer periphery of the building. As described by Casson et al. and Mamboury and Wiegand the chambers of the *sphendone* are oblong trapezoidal as opposed to those of the eastern flank which are three partied (fig.III.21). [26] The corridor and the chambers corresponding to arches 11-28 were transformed into a cistern, namely the Cold Cistern after the application of a hydraulic waterproof plaster (M4) on the surfaces of walls. [27] At present, behind arches 29-33 the level of the corridor is about 5 m. higher than the level behind arch 28, these two levels are connected by a concrete staircase (fig.III.22). The difference of level is due to piling of earth because the floor of chamber 1 (corresponding to arch 33) is also about 5 m. lower than the floor of the corridor that it is connected to.

We limited our survey in the substructures to these infilled sections, i.e. chambers 1-4. In the remaining chambers and the corridor there is still stagnant water rising about 50-60 cm above a very muddy floor.[28] Judging from the dimensions taken in

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[26] Mamboury and Wiegand, Kaiserpaläste, 41-43.

[27] At arch 21, a wall is blocking the inner corridor. This must have been built much later when the water level in the *sphendone* was not high enough. Although we did not go over this wall, it may be assumed that chambers and the corridor corresponding to arches 11-21 were also used as a cistern.

[28] In 1927 the water level was measured about three meters by Casson *et al.*, 423 cm. in 1932 by Mamboury and Wiegand and about 50 cm in 1997 during our survey.

chambers 2 and 5, the chambers measure about 920x 300 cm. and are about 700 cm high (657 cm according to Mamboury and Wiegand). They are connected to the peripheral corridor through two openings: a large archedway below the piled up walking level and at the floor level of the cistern and an arched window (170-180x96 cm2) approximately 450 cm above the floor level of the cistern. At the chambers 1-4 the arch below is buried under the earth body so the entry can be done only through the windows.

The construction technique is the usual mortared rubble bands alternating with mostly four courses of brick. The bricks are **B1** type measuring 31x5cm bound with **M1** type mortar 5 cm. thick in average. The width of the band of four brick courses measures 33-35 cm (fig.III.22b). The corridor ends in a brick barrel-vault and the chambers also have brick-barrel vaults perpendicular to the corridor. The holes where the scaffolding was inserted are still visible on the lateral walls of the chambers.

The interior façade of the arches, i.e., the outer wall of the corridor is reinforced by secondary walls and buttresses built completely in brick (fig.III.22c). The arches built in the secondary walls consist of three or more concentric rings for statical reasons. Here there are only **B4** type 38-40x5 cm2 bricks bound with **M2** mortar, this is the same type of material and technique as the infill of the arches on the exterior, therefore it may concluded that they are contemporaneous.

The floor of chamber 1 is visible looking downwards from its upper window which is today on the raised walking level. The walls of the chamber are covered with hydraulic mortar such as the walls of the chambers in the cistern. This proves that the infill of the corridor is later than the transformation of the substructure into a cistern and that chambers

1-4 were also filled with water. In this chamber below, there is still a 50-100 cm. deep water body. This chamber must have been infilled together with the corridor and then excavated recently (fig.III.23).[29]

Chamber 2 is accessible. Its present earth floor is about 100-150 cm lower than the walking level at the corridor. It must have been dug out by the same people who worked in chamber 1. Facing the window through which the entry is possible, a low podium covered with a pointed barrel vault has been constructed. On the left, there is a very large niche. These two interventions correspond to the later usages of the substructures. Although there is no plaster on the surfaces, it is probable that they were once covered with hydraulic plaster (fig.III.24).

Chamber 3 is completely infilled. Therefore, its location can be determined only through its window (fig.III.25a). Chamber 4 is also accessible through its upper window whose sides have been reinforced by concrete. Inside, the floor is about 30 cm. lower than the corridor, so one can touch the barrel vault. On two sides the holes for the scaffolding are clearly visible (fig.III.25b-c). Chamber 5 is part of the cistern, so both its upper and lower windows are accessible. The latter is obviously the entrance to the chamber (Fig.III.26a-b)

Along the corridor, facing chamber 3, three small rectangular spaces are delimited by grey marble pieces. They may have been once used to keep small animals such as chickens(fig.III.26c). This reminds the use of the tertiary brick wall blocking the shallow

[29] Either the firebrigade who used the *sphendone* as a depot or the school may have excavated the chambers.

vault in the secondary reinforcement wall of arch 31, in which was opened a small hole suitable for the passage of small animals.

Our survey yielded data about the different phases of construction and repair which will eventually be presented in this paper. These allowed us to prepare a more comprehensive classification and catalogue for materials and to correlate the materials visible on the exterior surface with the ones used in the interior. This survey was especially beneficial in locating and describing some of the arches that were masked by the surface cladding on the exterior but clearly visible from inside.

A question that comes into mind at this point is *what was the substructure used for?* Originally, the great arches of the exterior wall were not blocked, and the inner corridor must have been used as a portico under which people wandered and chatted. So these subsequent chambers could have been suitable places for shopping facilities, for cafes or even for small ateliers. Casson argues that "the original purpose of the chambers which are found in the *sphendone*, and perhaps along most of the length of the Hippodrome, must have been to house personnel, tackle, and perhaps animals."[30] Diener thinks that these chambers were an underworld for talismans and astrologers from which the ladies learned the name of their future husband.[31] The numerous chambers along the Hippodrome may have served some or even all these functions. During our survey we did not come across any finds or indications that could give clues about the function of the interior chambers. The literary sources do not mention anything about them. Moreover the hydraulic plaster applied on the walls masks any traces of earlier periods. We do not even

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[30] Casson et al., *Preliminary Report*, 17.

[31] Berta Diener-Eckstein, *Imperial Byzantium* (Boston: Little Brown, 1938), 122-124.

know whether the entries to the chambers were closed. Casson's proposal does not seem to be likely, especially in terms of housing animals, because keeping animals in the *sphendone* would mean taking them out before the races and make them walk along the structure up to the first available gate on the flanks since the *sphendone* did not have a direct entry to the arena, then lead them to the starting gates. This itinerary must have been quite unpractical. Ancient authors mention that imperial stables were located in the city and some of them were in the *diippion* right in the north of the starting stalls. For storing equipment what would be more convenient than using the chambers under the seating tiers on the flanks that were closer to the *carceres*. For personnel, it must have been a pain to live in these cold and humid chambers that were probably impossible to heat due to the enormous volume of the substructures. On the other hand, the chambers could have served as shops and ateliers, used during the day and closed in the evening. Maybe as Diener proposes, talismans and astrologers may have occasionally occupied the chambers. The inhabitants of the neighbourhood may have also used them for storage purposes. However all these proposals are speculative since there is neither physical nor literary evidence about the usage of the substructures of the *sphendone*.

After the arches were blocked, the same space must have been a rather unpleasant place for leisure activities despite the ventilation windows in the infill. Then the chambers were probably emptied out and used as depots until its transformation into a cistern probably sometime between AD 600-800, due to the scarcity of water caused by the Arab attacks to Constantinople. The *Cold Cistern* as mentioned by Pseudo-Codinus and Buondelmonti, continued to feed water to the surrounding neighbourhoods until the mid

twentieth century as the Ottoman fountain adjacent to arch 11 clearly demonstrates. [32] For a certain period, we know that the firebrigade used it as a depot (fig.III.27.). The latest use and the one that caused the greatest damage, has been the building of houses adjoining to the exterior surface of the *sphendone*. The inhabitants of these houses carved out the surface to create niches, cupboards etc and covered the façade with modern building materials whose remnants are still visible on the exterior façade.

3.4. Description of the 33 arches[33]

The surviving substructures consist of arches in different dimensions. In terms of height, two groups can be observed: arches 1 to 10, which belong to the eastern flank of the Hippodrome, are about two meters lower than the big arches (11-33), which correspond to the substructures of the semi-circular end, called the *sphendone*. The big arches rise about 9 to 10 meters above the foundation level, indicated by the dressed stone courses. Since we could not reach the level of the crown of the arches, it is neither possible to give the exact height of each arch, nor any dimensions (of bricks, rubble stones, windows, niches, etc.) above 4-5 meters, from the ground level. On the other hand, in terms of their widths, the arches are not quite regular: the inner widths of the smaller arches of the eastern flank range from 270 to 330 cm; whereas the inner widths of the big arches range from 275 to 420 cm. Despite this irregularity, three groups of average widths can still be distinguished: 275 cm, as represented by arches 8-11; 350 cm, as represented

[32] Buondelmonti who visited Constantinople in the fifteenth century is the only traveler who mentioned the Cold Cistern. See Van der Vin, *Western Travellers*, 267. Also see Casson et al., *Preliminary Report*.

[33] Refer to table 3a-g, for a concise presentation of the types of materials used overall the structure, also to *3.1. General Description of the Structure*, in this thesis for an overall presentation of the surviving remains.

by arches 13-15; and 365 cm as represented by arches 19-25 (see Table 4 below). The irregularity in dimensions may indicate the spontaneity of the construction work. Three width groups mentioned above, may perhaps be explained by three worker teams, who have started the construction at the same time, but at different parts of the structure; as a result the arches in totally different dimensions may have served to join or *fill the gap* between the works of these teams (cf. widths of arches 13-15, 16-18 and 19-25).

TABLE 4: WIDTHS OF THE ARCHES

arch no:	inner width (cm)	arch no:	inner width (cm)
3	290	16	315
4	270	17	355
5	300	18	420
6	330	19	*370*
7	325	20	*360*
8	**275**	21	*360*
9	**280**	22	*360*
10	**275**	23	*365*
11	**275**	24	*365*
12	370	25	*375*
13	350	30	400
14	350	32	360
15	350		

Another difference between the big and small arches seems to be the construction technique of the voussoirs. Under the *General Description of the Structure* in this thesis, the details of constructional techniques have been presented. Nevertheless, one thing need to be repeated before giving the full description of each arch: the brick voussoirs of

the big arches are peculiar in terms of construction techniques. The voussoirs consist of two rings of bricks: the outer ring is made of layers of one brick; whereas the larger inner ring is made of layers of one and a half brick. This is clearly the character of the arches 11-25 and probably also of arches 26-33. However the arches 1-10, which belong to the eastern flank of the Hippodrome, most probably, consist of two equal rings of bricks. Unfortunately, due to erosion and damage, we can not be sure about their constructional characteristics.

Below, is presented the full description of the 33 arches of the surviving substructures. Our purpose is to provide a detailed account of the remains, as surveyed in 1997. For this reason, our description includes not only the building materials and techniques, but also the depiction of the degree of damage, as well as later interventions and additions to the surface. The text is accompanied by photographs and drawings, which are in the second volume of this thesis; and Tables 3a-3g, which are in appendix C in this volume.

ARCH 1 (fig.III.28-30, Table 3a)

DESCRIPTION: What survives from the first arch which is located on the very east of the stretch of arches above the ground level, is some of the uppermost left curve of the arch and a small portion of its right curve (fig.III.30a). Between arch 1 and arch 2, right below the crown of the arch, a 29 cm. wide bonding layer consisting of four courses of brick and running along the façade all over the *sphendone* can be clearly observed (fig.III.30b). About 130 cm. below this layer, start the brick courses upon which the arch

stands, but only three courses are visible today as the remaining structure below is buried under the earth. These two bonding brick bands run through the core consisting of mortared rubble faced with squared rubble stones laid in fairly regular courses. This alternation of brick and rubble bands is the common building technique overall the structure. Not much has remained from the original structure above the arch, this section is modern masonry based on the use of reused rubble stones joined with cement mortar M3.

BRICKWORK. The bricks of the arch and leveling courses belong to type **B1**, i.e. they are 30 cm wide and 4-5 cm thick. The bricks at the bonding bands are laid in very close courses, the thickness of mortar varying between 4 and 6 cm. This greyish cream colour mortar (**M1**) consists of an aggregate of small pebble and mostly crushed brick particles.

MASONRY. Dressed stone: There is no trace of dressed stones which can be observed at the foundation level of arches 10-20. These must be buried a couple of meters under the earth.

Rubble stone: Rubble stone is found at the core which consists of rubble stones set in thick mortar forming an irregular and compact mass. This core is faced with the same type of squared rubble stones set in fairly regular courses.

ARCH 2 (fig.III.28, 31, Table 3a)

DESCRIPTION: The second arch is masked by a modern projecting structure rectangular in shape with a semi-circular arched opening in the middle which probably follows the shape and dimensions of the original arch beneath. 26-29 cm. thick bonding layer of four courses of brick and intersecting the arch on the two curvilinear sides approximately 40 cm

below the crown, is visible on the left (26 cm. thick) and on the right (29 cm. thick). Between arch 2 and arch 3, 130 cm. of mortared rubble laid out in irregular courses is followed by three courses of bricks standing on a layer of very thick mortar down to the ground level. The structure above the arch is modern masonry such as above arch 1.

BRICKWORK: The bricks of the arch are not visible at all, however it may be assumed that the arch consists of two rings of 30x5 cm2 **B1** bricks such as the ones at the arches 1 and 3. The bricks of the bonding layers probably consist of broken **B1** type bricks, since their dimensions vary between 12-18 cm with an average thickness of 4.5 cm. The bricks at this bonding layer are laid out even more closely , the thickness of the band is 26cm. The courses of brick at the ground level are also of type **B1** (30x5 cm2).The mortar **M1** binding these bricks is greyish cream colour with an aggregate of small pebbles and mostly crushed brick particles.

MASONRY. **Dressed stone:** same as arch 1

Rubble stone: same as arch 1

ARCH 3 (fig.III.28, 32-33, Table 3a)

DESCRIPTION: The arch probably consists of two concentric rings of brick: Whereas the semi-circular outer ring of the arch can be easily measured, the inner ring has been severely damaged, therefore the thickness of the arch cannot be securely measured. If arch 5 is taken as a prototype for arch 3, it may be assumed that the inner ring consists of 30x5 cm2 bricks, such as the outer ring (fig.III.33a). This arch has not been covered on the surface but a blocking wall has been built up about 1.5-2 m in the core, probably where the

barrel vault opens to the inner corridor. Since the blocking wall is covered with cement plaster, it is not possible to date it. Nonetheless it may have been built by the inhabitants of the adjoining house to stop the humid and dense air coming from the substructures of the *sphendone*. The Eminönü Municipality attached iron bars on the surface of the arch to prevent the drunkards and homeless people from occupying these vaulted niches.

The four courses of brick run about 40 cm. below the crown of the arch on both sides. The secondary bonding layer about 130 cm. below can be seen down to 8 courses until the ground level. Between the bonding courses, there is the usual mortared rubble band. Between arch 3 and 4, there is the trace of the roof of a now-destroyed house at an average height of 420 cm above the ground level. Right below the roof there is a small arched niche (fig.III.33b) which must have been carved out by the inhabitants of the once adjoining house. Judging from the height of the roof, it may be assumed that the ground level was 1-2 m. lower when the house was built. A couple of ancient brick courses at the bottom edge of the niche may be the traces of another bonding brick layer that used to run above the crown of the arches. The upper levels of the structure consist of modern masonry such as at the previous sections described above.

BRICKWORK: All the bricks belong to type **B1**, measuring 30x4-5 cm2. The 4 courses of bricks running 40 cm below the crown of the arch are 29 cm wide and consist of **B1** bricks measuring 22-30x4 cm2. The dimensions smaller than 30 are probably broken bricks. Some of the **B1** type bricks at the bonding courses right above the ground are yellowish in contrast with the usual kiln-baked bricks of dark orange-red colour. Those are less closely laid out, the average thickness of mortar being 6 cm.

M1 is the common mortar type at this section as well, however the mortar joining the brick courses below seem to contain bigger lumps of crushed brick. Here and there cement plaster is applied over the surface which is a remnant of the recent usage of the *sphendone* as a curtain wall for the adjoining wooden houses.

MASONRY. Dressed stone: same as arches 1-2.

Rubble stone: same as arches 1-2.

ARCH 4 (fig.III.34-35, 37, Table 3a)

DESCRIPTION: The inner ring of arch 4 has been severely eroded in a way to make the measurements very unprecise (fig.III.37a). Taking arch 5 as an example, it may be assumed that the semi-circular arch consists of two rings of bricks. The maximum thickness of the arch is about 70 cm. Such as arch 3 , arch 4 is blocked at the inner surface and an iron grid is attached to the exterior façade of the arch. On the other hand at about 40-50 cm above the ground, a concrete floor built up into the vault in order to transform it into a great niche to be used probably as a depot by the inhabitants of the once adjoining house whose roofline is partially visible above the arches 3 and 4. On the left of the arch, right below the crown the 4 courses of bricks, a small and shallow niche is carved out into the bonding brick layer. Further on the left, at about the same height, there is another shallow niche (fig.III.37b). These two niches the later usage of the outer wall of the *sphendone*.

The original wall of mortared rubble survives up to 20-30 cm. above the arch, it supports the modern wall consisting of squared rubble stones joined with cement mortar

(**M3**). Below it the four courses of brick intersecting the arch below the crown continue on both sides. Below them, between arch 4 and arch 5, there is the usual mortared rubble band of around 140 cm. 17 brick courses rise above the ground up to the height of 168 cm, up to this band of mortared rubble.

BRICKWORK: The bricks of the arch and of the four brick courses belong to type **B2**, i.e. they measure 32-**33**x4.5-**5**[34] cm. with an average mortar (**M1**) thickness of 6 cm , whereas the courses rising from the ground consist of 31x5 cm2 **B1** bricks with an average **M1** mortar thickness of 5.5 cm. Those **B1** bricks are rather yellowish in colour such as the bricks at the same location between arches 3 and 4.

MASONRY. Dressed stone: same as arches 1-3. A dressed block not in situ measuring 62x24 cm2, stands as a support for the concrete floor in the vault. This is probably a reused foundation stone.

Rubble stone: Mortared rubble alternates with the bonding layers of brick. The rubble stones set in thick mortar form an irregular and compact mass in which definite courses can hardly be discerned. As facing, the small amorphous rubble stones are used together with larger squared rubble stones.

ARCH 5 (fig.III.34, 36-37, Table 3a)

DESCRIPTION: This is another eroded arch which probably consist of two concentric rings measuring each 31 cm, i.e., one brick length. The thickness of the arch is about 74 cm. The black colour at the eroded parts must have been caused by the smoke of fire burnt

[34] The bold numbers indicate that these dimensions are likely to be the original one and the others are the result of erosion and weathering

in the vault (fig.III.37c). As at the arches 3 and 4, arch 5 has been walled up on the interior side and covered by an iron grid on the surface. Such as at arch 4, a concrete floor standing on cement bricks has been built at about 95cm above the present ground level, therefore the arched opening must have been used as a niche for storage purposes of the once adjoining house. Above the arch, the end of the original wall made in mortared rubble is more clearly visible, above it is the modern wall supporting the school.

The four bonding courses of brick are still visible (fig.III.37d) as well as the bonding brick courses underneath which rise about 60 cm. above ground level. Between them there is the usual mortared rubble band . Between arch 5 and 6 there is a chimney 87 cm large and 420 cm. high belonging to the adjoining house whose inhabitants must be responsible for the transformation of the arch 5 into a big depot.

BRICKWORK: The bricks at this section belong to **B1**,i.e. they measure 30-31x31x5 cm. Their colour is the usual dark orange-red. The average thickness of **M1** mortar is 5 cm.

MASONRY. Dressed stone: same as arches 1-4

Rubble stone: Mortared rubble alternates with the bonding layers of brick. The rubble stones set in thick mortar form an irregular and compact mass in which definite courses can hardly be discerned. The small amorphous rubble stones are used together with larger squared rubble stones.

ARCH 6 (fig.III.38, 39, 41, Table 3a)

DESCRIPTION: This arch is so much damaged that nothing can be said abut its construction technique and dimensions. The black colour due to smoke heavily covers the whole surface of the arch. It is blocked in the same manner as arches 3 to 5. This arch is smaller in height than the arches on its east because the four courses of brick which normally intersect the arches at about 40 cm. below their crown, here continues uninterrupted over the eroded arch. Above the arch on top of the original wall stand two very large dressed stones which must have been brought there during the construction of the modern wall above. They may been obtained from the collapsed parts of the *sphendone*. The original wall is preserved up to about 150 cm above the crown of the arch. Above it there is modern masonry in which the trace of the almost flat roof of the once adjoining house is still visible.

BRICKWORK: Brick and dimensions cannot be measured due to erosion. But the mortar is probably type **M1** and the bricks may be **B1** such as the bricks at arch 5.

MASONRY. Dressed stone: The dressed stone blocks above the original wall cannot be measured as they are to high. However all of them belong to **MS1**, the metamorphosed limestone quarried in Bakırköy region.

Rubble stone: same as arches 1-5. However the rubble band above the uppermost brick band consists of more regular courses of small and large squared rubble stones (fig.III.41a).

ARCH 7 (fig.III.38, 40, 41, Table a-b)

DESCRIPTION: The height of the arch is the same as the arches 6 to 10, i.e. smaller than all others. This is another eroded arch which cannot be measured The outer ring of bricks is partially preserved especially on the left curve. The vault has been walled up in the interior surface and closed by iron grid on the surface as the arches 3 to 6, however here it is possible to see the inner corridor through a gap at the infill. Between arch 7 and 8 there is a small shallow niche indicating the later usage of the surface. The brick bands alternate with the usual mortar and rubble masonry as described before.

Above the uppermost brick layer, the original wall, continues up to 450 cm. above the ground level. Then the modern wall 860 cm. from the ground level up to the garden of the *Sultanahmet Endüstri Meslek Lisesi.*

BRICKWORK: The dimensions of the brick forming the arch cannot be measured due to erosion, on the other hand the bricks of the 4 courses (4 courses=28 cm) running below the niche measure 31-32x4.5-5 cm (**B1-2?**) bond with a 3.5-5 cm thick **M1** mortar.

MASONRY. Dressed stone: same as arches1-6.

Rubble stone: same as arch 6 (fig.III.41b).

ARCH 8 (fig.III.42, 43, 45, Table 3b)

DESCRIPTION: This arch is equal in height to arches 6 to 10. It consists of two concentric rings of brick equal in dimensions. The outer ring is well preserved except towards the crown whereas the inner ring is partially visible towards the bottom of the left and right curves. The arch is deeply eroded towards the crown by the carving out of a

chimney through the center (fig.III.45a). This indicates the use of the barrel vault as a hearth. Through the chimney, run four bonding courses of brick, the uppermost one being ca. 4 m. above the ground level On the right curve of the arch is carved out a shallow niche 260 cm above the ground level.[35] The four courses of brick are not visible through the niche. But they continue to run along the surface. Below them mortared rubble band alternates with other bonding brick courses.

The vault has been filled in and closed by an iron grid such as arches 3 to 7. A wooden plank at the level of the surviving original wall runs horizontally starting above arch 8. This must correspond to the roof of the once adjoining wall.

BRICKWORK: The bricks used at the arch are 31x4.5 cm (**B1**), bond with 3.5-5 cm **M1** mortar, whereas at the four courses of brick, the dimensions vary between 31-33cmx4,5-5 cm. (**B2**) with a thickness of mortar (**M1**) 4.5-5 cm. The four courses of brick are 33,5 cm. thick, they are less closely laid than those of the previous sections.

MASONRY. Dressed stone: same as arches 1-7.

Rubble stone: same as arches 6-7.

ARCH 9 (fig.III.42, 44, 45, Table 3b)

DESCRIPTION: The arch consists of two rings of brick: the inner brick ring is almost totally eroded whereas the outer brick ring survives on the right curve and at the crown. The vault has been filled in and closed by an iron grid as at arches 3-11. The dark grey colour indicates that the vault has been used for burning fire, probably not as a part of a

[35] This is the distance between the top edge of the niche and the ground level below the arch

house since there is no chimney, but by the homeless or drunkard people in the region.(fig.III.45b) The inner infill is plastered with tar, a precaution against the moisture coming from the water body inside the substructures. The four courses of brick above the arch and intersecting it below the summit are visible on both sides, eroded though. Other bonding brick courses rise above the ground on both sides alternating with the mortared rubble band above them. The wooden plank above arch 8 at the level of the surviving original wall continue to run horizontally above arch 9. Above it is the modern masonry wall supporting the garden of the school.

BRICKWORK: The bricks measure 31-33x4.5x5 cm (**B2**) bound with **M1** mortar 4,5-5 cm thick.

MASONRY. Dressed stone: same as arches 1-8.

Rubble stone: same arches 6-8.

ARCH 10 (fig.III.46-50, Table 3b)

DESCRIPTION: This is the last of the series of low arches: The arches on the west of this arch are about 2 m. higher than arches 6 to 10. This is also the start of the eastern flank of the Hippodrome. Two rings of brick forming the voussoir are preserved partially on the right curve towards the crown as well as on the left curve. The vault has been filled in and closed with an iron grid in the manner described before. Different than previous arches, due to the declining terrain (the terrain is 4 m lower than the ground level at arch 1) two courses of dressed blocks on the left and a single block on the right are visible on the ground. They correspond to the foundation level of the structure (fig.III.48a). Above them

are many courses of brick alternating with mortared rubble bands. The usual bonding layers made of four brick courses, one above the arch and one intersecting it below its crown (fig.III.48b) continue to run along the surface.

The surface is partially covered with a thin layer of cement plaster, there are also traces of broken pottery used for repair (fig.III.49a). On the left, there are two pieces of ceramic water pipes (fig.III.49b-50a) on a virtual vertical line, used by adjoining houses. The two courses of dressed blocks above the uppermost ceramic pipe and the superimposed brick courses indicate later repairs using material collected from the collapsed parts of the *sphendone* or from the surroundings. So these courses of dressed stones are not *in situ* but built probably before the construction of the school in nineteenth century, in order to reinforce the substructures that were supposed to carry the buildings above (fig.III.50b). The holes on the surface are the spaces where wooden beams of the adjoining house were inserted.

BRICKWORK: The bricks of the bonding courses right above the dressed stone blocks at the foundation level measure 30x5 cm2 and 31x5.5 cm2 (**B1**) joined with 5-6 cm of **M1** mortar. Bricks of the arches and of other courses cannot be measured because they are either very eroded or unreachable.

MASONRY. Dressed stone: The two courses of dressed limestone on the left are about 85 cm wide. These blocks of varying lengths (50-150 cm) run along the bottom of the pier between arches 10-11. Some of them project 40-50 cm. from the surface, i.e., they act as enlarged footings for the structure above. Between arch 13 and 14 there are such projecting dressed stone blocks at the foundation level. All these blocks are **MS1** type, the

typical grey tertiary limestone quarried at Bakırköy. It is not possible to tell how they are bound by visual observation.

Rubble stone: Same as arches 6-9.

ARCH 11 (fig.III.46, 52-53, Table 3b)

DESCRIPTION: At the first look, arch 11 is characterised by the Ottoman fountain adjoined to its surface (fig.III.54). Furthermore, from the East, it is the first of the 23 high arches of the *sphendone* with niches. [36] A peculiar brickwork technique is observed at these arches: the voussoir arch consists of two rings of bricks: the exterior ring is made of radially laid whole bricks, thus measuring one brick length depending on the type of brick used. The interior ring is larger than the exterior ring because it is made of one whole brick and a half-brick or slightly bigger than a half-brick (fig.III.52a). These big arches were fille in with large bricks bound with thick mortar. Usually a small ventilation window is in the infill right below the crown. The crowns of these arches are about two meters higher than the arches 6 to 10 and equal to arches 1 to 5.

The niche above arch 11 is completely demolished to leave in its place a large hole (fig.III.52b). The photograph suggests that the crown of the arch which has collapsed is reinforced by cement mortar (fig.III.53a). The dressed stone blocks at the foundation level are visible at the right pier but the left one is masked by brushwood. There are a number of brick bands consisting of four courses running along the façade: the uppermost one at a

[36] Arches 26 to 33 are either masked by surface cladding or only the uppermost curve of the arch is above the ground.

height of about 11m. runs through the uppermost section of the niche,[37] the one below is tangent to the arch at a height of about 8 m., below it the four courses of brick intersect the arch below its crown and this is also the band running above the smaller arches 1-10 (fig.III.53b); than comes the brick layer intersecting these smaller arches below the crown (this band measures 34 cm at arch 11) and intersecting the bigger arches slightly below the point where the voussoir starts to curve. There are other bands of brick below made of several courses, i.e. they do not follow the regular alternating mortared rubble - four courses of brick scheme of the upper levels.

The destroyed portions of the infill have been closed by an iron grid as at arches 3-10 but the interior of the substructures is still visible. The holes along the piers of the arch suggest the putholes for the wooden beams of the adjoining houses on the left and right as illustrated in Ousterhout. The section between arch 11 and arch12 is very eroded, therefore it does not yield significant data about the types of materials that are used there.

BRICKWORK: Bricks of the arch measure 31-33x4.5-5 cm (**B2**) whereas the broken bricks at the inner ring are around 17 cm, i.e., almost half a **B2** brick. The colour is the typical dark orange-red. The mortar (**M1**) thickness vary between 4.5-6 cm.

On the other hand the bricks at the infill are **B3** type, i.e. 40x4.5-5. cm2. They are bound with **M2** type mortar containing higher amount of crushed brick and larger lumps of brick pieces which make the colour rather pink-orange in contrast with the greyish cream **M1** mortar used at the arches.

[37] the heights are from the ground level below the fountain.

MASONRY. Dressed stone: The two courses of dressed stone blocks (**MS1**) between arch 10-11 are about 85 cm wide as described under arch 10. The dressed stones between arch11 and arch 12 could not be even seen because of the bushes.

Rubble stone: The mortared rubble bands that bricks alternate with do not follow very regular courses, i.e. although there are some distinguishable courses made of relatively big squared stones, mostly small broken amorphous stones used together with bigger squared stones form the common pattern (**MS2**)

ARCH 12 (fig.III.55-57, Table 3b-c)

DESCRIPTION: The voussoir of arch 12 standing on courses of dressed blocks is built in the technique under arch 11 (fig.III.57). It is better preserved towards the top. The carving out of a chimney on the right and of niches on the left, has caused severe erosion on the sides. The vault is completely filled in without leaving a ventilation window.

The slightly concave surface imply the existence of a niche above the arch, but it is not possible to tell its form.On the right of the arch there is a peculiar niche ending in a pointing arch. It might be older than other rectangular and slightly curvilinear niches.

The bands consisting of four courses of brick are as follows: (1) at the top edge of the niche above the arch; (2) At the bottom edge of the niche, tangent to the summit of the arch 3; (3) Intersecting the arch below the crown and running right above the smaller arches. Below these, the brick courses are hard to count. Number 3 is the last band consisting of four courses, other bands have several brick courses. All these bonding brick bands alternate with mortared rubble bands in the usual technique.

BRICKWORK: Bricks of the arch cannot be measured because the ones below are very eroded and covered with modern plaster, whereas the well preserved bricks are located too high to be measured. Between arch 12 and arch13, right above the Dressed blocks, there are **B1** type bricks of 31x5cm2 bond with M1 mortar 4.5 thick in average. The bricks of the infill are **B3** type 20-40x5-5.5cm2, the dimensions between 20-40 indicate either broken pieces of 38-40 cm bricks or reused ancient bricks. The **M2** mortar thickness used at the infill varies between 4.5-10 cm.

MASONRY. Dressed stone: The right pier is masked behind brushes, on the left one course of dressed stone blocks (78-150 cmx78cm) is clearly visible. They all belong to **MS1** type.

Rubble stone: Mortared rubble alternates with the bonding layers of brick. The rubble stones set in thick mortar form an irregular and compact mass in which definite courses can hardly be discerned. The small amorphous rubble stones are used together with larger squared rubble stones.

ARCH 13 (fig.III.55, 58-60, Table 3c)

DESCRIPTION: The voussoir is constructed with the technique described under arch 11 (fig.III.59a). The vault is filled in a way to leave a large ventilation window right below the inner ring of the arch. The piers stand on courses of dressed stone blocks on both sides. On the right 1.5 courses, on the left 2 courses are above the ground level. Between arch13 and 14, starting at the level of dressed stones, a chimney has been carved out. On the left, below them there are several brick courses.

The shape of the niche above the arch is more distinct in comparison to the niche of arch 12, however there is still no way to tell how it ends at the top. The original niche must be higher than the present remain. The neatly cut stone blocks and the regular brick courses above them must be modern repairs to consolidate the upper levels of the structure, in order to constitute a firm foundation for the garden of the *SultanAhmet Endüstri Meslek Lisesi.*

Throughout the structure, bands of brick courses alternate with mortared rubble as described at arch 12 (fig.III.59b)

BRICKWORK: The bricks at the lower sections of the arch are 31x5 cm2 **B1** bond with 5 cm thick **M1** mortar. The ones at the higher levels could not be measured. Beside the usual dark orange-red colour bricks there are yellowish colour bricks such as those between arches 3, 4 and 5. The **B1** bricks below the dressed stone blocks on the left also measure 31x5 cm2 (**B1**) which proves that this type of brick is the earliest, maybe dating back to the reign of Septimius Severus. The **B3** bricks of the infill measure 36-40-4.5 bond with 4.5-10 cm thick **M2** mortar.

MASONRY. Dressed stone: On the right 1.5 courses of **MS1**dressed limestone are preserved rising up to 70 cm. above the ground level. The lower course protrudes of 30 cm, from the surface (fig.III.60a). The piers of the arch stand 10 cm indented from the dressed stone footing. On the left two courses of **MS1** dressed limestone are preserved. Some stones protrude 60 cm from the surface. Two courses are 90 cm wide, whereas their lengths vary between 42-153 cm.

Rubble stone: same as arch 12 (fig.III.60b).

ARCH 14 (fig.III.61- 64, Table 3c)

DESCRIPTION: The voussoir consists of two rings of brick as described under arch 11 (fig.III.63a). Also the bands of brick are as described before. The bands of brick and mortared rubble are extremely eroded at lower levels due to carving out and plastering by the inhabitants of the once adjoining houses. The vault has been filled in leaving a ventilation window which has also been eventually filled in with small size stones (fig.III.63b). On the other hand the top levels are in pretty good condition, especially the niche which is relatively deeper than the preceding ones and whose concave shape is clearly visible. The concavity starts from the uppermost course of the band of 4 brick courses running tangent to the arch (fig.III.64a). Although the top of the niche is not distinguishable, it seems that the bricks have a tendency to curve up to forme a semi-dome.

On the right, the piers of the arch stand on two courses of dressed stone blocks as described under arch 13. However on the left, no dressed stone is visible. At the very bottom of the infill and of the arch, the surface is covered with small amorphous stones which indicates that originally, these were supposed to remain under the ground.

BRICKWORK: As the bricks are extremely eroded no measurements could be taken neither at the arch nor at the infill. Under the courses of MS1 dressed stones, there is M1a type mortar peculiar to arches 14-18.

MASONRY. Dressed stone: The courses of **MS1** dressed stone blocks between arches 13 and 14 are described under arch 13. On the left no dressed stone is visible.

Rubble stone: same as arch 12 (fig.III.64b).

ARCH 15 (fig.III.61, 65-67, Table 3c)

DESCRIPTION: The voussoir is constructed in the technique described under arch 11. The vault has been infilled later leaving a ventilation window which has been closed by the inhabitants of the adjoining house (fig.III.66a). The lower sections of this arch as well as the pier between arches 14 and 15 have been deeply carved out in order to form a number of niches in different sizes by the inhabitants of the adjoining houses. There are still traces of plaster and paint applied on the surface. Multiplied by the heavy surface weathering, not much can be said about the building materials and techniques (fig.III.66b).

The niche above the arch is not as well preserved as the one above arch 14, however it gives a clue about its rectangular shape at the bottom, although the shape of its upper part does not survive (fig.III.67a). The four courses of brick alternating with mortared rubble run along the surface at the levels described before under arch 11.

The arch stands on two courses of dressed stone blocks on the left, the ones on the right are probably masked by plaster and erosion. Under these courses are small amorphous rubble stones, but as the surface is plastered, not much can be distinguished.

BRICKWORK: Due to damage and surface weathering, the brickwork cannot be measured. At the surviving portions of the infill, there are 30, 35-39x4.5-5 cm **B3** type bricks bound with 4.5-5 cm thick **M2** mortar. Under courses of **MS1** Dressed blocks, there is **M1**a mortar.

MASONRY. Dressed stone: The courses on the left are 232 cm (the level of the top edge of the upper course) above the ground level and two courses are about 75 cm wide. The length of stones vary between 64-110 cm.

Rubble stone: Mortared rubble alternates with the bonding layers of brick. The rubble stones set in thick mortar form an irregular and compact mass in which definite courses can hardly be discerned. The small amorphous rubble stones are used together with larger squared rubble stones. At higher levels, stones seem to have been laid out in more regular courses (fig.III.67b)

ARCH 16 (fig.III.68-71, Table 3c)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch11. On the other hand, this arch differs from the other big arches of the *sphendone* in a number of respects (fig.III.70a): The niche above the arch has been filled by pieces of rubble stone and brick using pinkish colour mortar (**M2** probably) (fig.III.70b). At the infill, the ventilation window has been enlarged downwards. Moreover, a large opening 2 m. above the ground level and serving as an entrance to the interior (243x157 cm) has been opened during the walling up of the vault. Here a ramp leads to the entrance which has a stone beam running into the core. Above it, there is a less carelessly built arch consisting of two rings (fig.III.71a). The opening has been eventually filled on the interior surface and closed by an iron grid on the exterior surface as at arches 3-11. This entry is an indication that the substructures were accessible even after the vaults of the arches were bricked up.

BRICKWORK: The bricks of the arch and of the infill cannot be measured due to erosion but at the infill the thickness of the bricks are 4.5-5 cm whereas the thickness of mortar is 4.5-5 cm. Under courses of **MS1** dressed limestone, there is **M1a** mortar.

MASONRY. Dressed stone: The two courses of **MS1** dressed limestone between arches 16 and 17 are 155 **cm** (the level of the top edge of the upper course) above the present ground level. Two courses are about 75 cm wide, the length of stones varying between 62-135cm. The stones are not protruding from the surface (fig.III.71b)

Rubble stone: Mortared rubble alternates with the bonding layers of brick. The rubble stones set in thick mortar form an irregular and compact mass in which definite courses can hardly be discerned. The small amorphous rubble stones are used together with larger squared rubble stones.

ARCH 17 (fig.III.68, 72-73, Table 3d)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch11. It has been filled leaving a ventilation window right below the inner ring of the arch and this window has been filled in rubble stones probably by the inhabitants of the adjoining houses (fig.III.73a). The two courses of dressed limestones upon which the piers stand are present on both sides but some stones are replaced by a mixed construction including bricks, broken pieces of rubble stone, broken pottery etc. Below these is a small arch made of two concentric rings probably leading the ground water out. A trench may reveal ceramic pipes at this section (fig.III.73b). The niche above the arch is barely distinguishable, it must have been severely damaged especially towards the top.

BRICKWORK: Bricks are very eroded. Bricks at the small arch beneath the dressed blocks are 21,30x3-4 cm2 with a **M1** mortar thickness of 4-6 cm. If 3cm are eroded

dimensions, the small size **B1** bricks are again at earlier levels. 21 cm probably corresponds to broken bricks. Under courses of **MS1** Dressed blocks, there is **M1a** mortar.

MASONRY. Dressed stone: The two courses of **MS1** dressed limestone measure 73 cm and they are about 250 cm (the level of the top edge of the upper course) above the present ground level. The dimension of stones vary between 55-110 cm. on the left and 58 and 120 cm. on the right. None of them protrude from the surface

Rubble stone: same as arch 17.

ARCH 18 (fig.III.74-77, Table 3d)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch11 (fig.III.76a). It has been filled leaving a ventilation window whose sides have been reinforced with cement mortar. Right below the windows the plastered surface indicate the past existence of adjoining houses and the street lamp attached onto the surface. This arch is especially important because it reveals that originally the niches above the arches used to end in semi-domes (fig.III.76b).

The piers stand on two courses of dressed stone blocks on both sides. Right above them on the right a niche is carved out. Here there is a hole reinforced with concrete (fig.III.77a). Starting at the level of the courses downwards, the surface is faced with pieces of small rubble stones, bricks, pottery etc. The pier between arches 18 and 19 is extremely eroded. Here, the ground level starts to rise again.

BRICKWORK: No dimensions can be measured because the lower brickwork is eroded and those in good condition are too high to be measured. Under courses of **MS1** dressed limestone, there is **M1a** mortar.

MASONRY. Dressed stone: The width of the two courses on the right measure 68 cm and 70 cm on the left (fig.III.77b). The length of stones vary between 55-115 cm on the right and 64-105 cm on the left. These dressed stone blocks are about 2.5 m. above the ground level.

Rubble stone: same as arches 17-18.

ARCH 19 (fig.III.74, 78-79, Table 3d)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch11. The vault is bricked up as the arches 11-33. The niche and the courses of brick over the niche are hidden behind the leaves so only the four courses tangent to the arch and those that intersect it are visible. But it seems that the niche has been severely damaged. On two sides, the piers stand on the dressed stone blocks due to the rising topography, on the left only one course and on the right two courses are above the ground level. The lowermost levels of the infill are faced with small amorphous rubble stones (fig.III.79a). The putholes for the wooden beams of the adjoining houses are clearly visible on both sides of the piers.

In front of the arches 18-19 and 20 there is a brick and rubble construction 4-5 m. at the south of the *sphendone* used for leading water outside (fig.III.79b).

BRICKWORK: The bricks of the arch could not be measured but at the infill, the dimensions of the **B3** bricks vary between 38-42x4-5 and they are bond with 4.5-6 cm thick **M2** mortar thickness being 4.5-6 cm.

MASONRY. Dressed stone: The two courses on the right are as described under arch 18. On the left, the course rises 50 cm. from the ground level. The dimensions of the stones vary between 80-125 cm.

Rubble stone: Same as arches 17-18.

ARCH 20 (fig.III. 80-82, Table 3d)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch11. No ventilation window has been left while filling in the vault, but the air circulation is possible at the periphery of the inner ring because the infill does not totally close the opening. The upper levels of the structure are hidden behind leaves (fig.III.82a). On the right the pier stands on the dressed stone blocks of which one course is above the ground due to the rising topography. On the left, the remains of a house mask the lower sections of the surface.

BRICKWORK: The bricks of the arch measure 31x4.5-5 cm (B1) bond with M1 mortar 4-5 cm thick, the bricks of the arches at reachable heights are too eroded to be measured. The bricks of the infill are B3 type, they measure 38x5 cm2 and are bond with M2 mortar 5-6.5 cm. thick.

MASONRY. Dressed stone: On the right, one course of dressed stone blocks is 50 cm. wide. The length of stones varies between 80-125 cm.

Rubble stone: same as arches 17-19.

ARCH 21 (fig.III.80, 83-84, Table 3e)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described arch 11 (fig. III.84a). The upper levels of the structure are hidden behind the leaves . Similarly the concavity of the niche above is barely visible, it looks rather flat. This may be a later repair using ancient bricks and limemortar (fig.III.84b).

It is not possible to tell whether there was a ventilation window at the infill whose upper sections have collapsed than partially filled in with cement bricks in modern times.. At the bottom of the infill there is another opening, through which used to run a water pipe leading water in the cistern to the adjoining house and maybe to the surroundings as well. It is not possible to see the courses of dressed stone blocks upon which the piers of the arch stand, since these sections are covered by the remnants of the adjoining house whose wooden beams used to be inserted in the putholes that are aligned vertically on the arch.

BRICKWORK: The bricks of the arch and at the bonding courses measure 31x4.5-5 cm (**B1**) bound with 4-5 cm thick **M1** mortar, whereas at the infill there are 38x4.5 cm2 **B3** bricks , the thickness of **M2** mortar varying between 4.5-6 cm.

MASONRY. Dressed stone: Dressed stone blocks are not visible because of the remnants of the adjoining building.

Rubble stone: same as arches 17-20.

ARCH 22 (fig.III.85-88, Table 3e)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described arch11 (fig.III.87a).The upper levels of the infill have been replaced by modern infill constructed towards the interior surface into the barrel vault with modern bricks bound with cement mortar. In the center of the modern infill there is an opening closed by iron bars behind which can be seen another similar modern infill (fig.III.87b). Iron bars may have been attached earlier to prevent children living in the house from falling in the cistern and the opening may have been closed afterwards from the interior corridor by the Municipality. The niche which must have collapsed, has been filled in rubble and pieces of brick (fig.III.88a). At the bottom of the arch as well as between arch 22 and arch 23, there are the remains of the adjoining house which was burnt down in 1997.

BRICKWORK: The bricks of the courses are B1 measuring 31x4.5-5 cm bound with 5-5.5 cm thick M1 mortar. The infill consists of B3 type bricks, 38x4.5-5 cm, the average thickness of M2 mortar being 6 cm.

MASONRY. Dressed stone: Under the right pier of the arch, there is one single MS1 dressed stone block above the ground level.

Rubble stone: same as arches 17-21 (fig.III.88b)

ARCH 23 (fig.III.85, 89-91, Table 3e)

DESCRIPTION: The construction technique of the voussoir (fig.III.90a) and the alternation of brick courses with mortared rubble bands (fig.III.90b) are as described under

arch11. The surface used to be masked by a wooden house until November 1997 when this house burnt down and the surface thus became visible (fig.III.91a). At the bottom of the piers of the arch, the surface is still covered by the remains of the adjoining house and the trace of its roof is still attached to the façade through the crown of the arch. At the summit of the arch the trace of the roof remained. The niche above is blocked by rubble and old bricks using cement mortar (fig.III.91b). Here the roots of the superimposing tree may have caused this damage.

BRICKWORK: The bricks are B1 measuring 31x4.5-5 cm bound with of 5-5.5 cm thickM1 mortar. At the infill, B3 bricks measure 38x5 cm , the binding **M2** type mortar is 6 cm in average.

MASONRY. Dressed stone: There are no dressed stone blocks on the surface.

Rubble stone: Same as arches 17-22.

ARCH 24 (fig.III.92-94, Table 3e)

DESCRIPTION: The construction technique of the voussoir (fig.III.94a) and the alternation of brick courses with mortared rubble bands is as described under arch 11. The vault has been filled in leaving a ventilation window open whose arch has been repaired by modern bricks. The niche is to some extent preserved, but its bottom edge is repaired by rubble stones. This niche seems to be smaller in width and in height than the niches of the previous arches (fig.III.94b). At the bottom and on the right half of the façade are the remains of the destroyed house.

BRICKWORK: The bricks are **B1** type measuring 31x5 and bound with 5 cm thick **M1** type mortar. The infill consists of **B3** type 38x5 cm bricks bond with 6-6.5 cm thick. **M3** type mortar

MASONRY. Dressed stone: There are no dressed stone blocks above the ground level.

Rubble stone: same as arches 17-23.

ARCH 25 (fig.III.92, 95-96, Table 3e)

DESCRIPTION: The construction technique of the voussoir and the alternation of brick courses with mortared rubble bands are as described under arch 11. The arch has been filled in leaving a ventilation window right below the inner ring of the arch (fig.III.96a). The bottom of this window is about 620 cm and the summit of the arch about 10 m. above the course of Dressed blocks, i.e, the foundation level. The niche above has been filled in with squared rubble stones and ancient bricks (fig.III.96b), so this is another collapsed or destroyed upper section. The infill of the arch stands on one course of dressed limestone being exactly at the same level as the dressed stones between arches 18 and 19. On the left of the arch start a facing consisting of modern bricks (B4) that completely mask the surface.

BRICKWORK: The bricks are B1 type 31x5 cm bricks bound with 5cm thick M1 mortar. The infill is made of 38x5 cm2 B3 type bricks bound with 6 cm thick M2 mortar.

MASONRY. Dressed stone: The courses of dressed stone blocks cannot be measured.

Rubble stone: same as arches 17-24.

ARCH 26 (fig.III.98-99, Table 3e-f)

DESCRIPTION: This arch is completely masked by the facing made of modern bricks. The window corresponds to the original ventilation window in the infill, as it can be clearly seen from the interior corridor.

BRICKWORK: The modern bricks **B4** measure 22.5x11x7 cm3 bound with 2 cm thick cement mortar (**M3**).

MASONRY. Dressed stone: There are dressed stone blocks above the ground level.

Rubble stone: Mortared rubble is masked by the surface cladding.

ARCH 27 (fig.III.98, 100-101, Table 3f)

DESCRIPTION: This arch is faced with modern brick cladding such as arch 26 and the window at the infill which can be seen from the interior corridor corresponds to the original ventilation window. However the collapsed sections of the cladding above and at the bottom reveal the original structure behind. From the two bands made of four brick courses alternating with bands of mortared rubble, the one below is the band running tangent to the arch and the one above is the one running through the niche, moreover it is also possible to see some of the brick courses framing the niche on its left edge (fig.III.101a). The destroyed section at the ground level reveal the brickwork of the infill judging from their dimensions as well as their locations.

BRICKWORK: The modern bricks **B4** measure 22.5x11x7 cm, the infill bricks (B3) are 38x5cm2 bound with 5.5 cm thick M2 mortar. The bricks of the bonding courses could not be measured.

MASONRY. Dressed stone: There are no dressed stone blocks on the surface

Rubble stone: The mortared rubble seems to have been reinforced with lime mortar generously applied on the surface in a way to mask the rubble stones (fig.III.101b).

ARCH 28 (fig.III.102-103, Table 3f)

DESCRIPTION: It is very difficult to locate arch 28 from outside because the surface is masked under the remains of the adjoining house such as bathroom faience tiles, trace of the staircase, mortar and paint etc. The dressed stone blocks are modern construction. From the interior, the window at the infill is clearly visible.

BRICKWORK: The bricks at this section measure 24-27.5x2.5-3 cm with a mortar thickness of 3.5-4 cm (B5), these correspond to modern repairs and additions to the structure. There are also 22.5x11x7 cm3 B4 type modern bricks.

MASONRY. Dressed stone: The dressed stone courses alternating with brick are reused stones. Their average dimensions are 25x40 cm2.

Rubble stone: There are no rubble stones at this section.

ARCH 29 (fig.III.102, 104-105, Table 3f)

DESCRIPTION: Parts of this section are covered with the remains of the adjoining house such as bathroom and kitchen tiles, mortar, paint etc. However a small portion of the left curve of the arch which is most probably constructed in the technique described under arch

11. Judging from this surviving curve, it can be concluded that arch 29 is one of the big arches of the *sphendone* (fig.III.105a).

The window at the infill is clearly visible from the interior corridor, however it is not possible to take measurements of the materials because up to the level of the window the surface of the wall is covered with hydraulic plaster. The arch of the ventilation window has additional rings (here 3 in total) rings above the crown (fig.III.101b).

BRICKWORK: The surface is covered with **B4** bricks. The bricks of the arch could not be measured.

MASONRY. Dressed stone: There are no dressed stone blocks above the ground

Rubble stone: There are reused rubble stones as part of the repair. Between arch 30 and arch 31, four courses running tangent to the arches and mortared rubble bands alternating with brick courses are partially visible.

ARCH 30 (fig.III.106-109, Table 3f-g)

DESCRIPTION: Due to sharply declining terrain, only the upper part of the arch is above the ground. The construction technique is as described under arch 11. The arch has undergone many repairs. It has been filled in many times, the outer wall at the bottom indicates an early infill and the wall in the barrel vault being a later repair. It is also possible to see the trace of the ventilation window which also has been bricked up.

The four brick courses tangent to the arch and those intersecting it below the summit appear partially on the surface. However above the arch the modern repair masks the original surface except for a few brick courses towards the very top alternating with

mortared rubble. On the interior façade, the structure is reinforced by a secondary wall and buttresses. So the original wall is also hidden from inside.

The arch at the reinforcing secondary wall in the interior consists of four rings of bricks. This shows that since the thickness of the big arches proved to be insufficient, the crown of the arches of the reinforcing wall have been further strengthened by building more rings of brick so that they could carry the heavy structure above as well as resist the earthquakes.

BRICKWORK: The bricks of the arch measure 32.5-34x5 cm (**B3**) bound with 4-5 cm thick mortar and those at the infill 38x4-5 cm with a 6 cm thick **M2** mortar. The bricks of the secondary wall in the interior are 38x4.5-5 cm **B3** type bricks bound with **M2** mortar with an average thickness of 6 cm.

MASONRY. Dressed stone: There are no dressed stone blocks above the ground level.

Rubble stone: It is possible to see mortared rubble alternating with bricks at some sections towards the top of the surviving wall.

ARCH 31 (fig.III.106-107, 110-112, Table 3g)

DESCRIPTION: The construction technique of the voussoir is as described under arch 11. It is characterised by the inscription in Ottoman adjoined to the summit of the arch. Its right curve is covered by cement plaster, so only the bricks of the left curve are visible. Four courses of brick running tangent to the arch and those intersecting it below the crown partially appear among modern bricks, cement plaster, broken pottery, and reused rubble stones that have been applied and incorporated into the structure for the purposes of

repair and reinforcement. The arch is filled 20-30 cm. inside the barrel vault and covered by cement plaster. The semi-circular arch has been reshaped at the top into a slightly pointing arch to give the effect of an Ottoman hand.

There are three phases of construction in the interior:

1. the original wall of the *sphendone*
2. the infill of the arch, the secondary reinforcing wall and the buttresses (fig.III.111)
3. the tertiary wall adjacent to the secondary wall

The tertiary wall is not built for reinforcement purposes but probably to keep animals in the barrel vault formed by the arch of the secondary wall. (The small hole at the top of the wall which can allow the passage of small animals such as chickens).

Such as at the interior of arches 30 and 32, the arches of the secondary wall consist of many concentric rings (here 4).

BRICKWORK: The bricks of the voussoir measure 31x5 (**B1**) bound with 4-5 cm thick M1 mortar. The bricks at the courses that intersect the arch below the crown, there are B2 type 33x5 cm bricks bound with 4 cm thick mortar. **B4** type modern bricks measuring 23x11 such as those at the arches 26 and 27 are used for repair. The bricks of the secondary reinforcement wall in the interior are B3 measuring 38x4.5-5. The bricks of the tertiary wall built in front of the secondary reinforcement wall have very peculiar dimensions: 29x2.5 cm2.

MASONRY. Dressed stone: There is one dressed stone block measuring 40x98 below the right pier of the arch, but this cannot be in situ.

Rubble stone: The rubble stones above the 4 courses of brick may be the original mortared rubble band but they have undergone several repairs.

ARCH 32 (fig.III.113-115, Table 3g)

DESCRIPTION: The construction technique of the voussoir is as described under arch 11. This arch is the entrance to the substructures of the *sphendone*. Inside the vault an iron door framed by neatly cut dressed stones has been built. On the two sides of the entrance, the curves of the arch survive as well the 4 brick courses intersecting it below the crown.

Above the arch and on its sides, the surface has been repaired using ancient rubble stones, ancient and modern bricks bound together with cement mortar. So not much can be said about the original structure. However in the interior corridor, the structure was reinforced by the construction of a secondary wall and buttresses supporting the barrel vault (fig.III.115a)

Such as at the interior of 30 and 31, the arch of the secondary reinforcement wall consists of many concentric rings (here 3) to resist the weight of the structure above as well as the earthquakes (fig.III.115b). Between arch 32 and arch 31, at the secondary wall in the interior, two small niches have been carved out indicating the usage of the interior corridor (fig.III.115c).

BRICKWORK: The bricks of the arch are B1 measuring 31x5 cm2 bound with a 5.5 cm thick M1 mortar The bricks of the courses running tangent to the arches is 32x4.5. The bricks of the reinforcement in the interior corridor are B3 type bricks measuring 38x5 cm.

MASONRY. Dressed stone. There are no ancient dressed stone blocks stones *in situ*.

Rubble stone: The rubble stones that appear here and there over the surface are reused material bound with cement mortar. The mortared rubble courses towards the top of the wall may be original.

ARCH 33 (fig.III.107, 113, 116-118, Table 3g)

DESCRIPTION: This is the last arch on the west that survives above the ground level. From it only a couple of bricks of its left curve and the 4 courses of brick intersecting it below its summit survive. Above these courses there is a closed niche framed by stones having late Ottoman carvings. All the surface has been repaired with modern and ancient bricks and rubble stones bound with cement mortar.

From the interior corridor a larger portion of the arch is visible. This is the end of the interior corridor and chambers (fig.III.118). Here it is clear that the arch consists of two equal rings of radially laid bricks (fig.III.117a).

BRICKWORK: The bricks of the arch measure 31x4.5-5 (**B1**) with a **M1** mortar thickness of 4.5-5 cm. At the courses there are the same type of bricks measuring 31x4 cm2. The four courses of brick measure 33 cm (fig.III.117b).

MASONRY. Dressed stone: There are no dressed stone blocks.

Rubble stone: The rubble stones on the surface are used for the repair, so even if some of them are original it is not possible to differentiate the *in situ* ones from the reused rubble stones.

CHAPTER IV

THE HIPPODROME OF CONSTANTINOPLE THROUGH THE AGES

1. Who Built the Hippodrome at Constantinople?

Septimius Severus is known to have chosen the site for the Hippodrome in 196 AD and to have carried out the necessary cut-and-fill work of the sharply declining terrain in order to create an available space for the Hippodrome of Byzantium that would reach about 450-480 meters.[1] Primary sources give him also the credit of constructing the *sphendone* as well as το πρωτον κτισμα or the first seats that were left unfinished when Septimius Severus died in 211.[2] Malalas (490-570 AD) refers to Septimius Severus as follows:

> ...The most sacred Severus set up the Hippodrome in Byzantion, after purchasing buildings and removing trees which were in the garden there, he constructed the Hippodrome for the Byzantines, but he was not able to complete this.[3]

After an interval of about a century, Constantine the Great completed and embellished the Hippodrome that he inaugurated together with the city Constantinople on May 11th 330 as the *Chronicon Paschale* of the mid-seventh century reports:

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[1] See chapter II in this paper, where dimensions are discussed. Also see, MacDonald, "The Hippodrome," 42-44, Guilland, "Les Dimensions," Bsl (1970), Vogt, Byzantion X (1935): 471-488.

[2] Zosimus in the fifth century, Malalas in the sixth century, the *Chronicon Paschale* in the seventh century, Glykas and Cedrenus in the twelfth century are among ancient sources associating the construction of the Hippodrome with Septimius Severus. See Guilland, "Les Hippodromes de Byzance," 182.

[3] Malalas' chronicle of the sixth century AD is known to be the earliest extant example of Byzantine chronicles . It consists of 18 books tracing a history from Adam up to the reign of Justinian. The last book is relevant for the study of the Hippodrome of Constantinople. See Elizabeth and Michael Jeffreys and Roger Scott, trs., *The Chronicle of John Malalas* (Melbourne: Australian Association for Byzantine Studies, 1986), 155.

> He also completed the Hippodrome which he decorated with bronze statues and other embellishment, and made in it a loge for the emperor to watch (the games from) in imitation of the one in Rome.[4]

Despite the existence of a substantial number of ancient texts about the construction of the Hippodrome, these accounts are mostly repetitive and lacking details especially in terms of informing about the extent of the Severan or Constantinian construction. Therefore, the construction history of the building cannot be securely reconstructed without looking into the archaeological evidence.

On the other hand, the physical evidence above the ground level is limited to the surviving substructures of the *sphendone* whereas the rest of the structure is either completely demolished or its foundations remain under the modern buildings and roads. Although the data that has been gathered through excavations and surveys at the remains is valuable in furnishing the scholars with the characteristics of the late Roman building techniques and materials, the lack of surviving buildings in İstanbul dating from the same periods prevents a comparative analysis which could lead to an accurate date for the building phases of the monument. Therefore, even if the testimony of ancient authors that Septimius Severus actually gave the start for the construction, is correct, the questions *to what extent was the building completed by Septimius Severus? What are the architectural components added or replaced under Constantine's reign?* still remain open to debate.[5]

In this section, will be presented an attempt to give a tentative answer to these questions. It should be clearly noted that the answer is based on:

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[4] *Chronicon Paschale*, ed. L. Dindorf, *Corpus Scriptorum Historiae Byzantinae* (Bonn: 1828-1897), 527-30 quoted in Cyril Mango, *The Art of the Byzantine Empire 312-1453*, (Toronto: University of Toronto Press, 1986), 7.

[5] Constantine may have replaced wooden seats with marble/stone ones. One single stone seat was unearthed in the garden of Sultan Ahmet Mosque where it is still standing presently.

i. the historical facts and context related to the two emperors

ii. the choice of site, characteristics of the terrain and of the structure that was intended to be built on that topography

iii. the use of the characteristic building materials and techniques of the late Roman and early Byzantine architecture especially in Asia Minor, as a comparanda material for the data gathered at our survey of the *sphendone* in 1997.

The answers that will be presented in the following paragraphs, are by no means provable by the three items above. In other words the answers will be the product of reasoning, using the limited written and physical data in hand. During our survey, no coins, inscriptions, ceramic etc. that would enable us to date more precisely the different parts of the structure were found. It is also unfortunate that the trenches excavated by the British Academy in 1927-1928, and the salvage excavation carried out by Rüstem Duyuran at the site of the Palace of Justice, remained confined to the flanks of the Hippodrome and no trenches were dug at the foundation of the *sphendone* or in the garden of the *Sultanahmet Endüstri Meslek Lisesi*.

1.1. Septimius Severus and Constantine

To start with, the very first assumption is to trust ancient historians in giving Septimius Severus credit of initiating the construction of the structure.[6] For a Hippodrome, the most convenient site would be a level terrain surrounded by two adjacent hills upon which seating tiers would be constructed without great pain and cost. For instance, the Circus Maximus in Rome which, according to Pseudo-Codinus, served as a model for the Hippodrome in Constantinople, was situated in the valley between the Palatine and Aventine hills.[7] On the other hand, the site chosen by Septimius Severus was an extremely difficult one. Beside not being aligned between two hills, the level surface available was not even large enough to build the arena.[8] Grosvenor explained the difficult topography and the amount of work this necessitated as follows:

> Severus determined that this level surface should be carried 500 feet further south, beyond the sharp descent and the precipice; that, piling arch on arch, over columns of solid masonry, he would raise a new surface, thus suported, which should stand sixty feet in air above the old surface below.[9]

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[6] See supra, footnote no.4. Pescennius Niger was proclaimed emperor in Antioch by his soldiers in 193 at the same time when Septimius Severus was proclaimed emperor in the Upper Pannonia. Byzantium was among the cities supporting Pescennius who intended to occupy Perinthus in order to control the main land routes. Septimius Severus captured Perinthus and besieged Byzantium for more than 2 years. When Pescennius was finally defeated, Byzantium surrendered and Septimius Severus destroyed its fortifications in late 195. He deprived the city from its rights by making it a κωμη of Perinthus. However later on he decided to restore the city. See Janin, *Constantinople*, 20-21 and Michael Grant, *The Severans. The Changed Roman Empire* (London and New York: Routledge, 1996), 8-10.

[7] Pseudo-Codinus' late tenth century compilation on the topography of Constantinople, is edited by Th. Preger, *Scriptores Originum Constantinopolitanarum* I-III (Leipzig: 1901, 1907). Pseudo-Codinus argues that the Hippodrome was shaped on the Circus Maximus, "κατα μιμησιν της Ρωμης." See Guilland, "Les Hippodromes de Byzance," 183 and Vogt, "L'Hippodrome," 471. Also refer to chapter II in this paper for further information about the Circus Maximus.

[8] The topography at the North West of the structure rises of 4.1 m, the seating tiers in this section are supported by the terrain. However this natural slope is not present all over the western flank. See MacDonald, "The Hippodrome,"4.

[9] Grosvenor, *The* Hippodrome *of Constantinople and Its Still Existing Monuments* , (London:Sir Joseph Causton&Sons, 1889), 9.

Why choose such a problematic site that would necessitate extra-work and financial sums? Wasn't there a larger and more suitable space for a Hippodrome? Before the tetrarchic period, during which the circuses were built within the fortification due to the presence of the imperial residence physically connected to the circus, Roman circuses were mostly located outside the city limits, and generally on the main throughfares. Therefore, the claim that the territories of Byzantium and its surroundings did not include a suitable site at all for a Hippodrome is not convincing. Especially when one remembers the building activity that Diocletian carried out in Nicomedia, which included the destrucion of complete districts to empty out space for the construction of a Hippodrome, this would not be a great problem for the emperor.[10] Instead Septimius Severus chose a site quite central within the territory of Byzantium, overlooking the sea and the acropolis where Topkapı Palace stands today. If his aim was monumentality, he achieved his purpose perfectly, because few other sites would have lead to such a spectacular vista of the *Propontis* and such a spectacular appearance looking at the Hippodrome especially from the board of a ship.

Was Septimius Severus devising a further urban development for this small settlement of Byzantium? By giving the start to the construction of a Hippodrome which would accommodate at least 50,000 people, it is plausible that he was imagining a great city, or a prosperous region including Perinthus, Nicomedia, Nicaea, Chalcedon. On the other hand, his choice of a site at the extremity of the peninsula may be an indication that he did not have a precise urban development plan in mind contrary to the policy of

[10] Avni Öztüre states that the constructional activities of Diocletian at Nicomedia started with the destruction of low quality buildings and those in disrepair. See A. Öztüre, *Nicomedia Yöresindeki Yeni Bulgularla İzmit Tarihi* (İstanbul: 1981), 52.

Constantine.[11] But if the Hippodrome would serve other settlements in Thrace and on the southern shore of the Propontis, for an approach from the sea, both the monumentality of the structure would be revealed and the access to the structure from the ports located at the mouth of the Golden Horn would be quite easy.

On the other hand, had the literary sources not told uswho started the construction, it might have been still possible to argue that when the site for the Hippodrome was chosen there was not a well-established tradition of adjoining the Hippodrome to the palace. Because its western flank does not allow as *beautiful* vistas as the eastern flank does, and beyond the eastern flank any construction necessitated the building-up of terraces upon which the many buildings in the Great Palace complex were indeed gradually constructed. So both flanks are probably not very good choices in terms of vistas and topography respectively. If the Hippodrome were not already there, Constantine could have chosen another site for his palace and circus, one along the Golden Horn would probably be an option worthwhile to consider in terms of the beauty of the site, the concerns of seclusion and protection as well as the limits of the new city (fig.IV.1).

In the perspective presented above, the choice of site may seem to reinforce the assumption that Septimius Severus gave the start for the Hippodrome. However does this also help to speculate about the extent of his work? Although the primary sources give him credit of the construction of the *sphendone*, the following question should then be asked: What would be the first process of construction, in other words, which part(s) of the building would be primarily constructed? The substructures of the *sphendone*, i.e. the structure that has survived today, is statically and functionally fundamental for the

[11] See chapter II in this paper and MacDonald, "The Hippodrome," 54-56.

accomodation of the races because it acts a a retaining wall for an arena about 14 m. higher than the level below.[12] However this does not mean that the construction work would start from the *sphendone*, than continue towards the North. It is possible that the construction started at different parts of the building, i.e. whereas one team of workers were busy building the substructures of the *sphendone*, other teams may have been working at the construction of the flanks. But since the *sphendone* would not only support the seating tiers above, but also counteract the forces caused by the movement of the terrain, it would consitute one of the starting points of constructional activity. Thus once the terrain was securely prevented from collapsing, a number of seating tiers would have been completed by other teams of builders. Thus during the many years of construction, races could still be held.

The construction of the semi-circular structure would start from the innermost wall proceeding outwards and the whole substructure of the *sphendone* would more or less rise level by level and be completed all at once. The surviving substructures do not reveal any constructional break indicating different and distant periods of construction. Rather the structure looks as if the outer semi-circle is one continuous structure with no dilatation joints or constructional breaks, although the facing may be masking these in the core. It may be concluded that the substructures of the *sphendone* were completed as a single operation under Septimius Severus.

The average period necessary for the construction of a Hippodrome was about five years. Why would the inhabitants, governors, wealthy people in Byzantium leave such a popular building incomplete for more than one hundred years? What about Caracalla's

[12] The present ground level upon which the column of Constantine Porphyrogenitus stands today is 13.885 above the lowest level that we could measure at the foot of the *sphendone*.

reign, is it possible that no work was carried out at the Hippodrome after the death of his father in 211? Cassius Dio reports us that Caracalla passed the winter of 214-215 in Nicomedia where his *adventus* was celebrated by races in the Hippodrome and gymnasium:

> But apart from all these burdens, we were also compelled to build at our own expense all sorts of houses for him whenever he set out from Rome, and costly lodgings in the middle of even the very shortest journeys; yet he had only never lived in them, but in some cases was not destined even to see them. Moreover we constructed amphitheatres and race-courses wherever he spent the winter or expected to spend it, all without receiving any contribution from him.[13]

It is also known that Caracallla visited Constantinople, continued the constructional works and even renamed the city *Antoninia*.[14] In this respect one would expect that the Hippodrome would be completed under Caracalla, not necessarily sponsored by him or by his orders, but due to the desire of the inhabitants of Byzantium to welcome the *adventus* of the new emperor in their Hippodrome, especially when the emperor was nearby, in Nicomedia. However, the primary sources do not associate Caracalla at all, with the construction of the Hippodrome.

Despite the existence of a Hippodrome, partialy completed though it was, Byzantium could never surpass Nicomedia which was considered by many to be the capital of the Eastern provinces, among them Septimius Severus, Diocletian and Caracalla. Nicomedia, in Bithynia, was the main stopping place of the emperors, with their troops and retinue on the way from the West to the East.[15] In AD 284 Diocletian, who was

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[13] Millar, *Emperor*, 33 quotes from Cassius Dio LXXVII, trans. Loeb.
[14] David Talbot-Rice and Swaan, *Constantinople, Byzance, İstanbul* (Paris: Albin Michel, 1965), 14-15.
[15] The importance of Nicomedia increased when it supported Septimius Severus against Pescennius Niger, wasthus given the title of *fides*. Severus is known to have carried out construction works there. Subsequent

acclaimed emperor in Nicomedia, started the construction of the new Hippodrome because the old one was in a damaged condition after the Gothic attacks in AD 259.[16] Only 40 years later, Constantine, defeating his rival Licinius at Chrysopolis (Üsküdar) right across from Byzantium, chose this ancient Megarian settlement as his new capital and started to *construct* his Hippodrome which would surpass the Nicomedian hippodrome by far within a couple of decades. [17] Since Alexander the Great, especially in the East, founding cities was considered to be one of the essential and traditional roles of a ruler. Thus Constantine, who referred to Roman emperors as "...us, whose aim is to found new cities or restore the ancient or re-establish the moribund...," inaugurated his new city on May 11th, 330 in the Hippodrome. [18]

Constantinople rivaled Rome just as its Hippodrome rivaled the *Circus Maximus* although Constantine never called his city *Nea Roma*. Instead, in the late fourth century, Constantinople was called the *royal city* or the *reigning city,* a title that used to be applied to Rome.[19] Constantine was a child of the tetrarchy which had created a well established

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emperors such as Caracalla, Elagabalus, Severus Alexander, Gordianus III are known to have resided in or visited Nicomedia. See Öztüre, 44-58.

[16] Ibid. It is quite unfortunate that nothing has survived from this Hippodrome because by being close to the Hippodrome of Constantinople in distance and in time, it is very likely that the building techniques, design, materials and maybe master workers also were common or very similar in both.

[17] We do not discuss here why he chose Byzantium as his capital. Literary sources tell us that he had considered other places to establish a capital, such as Sirmium, where he had been frequently, Serdica, Thessalonica and Troy. Nicomedia was already strongly associated with Diocletian, so it would not fit the ambitions of Constantine. However during the building activities in Byzantium, Nicomedia remained his chief residence. According to Zosimus "...he sought out a city as a counterbalance to Rome, where he had to build a palace. When he found a place in the Troad between Sigeum and old Ilium suitable for constructing a city, he laid foundations and built part of the wall which can still be seen to his day as you sail towards the Hellespont, but he changed his mind, and leaving the work unfinished, went to Byzantium The site of the city pleased him and he resolved to enlarge it as much as possible to make it a home fit for an emperor..." in Ronald T. Ridley, tr., *Zosimus New History* (Melbourne: Australian Association for Byzantine Studies, 1982), 37. Also see Krautheimer, *Capitals*, chap. Constantinople passim.

[18] A.H.M. Jones, *The Later Roman Empire (284-602),* (Baltimore: The Johns Hopkins University Press, 1986), 719.

[19] Millar, *Emperor*, 55. Moreover the rivalry was not peculiar to Constantinople, tetrarchic residences such as Sirmium, Serdica (Constantine called it "my Rome"), Milan, Trier, Nicomedia etc. were implicitly or explicitly claiming to be the "New Rome".

tradition of creating and restoring cities, i.e. building major public buildings and facilities serving as the propaganda of the *augustus* or *caesar*. The triad of the circus, palace and public baths were the elements differentiating a major imperial centre from other settlements. When Constantine chose Byzantium as his alternative capital, then following the imperial building tradition, he needed a palace adjacent to the Hippodrome. The question that arises at this point is to what extent was it already completed from the Severan period up to Constantine. Why didn't Constantine decide to build a Hippodrome from scratch at a suitable site that would also easily accommodate his palace? Extending the Severan city, instead of making the major public core the physical center of his city, why did he then leave the political, religious, social and administrative center at the very edge of the peninsula, at the very end of the main thoroughfares? The idea that comes into mind is that, the Hippodrome was to a large extent already completed when Constantine decided to make Byzantium his capital. Since there was already a more or less complete Hippodrome, there would be no reason to look for another site, after all the Romans were very competent in building up on terraces.[20] He was left with enlarging the seating tiers, adding the *kathisma* leading to the palace, whose construction he also started, importing and ordering the monuments that would ornate the building, and maybe also building the seating tiers on the *sphendone*.[21] Thus he also did not have disturb the urban memory about the region, keeping the pagan connotations of the acropolis, which would be integrated in Christianity with the construction of Haghia Sophia across the Hippodrome.

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[20] We should admit that this is a very Hippodrome-centered approach, but this is a tentative argument trying to contribute to the debate about the builders of the Hippodrome.

[21] One can argue that since the fundamental and initial construction activity took five years, he was waiting for the completion of the Hippodrome, interestingly five years is the average period for the construction of a circus.

In conclusion Constantine must have found a Hippodrome whose foundations, substructures and even some of the seats were firmly standing. But in order to make it worthy of being the circus of his capital and a rival of Circus Maximus, he hed to turn it into a closed and monumental structure embellished by the spolia brought from all over the Roman world. Now we should look more closely to the physical evidence in hand hoping to differentiate the Severan construction from the Constantinian one.

1.2. Building tradition in Asia Minor and in Constantinople

Late Roman and early Byzantine architecture in Constantinople is a controversial topic due to the dearth of remains dating from those periods as well as to the limited number of scholarly work done on these topics. Dating based on building techniques and materials becomes even more problematic since the tradition and craftsmanship do not differ dramatically over a few centuries. Broadly speaking, three materials are simultaneously used in early Byzantine Constantinople: ashlar, brick and mortared rubble whose characteristics and usage at the substructures of the *sphendone* have been extensively presented in chapter III. [22] At this point, a brief look at the emergence of this new tradition of construction is necessary in order to be able to present more solid arguments for the answer to the question *who built the* Hippodrome.

The first two centuries of the common era of architecture at Rome in the common era are characterised by the use of *pozzolona* concrete as a core material faced with other materials, mostly brick. This dark volcanic sand, *pozzolana*, enabled the production of a

[22] Sea also Ward-Perkins, "Early Byzantine,", 52-56, Hazel Dodge, "Brick Construction in Roman Greece and Asia Minor," in Sarah Macready and F.H. Thompson, eds., *Roman Architecture in the Greek World* (London, Thames and Hudson: 1987), 106-116 and Cyril Mango, *Byzantine Architecture* (UK: Faber & Faber, 1986), 7-31.

very hard, durable concrete was not available in Asia Minor, where ashlar stone masonry was the traditional building technique. In the second and third centuries AD, the appearance of a new technique can be observed at a number of places in Asia Minor, namely brickwork alternating with mortared rubble and ashlar stone masonry such as the Aqueduct at Aspendus, the Celsus library and Harbour Baths in Ephesus, the baths at Ancyra (fig.IV.2.), the bath and gymnasium complex in Sardis, and the fortifications of Nicaea and Nicomedia (fig.IV.3.). By the third century AD, the core built of rubble set in mortar, faced with small squared stones and bonded with a number of brick courses (often 4-6), running through the core, had become a well-established constructional tradition in Asia Minor. In the absence of *pozzolana*, Roman understanding of space was applied by the use of brick for the construction of arches, simple cross-vaults, barrel vaults and domes.[23]

On the other hand from the fourth century BC onwards, there was a brick tradition in Greece and the Balkans such as the Thracian tombs at Olynthus, with brick walls and vaults, the Severan warehouse at Tomis and the city walls of Serdica of the second century AD.[24] Another example from Diocletianopolis, the present Hissar in Bulgaria show very similar characteristics with the substructures of the *sphendone*. The Diocletianic fortifications consist of mortared rubble bond with bands of four brick courses (4 courses= 40-50 cm) and faced with irregularly shaped stones. The southern gate on this fortification is adorned on two sides by two niches ending in semi-domical niches, similar to those above the arches at the *sphendone* (fig.IV.4).[25] This building technique may represent a

[23] Except for a similar concrete that appear at the harbour-mole of Elaeusa-Sebaste and the bath-buildings of Korykos in Cilicia, see Ward-Perkins, "Early Byzantine," 77-95.
[24] Hazel Dodge "The Use of Brick in Roman Asia Minor," *Yayla* V (1984): 10-15.
[25] Madzarov, 202-207.

combination of the existing birckwork tradition in Thrace with the imitation of the Roman concrete. It is possible that this origins of this technique lie in Thrace.

The remains of the substructures of the *sphendone* fit into the building technique described above, i.e. mortared rubble bonded with brick courses. However this does not allow us to date the building immediately to a pre-Constantinian period, since the same technique with variations though, has been used throughout the early Byzantine period such as the Theodosian walls at Constantinople of the early fifth century, illustrate (fig.IV.5). To what extent do the dimensions of bricks, the ratio between brick and mortar, the number of bonding brick courses, the width of rubble bands, the variations and consistencies of these throughout the building point to distinct periods? Ward-Perkins prefers to use the dimensions of the bricks as a dating criteron, whereas Hazel Dodge argues that "...the brick thicknesses in Asia Minor remain remarkably consistent...only the mortar joint thickness may be taken as a possible chronological indicator, and then only in a very general way."[26] Whatever criteria we take as a basis of comparison, we have two categories of comparison: the brick-mortared rubble technique in Asia Minor, Thrace and the Balkans starting in the second century AD and early Byzantine buildings in Constantinople. Ward-Perkins clearly underlines that for the early Byzantine buildings "we are entirely dependent on the *disjecta membra* of ancient buildings," and that from the earliest to the latest structures, building techniques only slightly change, which makes dating even more unprecise.[27] It is also necessary to be cautious about basing the arguments on the dimensions of bricks because ancient bricks have been constantly reused in later periods. Moreover these changes may indicate a change not necessarily of period

[26] Dodge, "Brick Construction," 113.
[27] Ward-Perkins, "Early Byzantine," 52.

but of master workers, localities or simply of taste. What Ward-Perkins underline in his discussion of the Early Byzantine Architecture is an extremely important issue:

> Within the last few decades new capitals, in several cases amounting virtually to refoundations of ancient cities, had sprung up in half a dozen provinces of the Empire -Trier, Milan, Sirmium, Salonica, Nicomedia, Antioch. All of these, for all that they may have had in common in the field of planning and of architectural ideas, must have been realized very largely, if not entirely, by local architects employing local craftsmen and using local materials. In this, Constantinople was evidently no exception.[28]

After having stated the limits and problems of dating based on building materials and techniques, we may now attempt to trace the variations and consistencies that can be observed at the substructures of the *sphendone*. It can be concluded that, except at the infill of the arches which obviously belong to a different period, throughout the structure, the majority of the bricks measure 30-31x5 cm3. However there are also brick measuring 32-33 cm2, their thicknesses varying between 4-5 cm.[29] Any dimension smaller than 30 cm. is not worthy to note because these must correspond to broken pieces of the 30-31cm2 standard bricks. However the dimension greater than 33 is almost always 38, some isolated examples of 35-36 cm bricks must be indicating either erosion and/or breaking or misproduction. Another important remark is that there is not a distinct line that separate 30 cm. bricks from the larger 32-33 cm bricks: for instance, whereas the bricks at the arches 1,3,5,8 are 30-31 cm., arch 4 has 32-33 cm2 bricks. There are three ways to comment upon this remark: (1) These different size bricks may be contamporeneous, (2) 30 cm. square bricks of an earlier date may have been reused together with 32-33 cm2 bricks of a relatively later date, (3) 32-33 cm2 may be indication of later repairs. Among these

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[28] Ward-Perkins, "Early Byzantine," 102.

[29] The 1 cm. difference between 30-31cm and 32-33 cm does not mean much since the bricks are extremely eroded, especially rounded at the edges which effects the preciseness of the measurements.

alternatives, the first one seems to be the most plausible. For the construction of the substructures, millions and millions of bricks were needed; one atelier would not be able to supply the demand.[30] After all it is very difficult to differentiate 32-33 cm bricks from 30-31 cm ones just by looking from a distance. We preferred to rule out the second alternative due to the overwhelming majority of 30-31 cm bricks used at the arches which must have belonged to the earliest phase because these are the elements that carry the weight of the structure above. The third alternative does not seem to be likely because quite simply the 32-33 cm bricks do not look like repairs at all. They are smoothly interwoven with 30-31cm bricks everywhere from the first to the 33th arch. These two types seem to have been produced and utilized during the first phase of construction of the Hippodrome that we think is Severan (see Table 3).

When it comes to the other parts of the Constantinopolitan Hippodrome excavated and surveyed by Casson, Mamboury and Wiegand, Duyuran and MacDonald, we see that at B,C and G the bricks measure in average 31x5-5.5. cm.[31] The excavations at the extreme northwestern corner (at G) are especially significant: dark red bricks measuring 30x5 cm are very closely laid, i.e. 4 courses measuring 29 cm. At the *sphendone*, although the width of the four courses of bricks could not be measured between arches 12 to 33, between arch 1-8, we also measured 29 cm. whereas 33-34 cm at arches 8-12 and 33. Ward-Perkins observed that this constructional technique looked very much like the one revealed by Casson in their excavations in 1927 (fig.IV.6.) and that "both are Constantinian date". The dimensions of the bricks measured by other scholars, despite

[30] No brick workshops have been ever found in Constantinople.
[31] More precisely, at B we have 31x5 cm2 bricks with large mortar joints, at C 31x5.5 cm2 bricks with 7-9 cm. mortar joints and at the piers discovered at G there are 32x5.7 cm2 as well as 30x3 cm2 bricks. See MacDonald, 4-23.

slight variations, match with the average dimensions of the bricks we measured at the *sphendone*. However the construction technique also look very much like the Diocletianic fortifications at Hissar. If we were to follow the tentative Constantinian date of Ward-Perkins, this could mean that the substructures of the *sphendone* were constructed under Constantine. However Ward-Perkins does not explain how he reached such a conclusion. He just detects a "fairly consistent tendency for the size of bricks to get less" in the Byzantine architecture. He argues that the average dimension of 39 cm. as exemplified at the *sphendone* decreases to 34-38 in Justinian buildings and considers 30 cm2 bricks at the Hippodrome as "unusual" and "isolated survival from previous periods."[32] Our survey proved that his statement is not totally correct. The bricks of the *sphendone* measure 30-31 cm on the average. 39 cm. bricks belong to the infills which were accomplished at a later date which were accomplished at a different date. Moreover there is no reason why the "isolated survival from previous periods" must indicate Constantinian period. In addition to Ward-Perkins, the team under the leadership of Casson who carried out two seasons of excavations at the Hippodrome in 1927-1928, claimed to be able to distinguish the Severan construction from the Constantinian one.[33] However neither the published photographs nor the description of these two architectural *layers* are helpful in underlining the differences of constructional techniques and materials.[34]

The 39 cm bricks that Ward-Perkins refers to belong to the infill of the big arches which obviously were blocked and reinforced by secondary walls and buttresses since the

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[32] Ward-Perkins, "Early Byzantine," 76.

[33] "The lowest black stratum in all probability represents the floor of a low-level corridor of the original second-century structure. Damage, neglect, or collapse seems to have produced the mass of roughly-hewn blocks which were upon it. The yellow clay bedding above was the floor of the corridor of the period of Constantine, when the Hippodrome seems to have been reconstructed..." in Casson et al. , *Preliminary*, 5 and fig.9.

[34] Ward-Perkins also was not able to make the difference, as he states in Ward- Perkins, "Early Byzantine"

overall structure was affected from the earthquakes. All the reinforcements consist of 36-40 cm bricks (average 38 cm) set in thick mortar. These may be dated to the aftermath of the seireas of earthquakes in the fifth century or to the reign of Justinian who is known to have carried out a restoration at the Hippodrome. [35] The series of earthquakes between 533-38 AD which caused the collapse of the dome of Haghia Sophia must have also seriously affected the Hippodrome if it was not struck a century earlier. Moreover in Justinianic buildings, the brick dimensions are about 34-38 cm as underlined by Ward-Perkins, this corresponds to the dimensions of the infills of the big arches of the substructures. Although there is still no way to securely date the reinforcement, the evidence seem to support an early sixth century date.

We believe that the only conclusion that can be reached at this point is that the substructures of the *sphendone* and of the seats revealed at those trenches are contamporeneous without concluding whether they are Constantinian or Severan. None of the scholars who worked at these sections provided us with detailed description and classification of the building materials and techniques, such as dimensions and composition of mortar, modulus of mortar to brick or photographs and detailed drawings of the construction techniques. This further makes any conclusion very tentative because we have to rely on the limited written and minimal visual documentation. Despite these difficulties, we still think an idea about the builder of these sections can be eventually proposed, however we should first have a look at the characteristics of the brick masonry at some other early Byzantine buildings of Constantinople:

[35] The earthquake of 447 AD ccaused serious damage at the fortifications, another in 478 AD was also a severe one. See Janin, *Constantinople*, 41.

TABLE 5: BRICKWORK AT EARLY BYZANTINE BUILDINGS IN CONSTANTINOPLE

structure	dimensions of the bricks	thickness of brick courses
Baths of*Zeuxippos* (Severan)	not given	not given in Casson
Early wall at Ankara Caddesi Severan or Constantinian[36]	37x4-4.5	5courses=41-42
early pier from the great palace	36x4	
Haghia Sophia,early church (360)	36.5-37.5x 3.5-5	6courses=49
Theodosian landwalls 413	36x4	
Cistern of Aetius (421)	40x4.5-5 cm	4 courses=41
Church of St. Euphemia 1st half of the 5th century	36-37x5	5 courses=42
Haghia Sophia (532-537)	35-38x4.5-6	

Comparing the date at the table above with the catalogue of the *sphendone* (table 3), it is obvious that none of these buildings made use of the brick type B1. These dimensions presented above are rather closer to the infills of the great arches of the substructures. Now let us consider a table including data about the brick/rubble structures built in Asia Minor in the second and third centuries:

[36] Ward-Perkins does not explain why he thinks that this wall is of an early date. The same applies to the *early pier* at the Great Palace. If the large dimensions of the brick are the criteria for his dating (because he underlines that the bricks show a tendancy to get smaller in time), his dating may be incorrect.

TABLE 6: BRICKWORK AT LATE 2ND EARLY THIRD CENTURY BUILDINGS IN ASIA MINOR

structure	dimensions of the bricks	thickness of brick courses
Serapeum at Pergamum (turn of 2nd and 3d centuries)	29-35x4.5-5	
Harbour baths at Ephesus (2nd half of 2nd century)	34-35x5	5 courses=34 also 41-43
Celsus library (around AD 117)	33x5	5 courses=40
Walls of Nicaea	30-36x3-6	4courses=27-31
Baths at Ancyra (Caracallan)	30x4.5-5.5	4courses=60-66
Reticulate Baths at Elaeusa-Sebaste	26-27x4.5-5	5courses=33-35
Walls of Nicomedia (under Diocletian)	30x3	
Vedius gymnasium at Ephesus	29-30 cm	

As Hazel Dodge concludes, 30-35 cm2 square bricks, corresponding to the Roman *pedales,* seem to have been the standard dimension for bricks produced in Asia Minor in the second and third centuries AD. For the majority of the examples above the average brick size is around 30-33 cm, and 30 cm bricks are not rare at all. Also the width of the four bonding courses of brick is a few centimeters minus or plus 30, i.e. they are very closely laid such as the bricks at the *sphendone*. These dimensions are very close to the ones measured at the surviving substructures of the *sphendone* or at least more closely laid than the bricks in the Table 5. Our table on the *sphendone* is closer to table 6 , i.e., the structures in Asia Minor than to Table 5, the structures of Constantinople built in the 4th-5th centuries. In other words the substructures of the *sphendone* in terms of dimensions and layout of the bricks fit rather into the building tradition of the second and third centuries in

Asia Minor than the one in Constantinople from the fourth to the early sixth centuries. This may support a Severan date for the substructures of the *sphendone* but it does not prove it.

In Table 6, we included only the length and thickness of bricks and brick courses. In her study, Hazel Dodge preferred to use the thickness of mortar joints as a chronological indicator for the buildings of Asia Minor. However the thicknesses in her table are not applicable at all to our measurements:[37] for Septimius Severus and Caracalla, she proposes 3.5-5.5 cm. of brick thickness and 4 cm. of mortar thickness, whereas this becomes 4-5 cm for bricks and 3.5 cm. for mortar in the fourth century, covering the reign of Constantine. On the other hand Ward-Perkins informs us that "there was a marked tendency to increase the proportion of mortar to brick, the only chronological difference being that on an average the horizontal jointing gets progressively wider, from a proportion of 1:1 (or even less) in the fourth century, up to 4:5 or even 2:3 in the sixth." Table 3 presenting the results of our survey reveal that the brick/mortar ratio seems to be on the one hand very irregular, however on the other hand the mortar thickness is usually 1 (that is equal to) or 1.1 times the thickness of the brick. We think that the difference between 1 and 1.1 and even 1.2 is negligeable, because this just indicates the spontaneity of the work. It would not be realistic to expect from the workers to keep exactly 1:1 ratio due to the pourability and malleability of the mortar; it does not allow the preciseness that can be reached at ashlar masonry. On the other hand a dramatic change in the ratio of mortar to brick can be observed at the infills where the mortar was generously applied. The infills are a clear indication that these sections had to be filled quite quickly as the building was seriously

[37] Dodge, "Brick Construction," 107.

affected by an earthquake. The large dimensions of the bricks (about 38-40 cm.), the large thickness and the low quality of the mortar containing large lumps of broken bricks and an increased amount of crushed brick (less refined when compared to the morter used at the arches) as well as the low quality of the craftsmenship point at the necessity for working quite fast. The workers did not have years and even months to complete the reinforcement of the *sphendone* both on the exterior and in the interior, as earthquakes shook the city continously throughout the fifth and sixth centuries. Therefore the mortar-brick ratio allows us only to differentiate the infills from the earlier structure. We think that any further attempt to be sharper in dating based on solely this criterion of building materials and techniques is not a realistic one, at least for the time being due to the dearth of comparative material.

1.3. Who built the Hippodrome?

In creating a piece of architecture, we may talk about three categories of people: the *mechanikos*, equivalent of the architect-engineer; the *architekton*, the master builder who controlled and guided the actual construction work; and the skilled craftsmen at the very lowest rank. These people were not expected to design or invent but apply already established formulae and traditions while working quickly and efficiently. It should also remembered that such people could be travelling as part of the army together with the emperor, although the skilled craftsmen and even the *architekton*, were mostly local people. In Constantinople, it is known that Constantine brought workers from as far as Naples, and made use of huge numbers of Goth foederati. But the crucial person in determining the design of the structure would be the *architekton* responsible for the

realization of the project whereas for the constructional details, the skilled craftsmen would be responsible.[38]

Most naturally, the master builders and skilled craftsmen experienced in building in brick and mortared rubble were in the service of Septimius Severus who started to restore, embellish and enlarge Byzantium in 196 AD. The building activities of the emperor consisted of the construction of the Hippodrome, the baths of *Zeuxippos*, the *tetrastoon* (later *Augustaion* under Constantine), fortifications, and the restoration and embellishment of some of the already existing buildings and spaces, such as the *Mese*, the stadium, the theatre, *kynegion* etc.[39] Among these buildings, only the Hippodrome and the baths of *Zeuxippos* have been excavated and studied (by the British Academy in 1927-1928). Therefore, at present, only the reports of the excavations at the Baths of *Zeuxippos*, can be used as a comparanda material in order to date the construction technique and materials used at the substructures of the *sphendone*.

The construction techniques of the baths of *Zeuxippos* and the artifacts discovered by the British Academy during the second season of excavations in 1928 point at a variety of periods spanning from 196 AD to the first half of the eighth century. Among these, the co-existence of two building phases is significant for our purposes: the lower levels have "small tile-like bricks" measuring 31x17.5x2.5 cm3 whereas the upper levels consist of 35 cm2 bricks that the British Academy dates to the reconstruction soon after the fire in 532 AD. Although the dimensions of the earlier bricks do not completely correspond to those of the *sphendone*, these two building phases may indicate an increase in the size of bricks from the late Roman to the Byzantine period, contrary to the suggestion of Ward-Perkins.

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[38] Mango, *Byzantine Architecture*, 19-20
[39] Janin, *Constantinople*, 21-26.

Similarly, two other common techniques, i.e. the alternation of 14-15 courses of brick with one course of large stone blocks and the alternation of 5 courses of brick with 5 courses of small squared stones, do not represent either the Severan construction according to the scholars.[40] As a result, the evidence provided by the baths of *Zeuxippos* rather illuminate the constructional traditions of the sixth to the eight centuries rather than those of the late Roman period.

As the data listed in Tables 3,4 and 5 indicate, the building tradition observed at the *sphendone* of Constantinople is the building tradition applied in Asia Minor and in Thrace since the mid-second century AD. We believe that the bricks measuring 30-31x5 cm. present in the substructures of the *sphendone* and of the seats most probably correspond to the Severan period. When Constantine started the construction activities in 324-325 AD, the building was quite well advanced, but it needed a comprehensive retouch to make it as beautiful, as splendid, as famous as Circus Maximus at Rome. The decorated, renovated Hippodrome with brand new marble seats, obelisks, statues, imperial box etc. would certainly look much different than Severan Hippodrome which was a comparatively rather modest, unattractive but strong structure ready for further use. The statement in the Chronicon Paschale, that "he [Constantine] also completed the Hippodrome," probably refers to the transformation of a provincial Hippodrome into an imperial Roman circus. When Pseudo-Codinus said that the Hippodrome at Constantinople was made in mimhsin of the Circus Maximus, what he meant was that it was as splendid, as monumental, as crowded and as exciting as the Circus Maximus.

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[40] Casson et al., *Second Report*, 5-17.

As a result, based on the literary evidence, the historiacal context, the building traditions, archaeological investigations and our own survey, as we attempted to present in this and the previous chapter, we believe that the remains of the substructures of the *sphendone* at the southern extremity of *Sultan Ahmet Meydanı* are the only surviving examples of Severan Byzantium.

2. Urban Memory

The Hippodrome of Constantinople has a past of almost 1700 years, starting with its re-inauguration on May 11th, 330. This long time period is marked by continuous rebuilding on the site, usually at the expense of the original structure. While its stones, bricks, metal elements, columns, statues etc. have been pillaged for reuse, it never lost its place and importance among the most popular and greatest public spaces of Constantinople and subsequently of İstanbul. Nevertheless, its orginal function, the chariot races, remained confined to its early history, whereas the lure of these spectacular days, as described by the ancient authors, were preserved just in its name, *Atmeydanı*.

In the preceding chapters, the public, urban, architectural and constructional characteristics of the Hippodrome of Constantinople have been studied. However not much has been said about its later history, i.e., the period from the decline of the chariot racing up to the present day. Fortunately the ancient authors and travelers to the city enable the scholars to follow the *life* of the building and of its site though in an incomplete and interrupted manner. The heydays of the chariot races have been presented under the discussion of the ceremonial and circus factions, their gradual decline can be narrated in connection to the decline of urban life in Constantinople, because such as the Hippodrome

has been inaugurated together with the city, likewise their lives were closely interconnected throughout 1700 years.

From its inauguration up to the middle of the fifth century, the city seems to have rapidly grown both in terms of population and the settled territory and to have been embellished and urbanised by an intensive constructional program. However starting in 404 AD, when the first major fire occurred, our sources record successive fires, earthquakes, droughts and plagues.[41] As an outcome of these calamities, many public riots broke out in the Hippodrome and caused further damage to the city as well as to the structure itself. Still, this neither stopped the constructional activity nor overshadowed the popularity of the Hippodrome. The urban growth continued up to the beginning of the seventh century but after the great plague in 747 AD which caused a substantial decrease in population, the construction of public buildings substantially slowed down together with a decrease in the frequency of the chariot races which reduced the public life to the marketplace and religious centres.[42]

Meanwhile the circus factions continued to perform their duties at the organization of the ceremonies up to the beginning of the eighth century AD. Their role in the ceremonial had gradually been augmented by the end of the sixth century AD and no factions riots were recorded between 610 and 700 AD.[43] The *Book of Ceremonies* informs

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[41] For a list of earthquakes and fires see Janin, *Constantinople*, 41-42. The first circus riot is dated to 445 AD, whereas the greatest one is the Nika riot in 532 AD. See also Cyril Mango, "The Development of Constantinople as an Urban Centre," in *Studies on Constantinople*, (Brookfield: Variorum Reprints.1993). 124-125.

[42] The population decreased to a considerable extent due to the plagues in 542, 555, 558, 561, 573-574, 591, 599, 698 and 747 AD. The Aqueduct of Valens which was the major water source of the city stopped to function in 626 AD due to the attacks of the Avars and was not repaired until 766 AD. This is probably an indication of the low population in this time period. Constantine V is known to have brought inhabitants from Greece and the Aegean islands to repopulate the city. See Cyril Mango, *Byzantium, the Empire of the New Rome* (London: Weidenfeld and Nicolson, 1980), 60-87; Mango, "Urban Centre," 118-128

[43] The lack of faction riots in that period lead scholars to the conclusion that either Heraclius or Leo III removed the political rights of the factions. However Cameron associates this lack with their increasing role

us that they had become loyal imperial dependants by the ninth century. At the same time, Constantinople started to live a period of revival through renovation and restoration activities. As a result of this overall revival, the factions and the chariot races survived a couple of more centuries though limited to a few ceremonial occasions.

A very significant event in the history of the Hippodrome occured in the twelfth century when the emperors quit the Great Palace to reside in the Blachernae. Although the Great Palace remained as the official residence up to the Fourth Crusade in 1204, the Hippodrome fell almost into complete disuse, and the factions stopped to function.[44] Thus the *kathisma* lost its *raison d'être*, because the emperor was no more a permanent inhabitant of the palace-hippodrome complex. He left his role as the host of the games and became himself a guest in the Hippodrome which was reduced to an open space occasionally used for chariot races. The account of Niketas Choniates about the mock chariot races combined with theatrical performances held at the palace of Blachernae in 1200 AD, points at the very rare use of the Hippodrome as well as the disinterest of the emperor in chariot races:

> The father-in-law Emperor [Alexios III], had no desire to attend horse races, but the newly married couple urged and demanded games. The emperor tried to appease contradictory desires: he went neither to the Great Palace nor to the stadium [the Hippodrome] but rather ordered the races moved to the Palace of Blachernae and quickly organized a performance there.[45]

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in the imperial ceremonial, hence their increasing dependence on the emperor. He also argues that since they had extensively expanded, "they simply became too grand" for rioting. See Cameron, *Factions*, 297-299.

[44] Ibid., 306-308 and Mango, *New Rome*, 82.

[45] A.P. Kazhdan, Ann Wharton Epstein, *Change in Byzantine Culture in the Eleventh and Twelfth Centuries* (Los Angeles: University of California Press, 1985), 240.

Immediately before the invasion of Constantinople by the crusaders in 1204, the western flank of the Hippodrome burnt down in a major fire. After the crusaders further damaged and pillaged the structure, chariot races appear no more in the accounts of the medieval authors and travellers. Nevertheless the Hippodrome continued to serve a new equestrian game, the so-called jousting. This game neither became part of a ceremonial nor turned out into a popular entertainment, appealing to thousands of spectators in the arena. Sigurd and Benjamin of Tudela, who visited the city in the twelfth century, described acrobatic shows, fireworks, musical performances and fights between exotic animals rather than chariot races. During the Latin Empire, the Hippodrome was mainly used for knightly tournaments, Bertrandon de la Broquière who visited the city in 1432 recorded shooting matches between horsemen.[46] The imperial ceremonies such as the coronation and *adventus* were taking place at the balcony of the Blachernae rather than at the *kathisma* of the Hippodrome.[47] While the Hippodrome was gradually decaying and being pillaged, the memory of the ancient entertainments were being partially preserved by keeping the area unbuilt.[48]

After the Turkish conquest of Constantinople in 1453, the ancient Byzantine public center continued to be an important public center of Ottoman İstanbul. Despite the construction of the Sultan Ahmet Mosque on the eastern flank of the Hippodrome, the İbrahim Paşa Palace (16th century) on the western flank, and a *tımarhane* on the *sphendone* (part of the present *Sultanahmet Meslek Lisesi*), the arena of the Hippodrome, called *At meydanı* (place of horses) by the Ottomans, was still used for a number of public

[46] Van der Vin, 268-269.
[47] Guilland, *Etudes*, 542-553.
[48] In the thirteenth century, the Doge brought the four bronze horses of the Hippodrome to San Marco in Venice. See Van der Vin, 269.

activities and imperial ceremonies. [49] In the sixteenth century, the *Surname-i Muradiye* by Nakkaş Osman including the account and miniatures depicting the ceremonies of circumcision held at *Atmeydanı*, is a clear expression of the continuity of the ceremonial character of the site from the Byzantine to the Ottoman period. In these miniatures, just as the Byzantine emperors in the Kathisma, Murat the II is depicted sitting in the İbrahim Paşa Palace watching the performances of the guild organizations (fig.IV.8). These miniatures, as well as others by Matrakçı Nasuh and Levni, depict the three surviving monuments on the spina (fig.IV.9.).[50] Although the public does not appear in the miniatures, it can be assumed that the spectators were also watching the carnival, standing here and there.[51] Many engravings illustrate that on normal days without ceremonies, *Atmeydanı* was a very popular public space in İstanbul (fig.IV.10). Through Haghia Sophia and Sultan Ahmet Mosque the region was a religious centre, through Topkapı Palace and a number of other palaces, it was an administrative and imperial centre, through close by *bedestens* and *arastas* it was a commercial centre; and through *Atmeydanı*, it was also an entertainment center. The memory of the Hippodrome was so far away, whatever

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[49] For the construction of the two buildings, the Hippodrome has been used as a quarry of building materials. In Casson et al., *Preliminary*,7, it is argued that the columns in the courtyard of Sultan Ahmet Mosque belong to the *sphendone*. Similarly İbrahim Paşa is known to have used the architectural elements of the Hippodrome. See Nurhan Atasoy, *İbrahim Paşa Sarayı* (İstanbul: İstanbul Üniversitesi Edebiyat Fakültesi, 1972), 12-13.

[50] Sezer Tansuğ, *Şenlikname Düzeni* (İstanbul: Yapı Kredi Yayınları, 1992), 37-43. Tansuğ makes very interesting comparisons between the composition of the relief on the Theodosian obelisk and the composition of the miniatures. He draws close parallels between the behaviour of the Byzantine emperor in the Kathisma and the Ottoman sultan in the balcony of the palace: "Üçüncü Murad çağındaki sünnet düğünü şenliklerinin Atmeydanı'nda yapılmış olması eski Bizans Hipodrom şenlikleri geleneği çizgisinin pek dışına çıkmıyor. Hatta o geleneği yeni bir planda tekrarlamış da oluyor. Padişah Üçüncü Murad'ın Kanuni Süleyman devrinde bile sultanların bırakmadıkları aşiret geleneğine yan çizerek, bir imparator edasıyla halkın arasında bir çadıra girmeden, konukları ağırlamak, görüşmek işini bir vezire yükleyip köşk şahnişine çekilmesi, geçitlerin bir çeşit yarışma havasına bürünmesi gibi olaylar, Bizans şenliklerinin yenilenmiş bir tekrarı düşüncesini uyandırıyor," 37.

[51] The *Cirit* games held in Atmeydanı more closely resemble the chariot races in that the public was kept away from the arena and watched the game in a rather organized manner.

memory existed of the ancient games was inaccurate and blurred, and maybe even part of the mythical history of the region. Nevertheless the prominence and popularity of the Hippodrome in the urban memory survived so many centuries after the disappearance of the circus games.

In 1865, September the 18th, the greatest fire in the history of the city, the so-called *Hocapaşa* Fire, devastated a very large area spanning from the Golden Horn, to the southern shore of the *Propontis*; and from the West of the Hippodrome to the *Bayezid* square. A commission (*Islahat-ı Turuk*) was immediately established in order to produce an urban plan for the reconstruction of the neighbourhoods struck by the great fire. The quick rise of the ground level on the arena of the Hippodrome; in other words around the three extant monuments on the *spina*, was the result of the accumulation of the debris of the destroyed houses (fig.IV.12 and fig.IV.14).[52] Therefore, the future excavations at the Hippodrome and the re-organization plans of the *Atmeydanı*, were closely related to the overall urban planning activity that emerged after the Hocapaşa fire.

The persistence of the importance of the site was once more asserted on October 28th, 1890 when the newspaper *La Turquie* proposed a landscape design project in order to transform *Atmeydanı* into a public park. This was the first attempt to reorganize the arena of the ancient Hippodrome. In the beginning of the twentieth century, under the influence of the *City Beautiful* movement in United States, Antoine Bouvard, the city architect of Paris was invited to İstanbul to prepare a design project including *Atmeydanı*. Bouvard proposed a symmetrical French garden just like *La place de la Concorde* in Paris. He wanted to dig the Hippodrome to its original level and provide it with monumental stairs.

[52] See Zeynep Çelik, *Değişen İstanbul*, İstanbul: Tarih Vakfı Yayınları, 1986), 46-53.

His design included the destruction of *İbrahim Paşa* Palace and *Sultan Ahmet Medresesi* to be replaced by his own buildings (fig.IV.11.). This project also was not put into practice.[53]

Today, the memory of the Hippodrome is preserved simply in the public park, *Atmeydanı parkı* . Every season, this area is full of tourist groups visiting Haghia Sophia, Sultan Ahmet Mosque and *İbrahim Paşa* Palace, the present Museum of Turkish and Islamic Arts. The three monuments on the *spina,* about which there is no written information on the site except for a small identification signboard, continue to attract the attention of the visitors. However there is neither a sign informing them that the site corresponds to the great Hippodrome of Constantinople, nor an arrow leading them to the remains of the *sphendone.*

The site is still one of the most populous and popular public centers of the huge city that İstanbul is today. Many official or municipal ceremonies are still held in this area. Recently temporary wooden house models, serving as shops and lunapark equipment were placed between the monuments during Ramadan. The official *Nevruz* celebrations also took place in *Atmeydanı.* In this respect the site still preserves its attractiveness and popularity, although its identity as a Hippodrome no more exists. Its presence in the urban memory which has been kept alive for 1700 years is today gradually fading away.

[53] Çelik, 88-94.

CONCLUSION

THE HIPPODROME IN THE PRESENT

Since the end of the nineteenth century, the Hippodrome at Constantinople has occupied an important place in Late Antique and Byzantine studies. Scholars were able to illuminate a number of problems about its plan, dimensions and architectural components, as well as its function and role in the public and political life of the city. While these answers remained open to debate, there are still unresolved problems due to the dearth of physical evidence and of detailed textual accounts. Despite the variety of different opinions and approaches to the evaluation of the archaeological remains and the primary sources, there is still an agreement that the Hippodrome was a multi-purpose structure which set the stage for the contact and communication among social classes and between the citizens and the ruler. In other words, it regulated the urban life to a great extent.

In this paper, I have attempted to underline this fundamental role of the Hippodrome by presenting how the emperors and citizens made use of this public space and structure. However, different uses should not mask the primary function of the Hippodrome, Roman style chariot races, which remained the focus of attention of the public, even if they were interwoven with imperial cermonies on the one hand, and public riots on the other hand. The crowd attending the Hippodrome was, after all, expecting to watch an exciting race among the top charioteers of the Roman world, therefore it would not be meaningful for the emperor to appear in the *kathisma* without the provision of

these games. At times, the high emotions of the citizens combined with economical and political problems lead to riots taking place in the Hippodrome that could even end in the bloody persecution of thousands of rioteers such as happened at the Nika Riot in 532. However mostly the public lead by the circus factions happily acclaimed the emperor who had provided them with *panem et circences*. The emperor fully profited from the almost fanatic interest of the public in chariot races for celebrating his enthronement, the birth of his heir, the military triumphs, the inauguration of the city etc.; thus he enhanced the urban identity while he also asserted his authority and power. Whether the relationship between the ruler and the ruled turned out to be peaceful or hostile, the Hippodrome was the only space where the closest contact was made possible. No other public building, be it a theatre, stadium, amphitheatre or even another circus, could compete with the great Hippodrome of Constantinople by any means.

The controversy about the activities at the Hippodrome arises mostly because of the evaluation of the character of circus factions. The traditional view, which considers the factions as political parties expressing the needs and protests of the public, give the Hippodrome the character of a free ground where the emperor had to resign to the demands of the citizen. On the other hand the modern approach, stripping the factions of such political connotations, placing them in the core of imperial ceremonial on the one hand and sports activities as clubs on the other, emphasizes the character of the Hippodrome as an entertainment arena rather than a political one. Although a comprehensive presentation of these two ideas as well as our approach to this issue has been included in the first chapter, it is important to repeat here that both opinions further

reveal that the history of the late antique and Byzantine İstanbul is very much in the orbit of the Hippodrome.

The unresolved problems multiply in number, when it comes to the architectural characteristics of the Hippodrome. The statement of ancient authors that it was shaped on the Circus Maximus can only be partially tested by the surviving physical evidence. The comparison with the Roman circuses built under the tetrarchy helps to illumnate the common and changing features of the tradition of circus construction, however they do not point at a rigid standard or canon that the Hippodrome of Constantinople may have followed. As presented in the second chapter, William MacDonald's proposals for restored plans based on the Circus Maximus and the Circus Maxentius are bound to remain tentative reconstructions unless further excavations are carried out at the site. The same applies to his proposals for the dimensions which can be ascertained only through new physical data. Many of the architectural elements such as the *kathisma* and the *carceres* mentioned in the primary sources, are either totally destroyed or barely survive under many layers of concrete and dumped earth, or as spolia spread out over the city. Scholars are face to face with the challenges of urban archaeology. In SultanAhmet, where the cars and the population are continuously circulating, any excavation trenches need special provision, such as the reorientation of the automobile and pedestrian traffic as well as the protection of the site against intruders and treasure hunters during and after the excavation. Any digging or documentation work should be carried out very quickly so that the site can be restored to its present situation, full of cars and tourist buses. The reorganization of the area in a way to expose the excavated remains does not seem likely to happen. It is very unfortunate that in the first half of the century when İstanbul was still a calm and much

less populated city, excavations were not extended northwards and southwards in a way to collect more data that could make possible the reconstruction of the architecture of the Hippodrome.

Today, it is still not late to reveal more about the southern semi-circular end of the Hippodrome. The overall product of the survey we have carried out at the substructures of the *sphendone* in 1997, has been a complete inventory of the remains through scaled elevations, photographs, written description of the building techniques and of the present state of the monument; and a catalogue in which the characteristics of the building materials have been presented in a concise format. We hope that these can form a basis for a further study about the structure, as well as a comparanda material for other studies. Such investigations may further contribute to differentiate the building phases more accurately.

Combining the results of our survey with previous architectural and archaeological studies of the Hippodrome, as well as late Roman and early Byzantine structures in Thrace and Asia Minor, and studying the accounts of ancient authors and travellers, we can differentiate three major building phases of the substructures of the *sphendone*. We believe that the surviving remains were completely built in the closing years of the second century, under Septimius Severus. The second phase as represented by the infills of the arches, the secondary walls and buttresses reinforcing the outer wall from its interior surface must have been built in the sixth century, most probably under Justinian, after the series of earthquakes that caused serious damage in Constantinople, included the collapse of the dome of Haghia Sophia. The transformation of the interior corridor into a cistern may be more ore less contemporaneous with the second building phase, or it may represent

another separate building phase during which the interior surfaces were covered with hydraulic plaster. The third distinguishable building phase are the interventions made on the surface and at the top of the substructures in the nineteenth and twentieth centuries. Even if there were other repairs and consolidations between these three major building phases, they did not leave distinct marks at the structure.

The substructures of the *sphendone* are today surrounded, from the East to the West, by a public park, a parking lot, an open area emptied out by the destruction of houses and gardens remaining between ancient houses and the substructures. The interior of the substructures are still not subdued to the demands of the *yap-işlet-devret* model that many of the ancient buildings of İstanbul, such as the cistern of *Binbirdirek,* suffer from. Our survey had to remain confined to the visual analysis of the structure, i.e., we did not have the chance to have mortar, brick and stone samples analyzed in a labaratory, nor did we get the opportunity to open trenches to learn more about the structure as well as its urban connections in the South.

We think that the area around the *sphendone* should be totally cleared out from the remains of the houses, then the parking lot should be removed, so that the area may be reorganized as an entity rather than being divided up to fullfill a variety of functions. In this process, the scholars may have the chance to open trenches right beneath and even inside the substructures as well as analyze the buliding materials and techniques aiming at the conservation and restoration of the collapsing parts of the structure such as the crown of the arches and niches above them. A landscape project exposing the structure would be more appropriate than the present arrangement in which the *sphendone* is hidden by bushes and trees.

The traces of the destroyed houses on the surface of the substructures should be taken out, and mortar should be reinforced where necessary. Between arches 25 and 33, the surface cladding can also be removed (if it does not give much damage to the original structure during scaling off) in order to expose the original construction beneath. Also the ugly blue grids closing arches 1-11 should be dismantled.

The interior of the substructures also need to be cleaned out from dirty water and garbage. The wall separating the interior corridor into two can be destroyed to make the corridor run continously along the periphery. It would be possible to open the substructures to the visitors after a number of small changes, such as the provision of lighting devices and walking boards, such as it has been done in *Yerebatan* cistern. Although the substructures are not as large as neither the *Yerebatan* nor *Binbirdirek* cisterns, we think that the interior and the exterior arrangement could be integrated by allowing one or two entrances to the interior, thus the whole space may become a nice public area without harming the original structure by many interventions. However it should be once more repeated that before the application of any project to make the structure function, we believe that the remains should be thoroughly studied.

We presented some of our proposals related to the presentation, conservation and restoration of the buliding and the reorganization of the site in a report submitted to the *Anıtlar ve Müzeler Genel Müdürlüğü* (see Appendix A). Such a project necessitates, beside financial sponsors, the expropriation of the private property around the substructures, the preparation of a landscape project that would be applied by *İstanbul Koruma Kurulu no.1*, and most importantly the gathering of a multi-disciplinary team consisting of archaeologists, historians, architects, conservation and restoration experts and also

structural engineers to detect any structural problems that are not visible to the naked eye. For a start we hope that informative signboards informing the visitors about the importance and history of the structure will be immediately erected to form a public consciousness about the importance of the Hippodrome in the history of İstanbul. Likewise an arrow indicating the way to the substructures of the *sphendone* whose existence is known by few visitors could be the initial step.

The Hippodrome of Constantinople continues to attract the attention of students and scholars. Further studies of textual and physical evidence contribute to answer some questions but problems do not come to an end. We think that at this point, further archaeological and architectural studies are an urgent necessity considering the rapid and many times spontaneous changes in İstanbul. Another path of study could be an investigation of the Ottoman archives in order to find records related to the Hippodrome. The *tamirat defterleri* (records of construction and restauration) of the Sultan Ahmet Mosque and İbrahim Paşa Palace may yield valuable data for researchers who can read Ottoman. Another valuable study would be about late antique and early Byzantine buildings in and around Constantinople, that could be used as a comparanda material in dating and understanding further the construction techniques of the period. We saw that more detailed documentation in the form of drawings,dimensions, photographs, written description of the materials and techniques are essential for every architectural study, especially for the structures located within cities, i.e. those open to rapid decay. We hope that our study further underlines that there is still a lot to do about the Hippodrome at Constantinople.

The *Atmeydanı* bears no remnants of the splendour of chariot races interwoven in the imperial ceremonial, except for the relief on the Dikilitaş, the Theodosian obelisk and its name. The *sphendone* lost its physical connection with *Atmeydanı* because of the buildings surrounding the ancient arena. However, even if the memory of the chariot races no more exists, the public character of the site is still preserved despite changes, destructions and damages of thousands of years. A comphrehensive reorganization of the site would make it again the *omphalos* of the ancient peninsula of İstanbul.

APPENDIX A

TEMMUZ 1997-ARALIK 1997 ARASINDA İSTANBUL ANTİK HİPPODROMUNDA YAPILAN ARAZİ ÇALIŞMALARININ ÖN RAPORU

İstanbul Antik hippodromu Sultanahmet Endüstri Meslek Lisesi'nden II.Wilhelm Çeşmesi'ne uzanan ve bugün *At meydanı* diye adlandırılan geniş alanı kapsamaktadır. Ancak bölgede 15. yüzyıldan günümüze dek süregelen yoğun yapılaşma sonucunda, hippodromun yapı malzemeleri yağmalanmış, geriye kalan mimari yapı da toprak altında kalmıştır. Bugün hippodromdan geriye, *sphendone* adı verilen güney ucunun yarım daire biçimindeki taşıyıcı alt yapısı ve iki paralel kenardaki tonozlu yapının bir kısmı kalmıştır. Geçmişte hippodromun oturma sıralarını taşıyan bu yapılar, bugün de Sultan Ahmet Meslek Lisesi'ne ait binaları taşımaktadır. Bugün hala ayakta olan bu kalıntıların istinat duvarı görevi görmenin ötesinde bir işlevi vardır. Yapı, dışarıdan içeriye doğru; hipodromun inşasından kısa bir süre sonra kapatılmış olan sıra sıra kemerlerin oluşturduğu bir cephe; tonozlu bir koridor ve ona açılan, yarımdaire çeper etrafına dizilmiş odalardan oluşmaktadır. Dış cephedeki kemerlerin birinden bu koridora ulaşmak mümkündür.

1997 Temmuz ayından beri sürdürülen çalışmalar ikiye ayrılmaktadır:

i. *sphendone*'nin dış cephesinin ölçekli çiziminin yapılması ve farklı/benzer yapı teknikleri ve malzemelerinin belirlenmesi için gerekli ölçüm, çizim ve fotoğraflama çalışmaları

ii. *sphendone*'nin iç yapısının cephe, kesit ve planlarının çizimi ve farklı/benzer yapı teknikleri ve malzemelerinin belirlenmesi için gerekli ölçüm, çizim ve fotoğraflama çalışmaları.

Sphendone'nin dış cephe çizimi şimdiye dek yapılmamıştır. Bunun nedeni hippodromla ilgili arazi çalışmalarının yapıldığı dönemlerde, cephenin etrafını çevirmiş olan, üstelik cepheyi destek olarak kullanmış, eski ancak tarihi değeri bulunmayan evlerin varlığı olmalıdır. Bu evlerin çok büyük bir kısmı Temmuz 1997'de Eminönü Belediyesi tarafından yıkılmış durumdaydı. Aralık 1997'ye kadar iki-üç ev daha yıkılmış ve cephe bir parça daha görünür duruma gelmiştir.

Öncelikle hippodromun ayakta ve görünürde olan kalıntılarının belgelenmesi için gerekli ölçüm çalışmaları gerçekleştirilmiştir. Bu ölçümler yapının çok yüksek olması, daha doğrusu eldeki ölçüm malzemeleriyle ulaşılamaz olması nedeniyle kısıtlı kalmıştır. Cephenin bir kısmını halen örtmekte olan binalar da çalışmayı hayli zorlaştırmıştır. Yine de alınan ölçülerle kalıntıların ölçekli bir planını çizmek mümkün olacaktır. Böyle bir plan 1927-1928 yıllarında hippodromda kazılar yapmış olan S.Casson başkanlığındaki İngiliz ekibin kazı raporlarında bulunmaktadır. Bugünkü ölçüm aletlerinden yararlanarak çizilmiş bir planı, 1927 tarihli bu planla karşılaştırmanın yararlı olacağı düşüncesindeyim. Eski planın binayı olduğundan daha simetrik ve düzgün gösterdiğini düşünüyorum. Çalışmalar sona erdiğinde bu düşüncenin doğru olup olmadığı ortaya çıkacaktır.

Alınan ölçülerle dış cephe çizimini de yapmak mümkün olacaktır. Ancak daha önce de belirtildiği gibi binanın bir kısmına eldeki aletlere erişmek mümkün olmamıştır. Bu bölgelerin çizimi için fotogrametrik yöntemlere başvurmak gerekmektedir. Yine olanakların yetersizliği nedeniyle, tam bir fotogrametrik çalışma yapmak mümkün

olmamıştır. Ancak fotoğraflarla ölçüleri biraraya getirerek oranlama yoluyla olabildiğince gerçek boyutlara yakın bir cephe çizimi yapabilmeyi umuyorum.

Dış cephedeki çalışmalar bununla sınırlı kalmamaktadır. İstanbul hippodromu tam olarak tarihlenememektedir. Yazılı kaynaklar inşa çalışmalarına Septimius Severus döneminde başlandığını ve yapının Constantine döneminde tamamlandığını söylemektedir. Ancak bu kaynakların doğru olup olmadığı, doğru olsa bile yapının ne kadarını Septimius Severus'un ne kadarını Constantine'in yaptırmış olduğu belli değildir. Tarihleme çalışmalarına ışık tutması amacıyla, dış cephede kullanılmış yapı malzemeleri ve tekniklerinin sınıflandırılması ve belgelenmesinin yerinde olacağı düşünülerek bu konuda da çalışılmıştır. Bunun için her kemer ve dolguda tuğla/taş boyutları ve harç kalınlıkları ölçülerek gerekli görülen yerlerde renkli ayrıntı fotoğrafları çekilmiştir. Bunun yanısıra cephenin zaman içindeki kullanımından kaynaklanan ve geriye kalan izler, nişler vb. belirlenmiş ve fotoğraflanmıştır.

Kalıntıların iç strüktürü Sultanahmet Endüstri Meslek Lisesi Müdürü Erol Çeliker'in sorumluluğundadır. Buraya açılan kapının anahtarını alabilmek ve çalışma yapabilmek için T.C. Kültür Bakanlığı Anıtlar ve Müzeler Genel Müdürlüğü'nün verdiği izin dışında, T.C. İstanbul Valiliği İl Milli Eğitim Müdürlüğü'nün B.08.4.MEM.4.34.00.18.580/1124 sayı ve 02.06.1997 tarihli izniyle, okul müdürü Erol Çeliker'in denetiminde ve desteğiyle çalışmalar yürütülmüştür.

İç koridorun seviyesi, kendisine bağlanan güney doğuya doğru dördüncü odadan sonra üç buçuk metre kadar düşmekte ve buraya bu yüzyılda yapılmış betonarme bir merdivenle ulaşılabilmektedir. Yapının merdivenden sonraki kesimi (5. odadan 12. odaya kadar) Bizans döneminden yakın zamana dek sarnıç olarak kullanılmıştır. Günümüzde su

düzeyi yaz aylarında 55-60 santim civarındadır. İç koridora 12. odaya kadar ulaşılabilmektedir, bu noktadan sonra koridoru bölen yüksek duvarı aşmak gerekmektedir. Bu bölgeye geçilmesi henüz denenmemiştir.

Yapının içinde yürütülen çalışmalarda ilk dört oda ve ana koridorun planı ile koridorun iki cephesinin eskizi çizilerek, bir-iki fotoğraf denemesi yapılmıştır. Ancak yapının oldukça karanlık olması nedeniyle henüz istenilen kalitede fotoğraf çekilmesi mümkün olmamıştır. Ölçüm çalışmaları da henüz tamamlanamamıştır. Hem ölçekli çizimde kullanılacak kaba ölçüler, hem de iç ve dış cephedeki yapı malzemeleri ve tekniklerinin karşılaştırılmasını sağlayacak tuğla ve harç ölçüleri eksiktir. Yapının içindeki hava çok nemli ve ağır olduğundan burada uzun süreli çalışmak mümkün olmamaktadır. Dolayısıyla iç yapıdaki çalışmaları 1998 yılında da sürdürmek gerekecektir. Çizimlere başlandıktan sonra çıkacak eksikleri tamamlamak için dış cephede de tekrar ölçü almak ve fotoğraf çekmek gerekebilir.

İstanbul hippodromu henüz tam olarak tarihlenememekle birlikte, İstanbul'un yerüstündeki en eski yapılarından biridir. Üstelik yer yer 20 metreye ulaşan bina, İstanbul'un en görkemli tuğla cephelerinden birisini oluşturmaktadır. Üzerinde bulunan geç Osmanlı döneminin seçkin yapılarından biri olan Sultan Ahmet Meslek Lisesi binalarıyla birlikte, İstanbul'da yaşamış farklı kültürlerin, farklı devirlerin birlikteliğini ve sürekliliğini örneklemesi bakımından da ayrı bir yeri vardır. Ne yazık ki cephede yoğun biçimde, yıkılan binalardan kalan parçalar (demir korkuluklar, çatı kalıntıları, kemerleri kapamakta kullanılan briketler, fayanslar vb.) son derece çirkin bir görünüm sergilemektedir. Yeni yıkılmış olan evlerin malzemeleri de olduğu gibi cephenin eteklerine

yığılmış durumdadır. Belediyenin parka ve otoparka dönüştürdüğü bir kesim göreceli olarak daha iyi durumdadır. Burayı da sarhoşlar mesken tutmuştur.

Bölge yabancı turistlerin uğrak yeridir. *Sphendone*'nin hemen yanındaki lüks oteller bu turist hareketini arttırmaktadır. İstanbul'un bu derece iyi durumdaki ve toprak üstündeki belki de en eski yapısının bu kadar bakımsız ve ilgiden yoksun olması çok acı bir durumdur, bu durum da yabancı turistlerin dikkatini çekmektedir. Çevre halkının hiç olmazsa bir kısmı bölgede yapılacak iyileştirici çalışmaları dörtgözle beklemektedir.

Bütün bunlar göz önünde tutulduğunda cephenin koruma altına alınmasının kaçınılmaz ve acil olduğunu düşünüyorum. Bu da ancak çevrenin islah edilmesi ve hiç olmazsa cephenin açıkta olan bölümlerinin çevresi için bir düzenleme projesi yapılmasıyla mümkün olacaktır. Cephede yukarıda belirttiğim yıkıntı kalıntılarının ortadan kaldırılması öncelikli olmalıdır. Tuğla ve moloz taş elemanların yer yer sağlamlaştırılması da gereklidir. Ancak bunu yaparken dikkat edilmesi gereken en önemli nokta orijinal harç ve tuğlaların kapatılmamasıdır. Yapıyla ilgili bilgileri umursamazca yok eden bir restorasyon yerine, konunun uzmanı kişilerce hazırlanan ve yürütülen bir projenin gerekliliği daha da önem kazanmaktadır.

Aynı biçimde yapının iç bölümlerinin de temizlik ve onarım çalışmalarına gereksinimi vardır. Burayı ziyarete açmak mümkün olabilir. Ancak *sphendone*'nin yüzyıllarca sarnıç olarak işlediği, dolayısıyla yapıya açılan ve yapıdan suyu tahliye eden su kanallarının varlığı göz ardı edilmemelidir. Şu anda içerideki su son derece pis ve mikropludur. Bu nedenle öncelikle tabandaki çamurun ve atıkların temizlenmesi zorunludur. Eğer buranın ziyarete açılması düşünülecek olursa, içeriye ek havalandırma ve aydınlatma düzeni yerleştirmek gerekecektir. Yapının Sultanahmet Meslek Lisesinin

temellerinde ve okul yönetiminin denetiminde olduğunu bir kez daha hatırlatmayı gerekli görüyorum. Ayrıca böyle bir proje gündeme gelirse, antik hipodromun yap-işlet-devret modeliyle çarçabuk çarşıya dönüştürülen İstanbul'daki pek çok sarnıcın kaderini paylaşmayacağını umuyorum.

Çalışmalarım şimdilik bir yüksek lisans tezi hazırlanmasına yönelik olduğundan ve buna bağlı olarak elimdeki olanakların kısıtlılığı nedeniyle, tuğla ve harçlarla ilgili kimyasal vb. analiz yaptıramıyorum. Dolayısıyla hipodromun arkeoloji, sanat tarihi ve tarih alanlarına vereceği daha pekçok bilgi vardır. Bu nedenle ileride düşünülecek herhangibir koruma/restorasyon çalışmasında yukarıda kısaca değinmeğe çalıştığım konuların göz önünde tutulmasının gerekliliğine inanıyorum. Şu anda öncelikli olan çevre düzenlemesi ve cephenin temizlenmesi konularına ivedilikle eğilinmesi gerektiğini düşünüyorum.

APPENDIX B

a. The permission given by the General Directorate of Monuments and Museums to undertake a fieldwork at the hippodrome (p.160)

b. The permission given by İstanbul Directorate of National Education to enter the substructures of the sphendone (p.161-162)

T.C.
KÜLTÜR BAKANLIĞI
Anıtlar ve Müzeler Genel Müdürlüğü

SAYI : B.16.0.AMG.0.10.00.01/713.1.
KONU : Tez çalışması

ANKARA

10.06.97 04165

Günder VARİNLİOĞLU
Büklüm Sk.17/17
06680 Kavaklıdere/ANKARA

Bilkent Üniversitesi Arkeoloji ve Sanat Tarihi Bölümü öğrencisi Günder Varinlioğlu'nun "İstanbul Antik Hipodromu" konulu yüksek lisans tezi çalışması için fotoğraf çekmek, ölçü almak ve çizim yapmak için izin talep ettiği 3.6.1997 tarihli müracaatı incelenmiştir.

Söz konusu çalışmanın İstanbul Arkeoloji Müzeleri Müdürlüğü denetiminde yapılması Bakanlığımızca uygun görülmektedir.

Bilgilerinizi ve gereğini rica ederim.

M.Akif IŞIK
Bakan a.
Genel Müdür

Ek:1 müracaat örneği

DAĞITIM:
-İstanbul Valiliğine
-Günder VARİNLİOĞLU
Büklüm Sk.17/17
06680 K.Dere/ANKARA
(Ek konmadı)

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İSTANBUL VALİLİĞİ
İl Milli Eğitim Müdürlüğü

[175]

SAYI : B.08.4.MEM.4.34.00.18.580/ 1124
KONU : Tez çalışması(Günder Varinlioğlu)

02 HAZİRAN 199

VALİLİK MAKAMINA

İLGİ :a-)Milli Eğitim Bakanlığı'nın 28.01.1988 gün e Basın ve Halkla İlişkiler Müşavirliğinin 610.BHİŞ.123 sayılı emri.

b-)Bilkent Üniversitesi İnsani Bilimler ve Edebiyat Fakültesi Arkeoloji ve Sanat tarihi Bölümünün 21.05.1997 günlü yazısı.

Bilkent Üniversitesi Arkeoloji ve Sanat Tarihi bölümü yüksek Lisans öğrencisi Günder Varinlioğlu "İstanbul At Meydanı(Hipodrom)"konusundatez çalışması yaptığı ve gerekli incelemeleri yapabilmek için Sultanahmet Endüstri Meslek Lisesi için izin verilmesi ile ilgili İLGİ(b)yazı ve ekleri ekte sunulmuştur.

Adı geçen öğrencinin tez çalışmasını Sultanahmet Endüstri Meslek Lisesinde, Okul idaresinin denetim ve gözetiminde yapması Müdürlüğümüzce uygun görülmektedir.

Makamınızca da uygun görüldüğü takdirde Olurlarınıza arzederim.

Erdem KAYAALP
Müdür a.
Müdür Yardımcısı

EK-1(İLGİ(b)yazı)

O L U R
02/06/1997
Ömer BALIBEY
Vali a.
Milli Eğitim Müdürü

İSTANBUL VALİLİĞİ
Eminönü İlçe Milli Eğitim Müdürlüğü [176]

Sayı : B.08.4.MEM.4.34.12 .18-580/1706 16/06/1997

KONU : Tez Çalışması (Günder VARİNLİOĞLU)

SULTANAHMET ENDÜSTRİ MESLEK LİSESİ MÜDÜRLÜĞÜNE
EMİNÖNÜ

İLGİ : a) Milli Eğitim Müdürlüğünün 05.06.1997 tarih ve 1173 sayılı emri.

b) Valilik Makamının 02.06.1997 tarih ve 1124 sayılı Onayı.

Bilkent Üniversitesi Arkeoloji ve Sanat Tarihi Bölümü Yüksek Lisans öğrencisi Günder VARİNLİOĞLU'nun okulunuzda tez çalışmasını yapması ile ilgili İLGİ (a emir ekinde alınan İLGİ (b) Valilik Onayı ekte gönderilmiştir.

Bilgilerinizi ve okulunuzun denetim ve bilgisinde adı geçenin çalışmasını yapmasına yardımcı olunmasını rica ederim.

Mehmet BOZKURT
Müdür a.
Şube Müdürü.

EKİ : 1. İLGİ (b) Kaymakamlık Onayı.

APPENDIX C

Table 1: A concise summary of the historical, urban and architectural characteristics of Circus Maximus, Circus Varianus, Circus Maxentius, the hippodrome at Constantinople and tetrarchic circuses.

Table 2: Proposals for the dimensions of the hippodrome at Constantinople (from William MacDonald, "The Hippodrome at Constantinople," (Ph.D. diss., Harvard University, 1956).

Table 3a-g: The catalogue of the building materials used at the substructures of the sphendone.

TABLE 1a. A CONCISE SUMMARY OF THE HISTORICAL, URBAN AND ARCHITECTURAL CHARACTERISTISCS OF CIRCUS MAXIMUS, CIRCUS VARIANUS, CIRCUS MAXENTIUS, THE HIPPODROME AT CONSTANTINOPLE AND TETRARCHIC CIRCUSES

place	builder&date	associated emperors	dimensions of arena	orientation	relation to city	palace complex	seating capacity	kinks	construction	arch
Circus Maximus	from 600 B.C. onwards, under Trajan (AD103 completion) almost canonical	Julius Caesar, Agrippa, Augustus, Claudius, Nero, Domitian, Caracalla, Alexander Severus, Diocletian, Maxentius, Constantine	580x79	NW /W (carceres)-SE/E	between Palatine and Aventine	on the left	150,000	kink on the left flank, one or double kinks on the right flank	brick faced concrete and stone under Trajan	yes
Sessorian complex	Severan (early 3d) continuing under Elagabalus (218-222)		565x115-125	NW (carceres)-SE	extreme SE corner of Rome	on the right	reduced seating capacity	?	brick and stone facing on concrete	no
Nicomedia	Diocletian[1], dedication 304	Licinius (chief residence)	?	?	?	palace-circus complex by Diocletian	?	?	?	?
Milan	late 2nd or early 3d, Maximian[2], palace dated to late 3d.	Constantius (305-6) Severus (306-7)	460x67-68	N orth (carceres)-South	W of the city, city wall enlarged to include circus	palace dated to late 3d probably to the right as indicated by the apsidal structure	cavea=9-11 m	kink on the left and on the right towers on both sides of the carceres	rubble and bricks in concrete	no
Aquileia	probably Maximian in late 3nd early 3d[3]	Constantine II Valentinian II	450-75.8	N/NW (carceres)-S/SE	city wall abutted on right flank	no precise evidence, probably on the left	cavea= 12 m on the left[4]	probably kinks on both sides		no
Antioch (palace complex)		Constantius (works on circus 335-350)	492.5x70-75	NW (carceres)-SE	on the island in the Orontes	probably on the right, there might be a pre-tetrarchic imperial residance on the same side	80,000		hard rubble oncrete	no

[1] Diocletian is also associated with Sirmium and Antioch. Diocletian claimed to make Nicomedia the equal of Rome. He is proclaimed emperor in Nicomedia in 284, the constructional activity started in 293-4 and the hippodrome was completed in 304. Nothing has remained of this hippodrome. This is very unfortunate because, due its proximity to Constantinople in distance and in time, it could provide very important comparative material in terms of design and construction techniques.

[2] Maximian the co-augustus of Diocletian may have started the urbanization of Milan, taking Nicomedia as an example

[3] Milan and Aquileia were Maximian's chief residences from 293 on or more securely between 299-305.

[4] At Aquileia and Thessalonike, the seating tiers on two sides are different in depth, the palace side is larger.

TABLE 1b. A CONCISE SUMMARY OF THE HISTORICAL, URBAN AND ARCHITECTURAL CHARACTERISTISCS OF CIRCUS MAXIMUS, CIRCUS VARIANUS, CIRCUS MAXENTIUS, THE HIPPODROME AT CONSTANTINOPLE AND TETRARCHIC CIRCUSES

place	builder&date	associated emperors	dimensions of arena	orientation	relation to city	palace complex	seating capacity	kinks	construction	arch (sph)
Thessalonike	tetrarchic Galerius's chief residence (308-9)	may be completed by Constantine (work including harbour)	400x73-74	NE(carceres)-SW	extreme SE corner of the city	on the right, apsidal structure present on the right	cavea=12m on the right, larger than left	kink on the right not clear, there may be a kink on the left	brick vaults	?
Trier	pre-tetrarchic non-monumental circus in the 2nd century Constantius (293 on) or Maximian may have started the second circus Constantine may have completed from 306 onwards	Crispus Constantine II Constans Valentinian Gratian (permanent imperial residence)	440x77-88	NE (sphendone)-SW (impact of topography)	east of the city, beyond the street grid, inside the city wall	in close proximity probably to the Northeast	?	there might be a kink on the right	rubble in thick mortar, regular stone facing for the superstructure	?
Circus Maxentius in Rome	Maxentius (306-312)		503x75-79	E-W (carceres)	on Via Appia	palace and mausoleum on the left	10,000	double kink on the right, one kink on the left towers on both sides of carceres	concrete core faced with alternating bricks and small tufa blocks there might be a marble facing	yes
Sirmium	little later than 312/3 by Licinius (308-316) or Constantine[5]		430x70	NW (carceres)-SE	SE of ancient town, city walls enlarged to include the circus	long apsidal structure on the right may indicat the presence of a palace	cavea=15m	kink on the right, there might be kink on the left also	opus mixtum brick vaults	yes
Constantinople	Septimius Severus started in 196 Constantine restarted the work in 325, inaugurated in 330		421-442 x76.95-83.2	NW (carveres)-SE	SW extremity of the city	on the left flank	80,000-100,000	one or double kink on the right, maybe one kink on the left	alternating brick and rubble set in hard mortar	no

[5] Constantine may have considered Sirmium as his capital city.

TABLE 2. PROPOSALS FOR THE DIMENSIONS OF THE HIPPODROME AT CONSTANTINOPLE (from MacDonald, p.44)

SPHENDONE	
outside diameter given by Casson and Rice	117.50 m.
outside diameter given by Mamboury	120.40 m
outside diameter, based on Hero of Byzantium+average width of tiers	122.55 m.
outside diameter, our survey in 1997	117.5-120 m.
TRACK WIDTH	
at sphendone, given by Hero of Byzantium	76.95 m.
at C, based on Hero of Byzantium+ "tangential widening effect"	78.32 m.
OVERALL WIDTH	
at C, given by Mamboury	122.00 m.
WIDTH OF TIERS	
at A and B	22.65 m.
at C	23.91 m.
at E	23.40 m.
at G	21.28 m.

average	22.80 m.

LENGTH OF TRACK

minimum	421.0 m.
maximum	442.0 m.

OVERALL LENGTH OF HIPPODROME

minimum	455.0 m.
maximum	475.0 m.

TABLE 3a: THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III...
ARCH 1	65	30x4-5	B1	X	4-6	M2	1:1	no ashlar	no ashlar	94-95	28,29,30
between ARCH 1-2	X	x3.5-5	B1	29	4-5.5	M2	1.1:1	no ashlar	no ashlar		28
ARCH 2	?	?	?	X	?	?	?	no ashlar	no ashlar	95-96	28,31
(*)between ARCH 2-3	X	12-18x4.5	B1	26	5	M2	10:9	no ashlar	no ashlar		28
ARCH 3	60-63, 67	30x4.5	B1	X	5-6	M2		no ashlar	no ashlar	96-98	28,32,33
(*)between ARCH 3-4	X	22-30X4	B1	29	6	M2	3:2	no ashlar	no ashlar		28
ARCH 4	70	32-33x4.5-5	B2	X	5-5.5	M2	11:10	no ashlar	no ashlar	98-99	34,35,37
(*)between ARCH 4-5	X	33x4/34x5	B2	?	6	M2	6:5/3:2	no ashlar	no ashlar		34
(¥)between ARCH 4-5	X	31x5	B1	?	5.5	M2	11:10	no ashlar	no ashlar		34
ARCH 5	60 (+14?)	30-31x5	B1	X	5	M2	1:1	no ashlar	no ashlar	99-100	34,36,37
between ARCH 5-6	X	31x4-5	B1	X	5	M1	1:1	no ashlar	no ashlar		34
ARCH 6	?	?	?	X	?	M1	?	x21		101-102	38,39,41
between ARCH 6-7	X	?	?	?	?	?	?	no ashlar	no ashlar		38
ARCH 7	?	?	?	X	?	?	?	no ashlar	no ashlar	102	38,40,41

TABLE 3b : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
between ARCH 7-8	X	31x4.5-5	B1	28	3.5-5	M1	1:1	no ashlar	no ashlar		41
ARCH 8	?	31x4.5	B1	X	4	M1	8:9	no ashlar	no ashlar	102.-103	42,43,45
(*)between ARCH 8-9	X	31-33x4.5x5	B2	33.5	4-4.5	M1	10:9	no ashlar	no ashlar		42
ARCH 9	?	31-33x4.5x5	B2	X	4.5-5	M1	1:1	no ashlar	no ashlar	103.-104	42,44,45
between ARCH 9-10	X	31x5	?	?	5.5	M1	11:10		MS1		42
ARCH 10	?	?	?	X		?	?	2 courses= 114	MS1	104.-106	46,47,48 ,49,50
between ARCH 10-11	X	30x5 31x5.5	B1	?	5-6	M1	6:5 1:1	2 courses= 114	MS1		46
ARCH 11	83	31-33x4.5-5	B2??	X	4.5-6	M1	6:5	2 courses= 114	MS1	106.-108	46,51,52 ,53
ARCH 11 infill	X	40x4.5-5	B3	X	7	M2	7:5	no ashlar	no ashlar		46
between ARCH 11-12	X	?	?	34	?	?	?	no ashlar	no ashlar		46
ARCH 12	X	?	?	X	?	?	?	no ashlar	no ashlar	108.-109	55,56,57
ARCH 12 infill	X	20-40x5-5.5	B3	X	6	M2	6:5	no ashlar	no ashlar		55

TABLE 3c : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
between ARCH 12-13	X	31x5	B1	?	4.5	M1	9:10	2 courses= 130	MS1		55
ARCH 13 infill	X	36-40x4.5	B3	X	4.5-10	M2	2:1	1 course=50	MS1	109-110	55
between ARCH 13-14	X	31x5	B1	?	5	M1	1:1	2 courses= 130	MS1		55
ARCH 14	?	?	?	X	?	? M1a (¶)	?	2 courses= 130	MS1	111	61,62,63 ,64
between ARCH 14-15	X	?	?	?	?	? M1a (¶)	?				61
ARCH 15	?	?	?	X	?	? M1a (¶)	?	2 courses= 75	MS1	112	61,65,66 ,67
ARCH 15 infill	X	35-39x4.5-5	B3	X	4.5-5	M2	1:1	no ashlar	no ashlar		61
between ARCH 15-16	X	?	?	X	?	? M1a (¶)	?	2 courses= 75	MS1		61
ARCH 16	?	x4.5-5	B1 or B2	X	4.5-5	M1 M1a (¶)	1:1	2 courses= 73	MS1	113-114	68,69,70 ,71
ARCH 16 infill	X	x4.5-5		X	4.5-5	M2	1:1	2 courses= 73	MS1		68
between ARCH 16-17 under ashlar	X	21,30x3	B1	X	4-6	M1 M1a (¶)	5:3	2 courses= 73	MS1		68

TABLE 3d : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
ARCH 17	?	?	?	X	?	? M1a (¶)	?	2 courses= 73	MS1	114-115	68,72,73
ARCH 17 small arch	60	17-40x4.5-5	B3	X	4-6	M1a (¶)	6:5	X	X		68
between ARCH 17-18	X	?	?	?	?	M1 M1a (¶)	?	2 courses= 68	MS1		68
ARCH 18	?	?	?	X	?	M1 M1a (¶)	?	2 courses= 68-70	MS1	115-116	74,75,76 ,77
between ARCH 18-19	X	?	?	?	?	M1	?	2 courses= 68-70	MS1		74
ARCH 19	?	30x5	B1	X	5.5	M1	11:10	2 courses= 70	MS1	116-117	74,78,79
ARCH 19 infill	X	38x4.5-5	B3	X	5-6	M2	6:5	no ashlar	no ashlar		74
between ARCH 19-20	X	31X4.5-5	B1	X	4-5	M1	1:1	1 course= 50	MS1		74
ARCH 20	X	31X4.5-5	B1	X	4-5	M1	4:5	no ashlar	no ashlar	117-118	80,81,82
ARCH 20 infill	X	38x5	B3	X	5-6.5	M2	11:10	no ashlar	no ashlar		80
between ARCH 20-21	X	31x4-5	B1	X	4.5-5	M1	1:1	no ashlar	no ashlar		80

TABLE 3e : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
ARCH 21	?	?	?	X	?	?	?	no ashlar	no ashlar	118	80,83,84
ARCH 21 infill	X	38x4-5	B3	X	4.5-6	M2	6:5	no ashlar	no ashlar		80
between ARCH 21-22	X	31x5	B1	?	5.5	M1	11:10	no ashlar	no ashlar		80
ARCH 22	?	31x4.5-5	B1	X	5-5.5	M1	10:9	no ashlar	no ashlar	119	85,86,87 ,88
ARCH 22 infill	X	38x4.5-5	B3	X	6	M2	6:5	no ashlar	no ashlar		85
between ARCH 22-23	X	31x4.5-5	B1	?	5-5.5	M1	10:9		MS1		85
ARCH 23	X	31X4.5-5	B1	X	5-5.5	M1	10:9	no ashlar	no ashlar	119 - 120	85,89,90 ,91
between ARCH 23-24	X	31x5	B1	?	5	M1	1:1	no ashlar	no ashlar		85
ARCH 24	?	31x5	B1	X	5	M1	1:1	no ashlar	no ashlar	120-121	92,93,94
between ARCH 24-25	X	31x5	B1	?	5	M1	1:1	no ashlar	no ashlar		92
ARCH 25	?	31x5	B1	X	5	M1	1:1			121	92,95,96
between ARCH 25-26	X	22.5x11x7	B4	X	1	M3	X		MS1		92
ARCH 26	?	22.5x11x7	B4	X	2	M3	X	no ashlar	no ashlar	122	98,99

TABLE 3f : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
between ARCH 26-27	X	22.5x11x7	B4	X	2	M3	X	no ashlar	no ashlar		98
ARCH 27	?	22.5x11x7	B4	X	2	M3	X	no ashlar	no ashlar	122-123	98,100, 101
ARCH 27 infill	X	38x5	B3	X	5.5	M2	11:10	no ashlar	no ashlar		98
between ARCH 27-28	X	22.5x11x7	B4 B1 or B2 (§)	?	?	M3 M1	?	no ashlar	no ashlar		98
ARCH 28	?	24-27.5X 2.5-3	B5	X	3.5-4	M2	4:3	no ashlar	no ashlar	123	102,103
between ARCH 28-29	X	22.5x11x7	B4	X		M3	X	no ashlar	no ashlar		102
ARCH 29	82	31x5	?	X	5	M1	1:1	no ashlar	no ashlar	123-124	102,104, 105
ARCH 29 infill		39x5	B3	X	7	M2	7:5	no ashlar	no ashlar		102
between ARCH 29-30	X	?	B4, B1 /B2 (§)	?	?	M1 M3	?	no ashlar	no ashlar		102
ARCH 30	53	32.5-34x5	B2	X	4-5	M1	1:1	no ashlar	no ashlar	124-125	106,108, 109

TABLE 3g : THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

PLACE	BRICK thickness of the arch(cm)	BRICK dimensions (cm)	BRICK type	BRICK 4 courses=	MORTAR thickness (cm)	MORTAR type	RATIO mortar: brick	ASHLAR dimensions (cm)	ASHLAR type	PAGE no.:	FIGURE number fig.III....
ARCH30 2nd interior wall	140	38x5	B3	X	6	M2	6:5	no ashlar	no ashlar		107,109
between ARCH 30-31	X	31x5 32-35x5	B1 B2	X	5-9	M1	1:1 9:5	no ashlar	no ashlar		106
ARCH 31		31-32.5x5	B2	X	4-5	M1	1:1	no ashlar	no ashlar	125. 127	106,110, 111
ARCH 31 2nd interior wall	140	38x4.5-5	B3	X	6	M2	6:5	no ashlar	no ashlar		107,111
ARCH 31 3d interior wall	X	29x2.5	B5-6	X				no ashlar	no ashlar		107,111
between ARCH 31-32	X	33x5 23x11x7	B2 B4	3 c.=25				no ashlar	no ashlar		106
ARCH 32		31X4-5	B1	X	4-5.5	M1	5:4	no ashlar	no ashlar	127-128	113,114, 115
ARCH 32 2nd interior wall	108	38x5	B3	X	6	M2	6:5	no ashlar	no ashlar		107,115
between ARCH 32-33	X	32X4,5	B2	?				no ashlar	no ashlar		113
ARCH 33	65	31x4.5	B1	33	4.5-5	M1	10:9	no ashlar	no ashlar	128	113,116, 117

TABLE 3a-g: THE CATALOGUE OF THE BUILDING MATERIALS USED AT THE SUBSTRUCTURES OF THE SPHENDONE

*These dimensions are from the 4 courses of brick running tangent to the summit of the arch.

¥ these dimensions are from the brick bands consisting of numerous courses, so closer to the ground level than the bands above.

§ At these sections, as the dimension of the corresponding bricks cannot be measured, it is assumed that they are B1 or B2 bricks.

(¶) M1a binds rubble stones and bricks below the MS1 dressed stone courses, it is not found in any other location.

The interior surfaces of arches 11-28 are covered with hydraulic mortar M4

MS2 mortared rubble is found all over the structure except at the infills and secondary reinforcing walls, so at all the sections in the catalogue MS2 is present.

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