

OBSERVATION OF THE CONCEPT OF PROPORTION IN ARCHITECTURE USING THE PALAZZO FARNESE EXAMPLE

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Abstract

The topic is the multi-lateral relationship established during the process of spatial perception between the space and the observer. Spatial perception is as varied as the number of people who are making the observation and evaluation, just as the evaluation in the person's systematizing is connected with the codes that the space physically provides (dimension, color, fabric, light, order...). Although the concept of proportion, one of the concurrences in spatial coding, dates to the ancient period, in this study the evaluations will be made using the example of a building from the Renaissance period.

In Renaissance architecture which began in Florence at the beginning of the fifteenth century and spread from there to Europe by the end of the same century, religious architecture like churches, cathedrals and chapels continued and examples of civil architectural buildings like kiosks, palaces and mansions gained speed (in comparison with the buildings of the Middle Ages).

While Renaissance architects took the arch, dome, column and decorative items from Greek and Roman art in organizing buildings, they remained attached to some shared values and old traditions; however, they found an opportunity to produce new and original styles. In this context the architect led the way himself in clarifying the arrangement that would be applied, the proportions and the details through the form and measurements of the building

What was inescapable in Renaissance period buildings was a conceptual harmony that numbers and proportions achieved. We know that this concept that had progressed ever since Aristotle had acquired the definition that "all the elements of the universe are the elements of numbers and in this context the number of the universe is a ball of numbers and harmony."¹

¹ It is observable that in the buildings of Renaissance era architects tried to establish acoustic harmony and optical harmony as an extension of the ancient period.

The study includes debating in Renaissance buildings the criteria for the spatial assemblage in regard to the Palazzo Farnese building.

Keywords: Renaissance architect, proportion, Rome, Palazzo Farnese

Introduction

Proportion and the concept of proportion which can't be ignored in every branch of art and every development have been the subject of research and application ever since mankind has existed.

Its basic definition and rhythm are relations that are repeated as lines of the same pieces or proportions. In the architectural sense this can be defined as visually organized essentials and the organization of their unity. While every unit is independent, it creates continuity when it coalesces. In architecture the projecting part in the masses and the proportions of fill and emptiness in the walls (the whole of the arrangement) which is evaluated as proportional rhythm gains importance. This continuity in the order - just as in a piece of the same music - provides a strong tie between the repetition of the measured stresses and the whole of the repetition (Gezer, 2007).

Balance

In this context the ratio is the relationship that the pieces of a whole form between its parts and the whole². The golden ratio in particular that has been applied ever since Greek civilization has been repeated in many scientific research and artistic branches.

The balance and form followed in nature create the balance in the whole. It is possible to find conceptual approaches such as physical balance or balance of thought, etc. in different disciplines taking the same approach.

Just like the unity of what resembles each other in the element of balance, the road followed in bringing together what is the opposite of each other and the effect that is created in what follows takes precedence through a different point of view. Just as opposite colors complete one another, one can talk of the wholes that curved and straight surfaces in architectural buildings and their opposite create that strengthen and crush one another.

Module – Piece

The module whose definition can't be separated from proportion is created by the proportion being repeated and through repetition. It's possible that it can be read in the completion of a building as it can remain in the

² We see this in the values of the triangle 3-4-5 that has continued ever since Egyptian civilization and in numbers like 1/2, 5/8, and 4/3.

detail – in the whole of the plan, cross section and façade plane. However the modular concept is not of an inescapable rule for a building.

In ancient Egypt the whole plan and the facade of the Temple of Horus at Edfu was solved – two pylons side by side on the façade were applied in the plan’s plane too. The grid system used on the façade created infrastructure for Greek architecture in later practice. So now today it is known that two levels of intercolumniation determine the height of the columns and three levels, the frieze and pediment section.³ (See Figure 1)



Figure 1 The Temple of Poseidon at Paestum

The modular approach used especially in religious architecture from ancient times reaches a summit when civil architecture in the Renaissance era is included.

The Renaissance was a movement seen in Europe and especially in Italy in the fields of literature, art and science and it gained speed through the study of the philosophers of the ancient period. In the aftermath of the dogmatic thought structure of the Middle Ages, the thought of turning to nature – pantheism – developed (Dal, 2007) and, parallel to this, the architects and philosophers of the Renaissance period which took man as its measure again interpreted Vitruvius even as they remained under the influence of Pythagoras and Plato among the various philosophical currents from ancient Greece.⁴

³ Examples could be multiplied of the way in which columns are set on four squares side by side in the Poseidon Temple at Paestum and the frieze and pediment sections are four squares one on top of the other.

⁴ Alberti, one of the important Renaissance architects, was known through the harmony of his architecturally proportionate systems created from Pythagoras’ rows of numbers and these numbers rested on the proportions of the numbers 1, 2, 3, and 4 which are whole numbers.

Platonism

This teaching didn’t remain peculiar only to Greek philosophy but influenced Christian philosophy too. It relies on the principle that the god of the universe and man was created.

Plato suggested that what was beautiful consisted solely of geometric forms so that the centrally planned church drawings that were debatable results in the Renaissance era have their source in Plato's understanding of the ideal's being made up of geometric forms. While the Renaissance period was saved from the dark world of the Middle Ages, at the same time a return was made to pre-scientific thought – impressionistic nature.

In the aforementioned return, architectural thought united the view that man and everything had one place and the principles of the entire cosmos were accepted as special concepts that created the principles for drafting buildings in this wholeness of beauty, order, unity, harmony, proportion and symmetry.⁵ (Oguz, 2004)

The Renaissance, which symbolizes rebirth in the meaning of the word, basically didn't attempt to copy the works of antiquity but examined them and benefited from them. So there could be no direct return to antiquity.

Because the Renaissance was known as a period in which most of the architects paid attention to the human dimension, this situation became the reason for carrying over the similar criteria for drawing religious and civil buildings – it ended the relationship of exaggerated proportions and buildings with religious thought applied in the Gothic Period. (Dal, 2007)

In the drawings of the “ideal church” in the Renaissance period, it was believed that it was necessary to apply the “golden ratio” (round and square) and that this basic form would make God happy. While the aforementioned geometric forms were added, other regular polygons, produced from the octagon and the circle, took their place in architecture as acceptable forms for assembling the central plan design. In the churches which architects like Francesco di Giorgio, Sebastiano Serlio and Leonardo da Vinci drew, a central dome was the element crowning the space and the space expanded equally on every side. (For example the Church of Santa Maria delle Carceri in Prato, the Church of Santa Maria della Consolazione in Todi), (Matthews, 2006, See Figure 2)

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Pythagoreanism It is a teaching that is half mystical and half religious. It is said of this teaching that numbers are mystical and mathematics symbolic. Every form is revealed through a proportionate number. Everything harmonious is revealed numerically. Numbers are suitable for all objects and makes them recognizable (Hançerlioğlu, 1977).

⁵ According to Palladeio's definition “Beauty is born of form and is harmonious according to the whole of the separate parts and every part to the other; that is, every element suits the other and in order to create it, whatever its purpose is, it is born as a complete and perfect body in appearance.” (Vitruvius, 1990).

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Figure 2 The Church of Santa Maria della Consolazione The Church of Santa Maria delle Carceri

One of the reasons for the birth and assimilation of the Renaissance in Italy can be analyzed as its being the center of the Roman Empire and also finding the most traces of the ancient Greek and Roman periods here. The philosophers and scientists' support for the Renaissance can be evaluated as the result of social and economic activity. Because Italy is located in the Mediterranean and had relations with other Mediterranean countries and Islamic civilization, scientists continued in schools opened in Spain and Sicily and they were influential in protecting intellectuals and artists through material and cultural wealth as Mediterranean trade passed through their hands (Dal, 2007).

The palazzos are the most important examples of civil architecture which this wealth brought. These buildings made themselves accepted in society and they were the residences of prestigious people who were accepted and culturally superior to their surroundings.

While the Hellenistic columns and the courtyards were unchangeable elements in terms of architectural characteristics, the corbelled friezes used on the impressive and showy front facades created the clear characteristics of rough style buildings.

Because the frequently met columns are not just construction elements but are accepted as architectural decoration, the facades of the religious buildings and the civil architectural and public sector buildings in this situation are covered with columns and plaster in the form of symbols. While these perpendicular elements are balanced by moldings, cornices and eaves, they tie the architecture together and can separate the wall-façade

proportions. The columns buried in the facades of the walls at the same time carry the characteristic of being the elements that provide shadow and most of the element carrying characteristics which are completely symbolic have been placed on the outside of the structure.⁶

In this context the façade that acquires a different meaning in the entrance part of the buildings does not express the existing building system and is in the form of a symbolic front wall that masks what remains on the back plan (Matthews, 2006).

Palazzo Farnese

One of buildings that exemplify the feeling of balance, calm and order is the Palazzo Farnese whose construction was started by the architect Young Antonio da Sangallo (1485-1549) in 1515 for Cardinal Alessandro Farnese. Ever since the early sixteenth century Rome had once again become a powerful center and the princes of the church by means of giant architectural projects had begun competing with each other in order to display their own power. Cardinal Farnese had great power in the Vatican with his entourage of 300 people. After he was chosen pope in 1534

He wanted Sangallo to enlarge the Palazzo that was still under construction. The third story of the palace's façade and a large part of the back was completed by Michelangelo between 1547 and 1559, changing the design of the third floor a little.

The external and courtyard facades of the building have a proportional arrangement. (See Pictures 3-4). On the ground floor its façade of rough stone has been plastered on the upper floors. The quoins visibly continue along the height of the entire façade. The windows, whose order is differentiated on every floor, is observed on the upper lintels and the windows with their details repeated in an orderly fashion provide the façade with a powerful effect.

The Concept of Ratio in the Palazzo Farnese Plan Assemblage

The building which has given its own name to the area in which its entrance is found (Piazza Farnese) has a garden parallel to the Tiber River from the southwest side (See Picture 1).

One enters the building through a door that emphasizes the center axis of the Piazza Farnese. The passage with its six rows of columns that are designed symmetrically on both sides of the entrance is attached to a square courtyard with arcaded sides. While the ratio of the width to height between

⁶ According to the theory of the Italian Renaissance an ideal church had to be raised on a pedestal so that it could be seen completely when looked at from every angle. (Matthews, 2006).

the rows of columns that frame the sides of the courtyard is repeated as $a/2a$, it is seen that the distance (the arcade's width) between the columns with the building is " $2a$ ".

The entrances that belong to the space that create the building are in back of the arcade. The plan design is created with the lineup of the space as space-arcade-courtyard-arcade (closed space-half space-open space) on the x and y axis (See Picture 2). Although the same lineup continues on the upper floor too, the half open space turns into the form of a closed space, however in a functional sense (the circulation area doesn't change).

Across from the entrances to the space that has been symmetrically designed on the ground floor, one sees that this symmetry was not passed along to the different arrangements that don't continue. On the upper floor one doesn't encounter symmetry in the entrance spaces and in the space sections.

Vis-à-vis this, the arrangement of the window openings in the whole of the building continues in parallel with the existing symmetric assemblage.

While the modular system in the plan assemblage is made up of geometric forms, it is in the harmonious characteristic that produces regular rectangular spaces (See Picture 2, Drawing 1). In the plan design the existing assemblage continues increasing as levels of a specific module called " a ". As for this ratio in the x axis and as for the axis - $2a$, $2a+a/2$, $2a+a/2$, $2a - y$, it is in the - a , $2a$, $2a$, a - system. At the intersection point of the plan design's symmetrical axes, it makes for the assemblage that the floor covering forms on the ground of the courtyard.

The Concept of Proportion on the Façade Assemblage of the Palazzo Farnese

The Entrance Façade

The building which is designed with three floors is made up of a door opening that emphasizes the central axis and the window opening is made up of the repetition of the $a/2$ module on the right and left on the ground floor. The entrance door was emphasized with rough stone cladding on the doorjambs and the projection above. The rhythm which continues along the whole façade on the horizontal - a , a , a , $a/2$, a , a , a - on the perpendicular is made up of the repetition in various proportions of the " a " module in the form of - a , a , a , $a/4$. It is possible to take in hand a module on the whole façade by repeating the module. While the proportion of the façade's width is $6a+a/2$ on the horizontal, the height is equal to half of the width with the ratio of $3a+a/4$ (See Picture 3, Drawing 3). The door opening which emphasizes the central axis is repeated as a specific proportion of the same module.

Although the formation of the window opening shows a difference on every floor, the width / height ratio is stable at $\frac{1}{2}$. While the doorjambes on the window openings have been shaped with plaster on every floor, the transom ends with a plain lintel on the ground floor, a triangular pediment and rounded arch on the second floor and a triangular pediment on the third floor.

The broad eave is supported with a cordon (See Picture 3, Drawing 3), at the same time the cordons that are repeated on every floor strengthen the horizontal effect of the building. While the rough material which stresses the entrance door is repeated on the corners of the building, balance is achieved between the horizontal and perpendicular effect.

The courtyard façade reflects the principles of symmetry which is the design principle of the building and the principles of the proportion and repetition. The tie between each one of the columns and the building that surrounds the courtyard on the ground floor relies on the aforementioned concept of proportion. As for the height of the columns that are equal in distance to the building and the opening between the columns that surround the sides of the courtyard, the space is two floors. The proportion of the width and height of the columns continues. The interval between the columns is designed to be the window opening. While the window formation on the courtyard façade shows a difference from the entrance façade, it has a triangular pediment on the first floor and an arch on the second floor. While the rows of columns continue on the ground and upper floors completing the whole in the perpendicular, the cordons that are repeated on every floor and the eaves stress the horizontal effect.

Conclusion

Renaissance architecture, formed through examining buildings of the ancient period, once again gained interpretation through the search for symbolic expression; however, in this animation one sees that in enlivening it, the effects of perception – interpretation gained in seriousness, more than from imitating the buildings of the ancient period.

The biggest data being that of nature and its proportions, the works also produced in which man is part of nature appears as the humanized parts of the universe and nature.

The purpose was not to decorate the building; the proportion, rhythm, planned openings and the effect of depth provide the concretizing of symbolism / physical expression (as is seen in the example of the Palazzetto Zuccari Gate, Rome, the turning of the dimensional characteristics of building entrances into characteristics that symbolize the mouth of monsters . See Figure 3).



Figure 3 The Palazzetto Zuccari Gate, Rome

The humanizing that is very frequently met in architecture ever since Greek civilization finds a place for itself in Renaissance architecture in the form for columns of people's bodies (Francesco de Giorgio Martini), column capitals of heads and torsos into column bodies. While characterizing the arrangements that compare with the architectural arrangements of Leonardo in this context, it is known that the Ionian order was identified with melancholy and the Corinthian order with pleasure (Masiero, 2006).

Although Renaissance architecture that used basic proportions has been compared with the rhythm in music since the past as well, the discovery of "time and movement" which is necessary for "rhythm" weakens the aforementioned relationship.⁷ In this comparison it became the basic golden ratio / the proportion in nature and was developed by being taken up again and again by Pisagor and his students, the Renaissance theoreticians and Corbusier.

While a separate column, epistyle, etc. was used on every floor in early Renaissance period buildings, a unit – architectural language – was created in itself.

As for the arrangements that covered several floors, they began to be applied in the time of Michelangelo and Palladio and in the aftermath of these applications the limits related to the size and monumentality of these buildings were immediately lifted and items such as the column, cornice, etc. that had been proportioned according to the height of the floor, began to be

⁷ In the architectural building one can easily perceive what creates the rhythm; however, to understand what the rhythm is an essential element experienced inside ourselves and has a mystical side.

proportionate according to the height of the buildings. However if the dimensions grew, then every element came together proportionately.

If in the aftermath of this stage of building palaces of giant dimensions was for the pleasure of those who lived there, one sees that the attempt to bring them to life came from the buildings of the ancient period. While functionality remained secondary in affecting spatial dimensions, aesthetic concerns moved to the forefront.

“The goal of the Renaissance architect is not to create tension and mystery but harmony and openness.” (Rasmussen, Yasanan Mimari)

In parallel with the general principles of the Renaissance architect, the Palazzo Farnese has early Renaissance architectural forms with separate detailed applications on every floor. It is differentiated as plain lenticular windows being formed on the ground floor, arched and triangular pediments on the first floor and triangular pediments on the second floor. Assemblage that changes on every floor removes the boredom of constant repetition.

The order created through a specific rhythm's repetition on every floor and the architectural solutions which show change within this order is the successful architectural formation of orderly repeated and moving concepts and the search for balance is continued, benefiting from the contrasting characteristics of full and empty facades on the surfaces on the whole façade. The orders like horizontal, perpendicular, full, empty, symmetrical and repetitive wrap around the aesthetic characteristic within the framework of specific applications.

In most of the architectural buildings that belong to the Renaissance period the arched entrance doors designed on the central axis and the symmetrical architectural approach has a symmetrical expression that enlivens the building, making it human.

While the stone cladding on the building's corners creates the limits of the building, it awakens an impression on the side of the façade's being thought of as lined paper. While the building's entrance that is defined together with the square supports the aforementioned approach, it creates the appearance of a theater curtain.

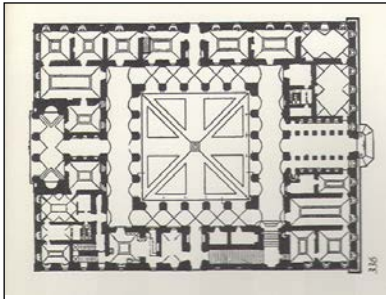
The choice of material in every building that was designed with the expression of feeling and thought creates an important circle at the level of interpretation and the use on offer. In this context the Palazzo Farnese tries to create the tie between meaning and form in the building material. Conceptually it has both concrete and abstract posts with the physical characteristic that affects the visual quality. As an architectural evaluation characterizing and not characterizing as “good” and being able to see and sense the ‘posture’ that the building's character has must be one of the approaches that create the foundation for Renaissance architecture. In order to evaluate the building's historical architecture laying down definite rules

and criteria is impossible; one learns that there has to be standards for every building and that each one has to be evaluated through its own special characteristics.

Pictures



Picture 1 The Tiber River and the Palazzo Farnese



Picture 2 The ground floor plan of the Palazzo Farnese Picture



3 The façade of the Palazzo Farnese



Picture 4 The appearance of the Palazzo Farn. from the courtyard courtyard



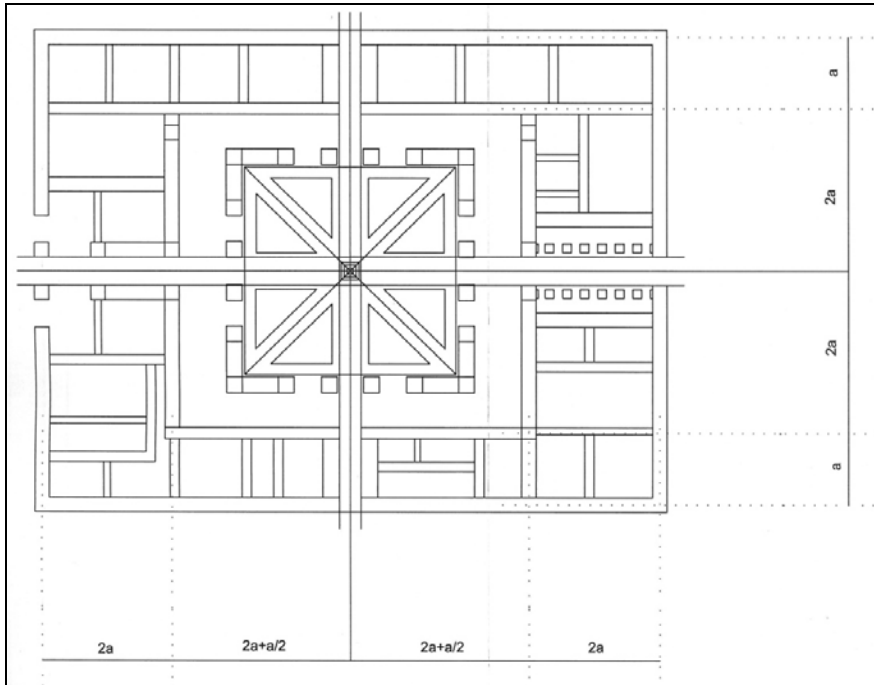
Picture 5 View of the Palazzo Farn. from the courtyard courtyard

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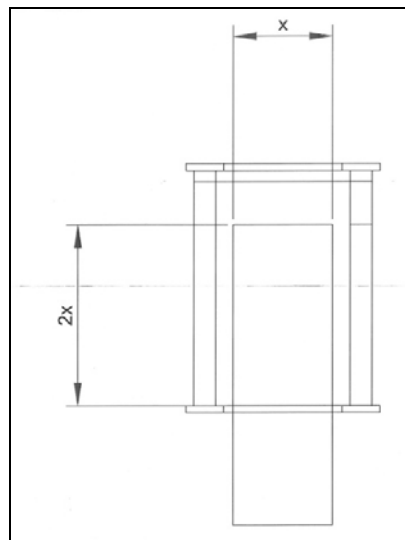
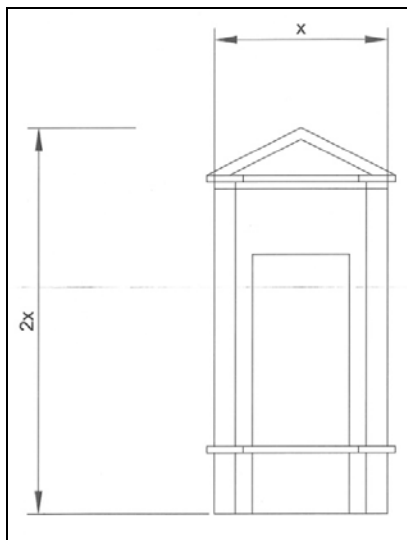
References:

- Arayıcı Osman (2009), “Malzeme ve Estetik Diyalektiği”, Mimarlıkta Malzeme Dergisi, TBMMO Mimarlar Odası İstanbul Büyükşehir Şubesi, yıl.4, sayı.14, s. 67–75.
- Ching, Francis D.K (2004), “Mimarlık Biçim Mekan Düzen”, çev. Sevgi Lökçe, Yapı Yayın 85, 2. baskı, İstanbul, s. 290.
- Dal, Yusuf www.onsayfa.com/forum/felsefe, “Rönesans’ın Bilim-Sanat ve Düşünce Hayatına Etkileri”, 27.8.2007
- Gezer, Hale (2007), “Mozaikte Bir Yer”, Mimarlıkta Malzeme Mimarlık ve Yapı Malzemeleri Dergisi, yıl.2, sayı.5, TBMMO Mimarlar Odası İstanbul Büyükkent Şubesi, İstanbul, s. 22–28.
- Hançerlioğlu, Orhan (1977), Felsefe Sözlüğü, Remzi Kitabevi, İstanbul, s. 258–259.
- Masiero, Roberto (2006), Mimaride Estetik, çev. Fırat Genç, Dost Kitabevi yayını, Ankara.
- Matthews, Henry (2006), “İstanbul ve Roma’da İdeal Form Kavramları Sinan’ın ve İtalyan Çağdaşlarının Kutsal Mimarisi” çev. Günhan Danışman, Mimar. İst, Mimarlık Kültür Dergisi, yıl.6, sayı.22, TMMOB Mimarlar Odası İstanbul Büyükkent Şubesi, s. 27–33.
- Oğuz, Şule “Rönesans’tan Yirminci Yüzyıla İki Temel Değerler Dizisi Bağlamında Mimarlık-Felsefe İlişkisi”, Mimarlık ve Felsefe, Yapı yayını, 2.baskı, İstanbul, 2004, s.72–79.
- Rasmussen, Sten Eiler (2009), Yaşanan Mimari, çev. Ö. Erduran, Remzi Kitabevi, İstanbul.
- Tunçer, O. C., (1981), “Orantı ve Modül Üzerine Selçuklu Yapılarından Bazı Örnekler”, Vakıflar Dergisi XIII, Ankara, s. 449-458.
- Vitruvius, Mimarlık Üzerine On Kitap, çev. S. Güven, Şevki Vanlı Mimarlık Vakfı Yayını, 1990.

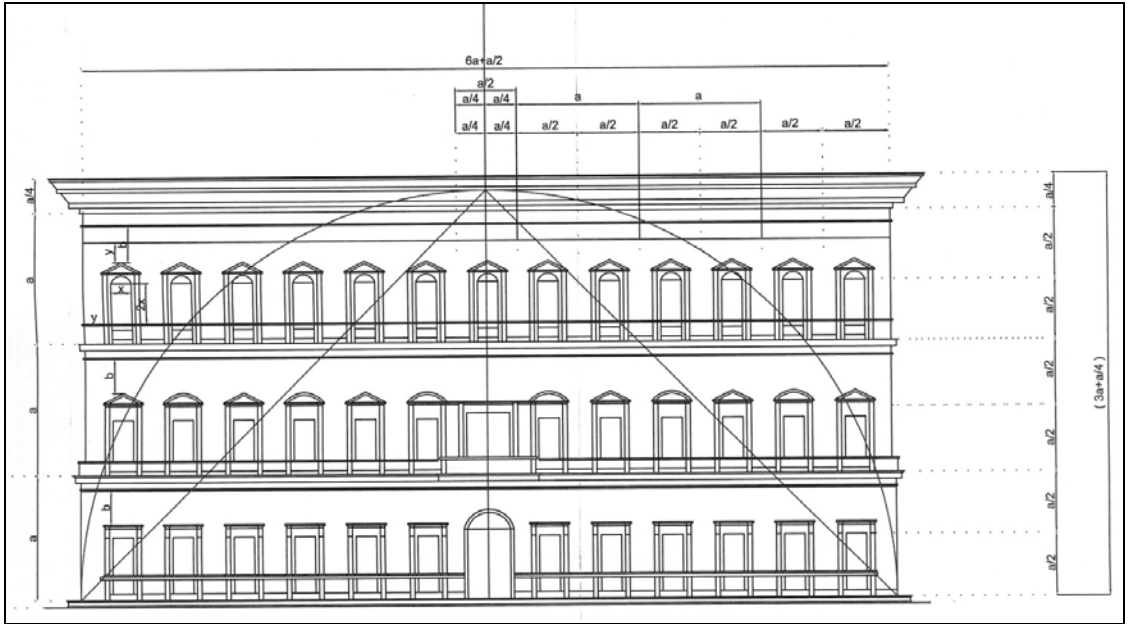
Drawings



Drawing 1



Drawing 2



Drawing 3