THE ANAMORPHIC LIBRARY
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ABSTRACT

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This thesis examines the idea of perspective, specifically anamorphic perspective, and how anamorphosis can be applied to architecture. Anamorphosis is a distorted image that appears regular only from a certain point. With a focus on anamorphosis, perspectival drawings became the key component in the design of the library. Perspectives have been embodied in architecture; however, they remained limited to the realm of illusion, distinct from constructed reality. The library contains this duality of illusionism and realism. Similar to reading a book, one might get lost in the story, imagine themself as one of the characters, and question if they are in reality, or in the illusion of the book.

To further enforce this falsehood, the library holds fictional books, ranging from fairy tales to mythological books.

The library is constructed with three main corridors, which wrap around the inner core, an open-air courtyard. The corridors contain the illusion while the “reality” resides adjacent to these corridors. This gives the spectator a chance to witness the stage of the illusion and the behind-the-scenes of the illusion, the reality.
Anamorphosis is a type of perspective distortion which requires the viewer to occupy a specific vantage point to reconstitute the image. This is commonly referred to as “forced perspective.” An anamorphic image appears irregular, or distorted, until the viewer reaches a certain point. Only from this point will the image be restored and appear with regular proportions.

The Baroque era exhibited the first known applications of anamorphosis, which was often used in drawings and paintings; however, only few accounts of anamorphosis have been found within architecture. The purpose of this research is to explore the anamorphic drawing methods and how anamorphosis can be employed in the design of architecture.
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Anamorphosis is a distorted projection or drawing, so made that when viewed from a particular point, it appears regular and properly proportioned. In classical Greek, the term anamorphosis literally translates as “distortion.”

This type of perspective “distortion” was developed during the Baroque period. In 1510, Leonardo da Vinci drew the first anamorphic image and wrote down the first description of how to look at an anamorphic image.

“If the observer should situate himself with his eye at a small aperture, and then through this hole the perspective will be well displayed. But because many spectators will strive to see at the same time the one work made in this manner, and as only one can see well how such perspective functions, all these other people will find it confusing.”

Fig. 2 - Egnazio Danti’s Anamorphosis

Fig. 3 - Jean-François Nicéron’s Anamorphic Grid

Anamorphic Drawing Methods from the Baroque Period
Francesco Borromini’s corridor at Palazzo Spada in Rome, Italy, became the key influence for this thesis. Borromini’s corridor, constructed in 1652, is an example of a type of architectural distortion that exaggerates the perspectival view. The round columns decrease in diameter and height. The spacing of these columns diminishes as the corridor converges in perspective. Borromini made the front arch larger, while the farthest arch is smallest. The sculpture at the end of the corridor stands at 2 feet in height although it seems properly proportioned in perspective. Angled walls and ceilings further exaggerate this illusion. The corridor appears as if it is 100 feet long, but in reality it is only 24 feet in length.

This thesis proposes to design a reverse perspective of Borromini’s corridor. As he creates architectural elements reducing in size, the library contains elements that increase in size so that in perspective, the elements appear equal in scale.
To begin this thesis, a study of perspectival drawings was conducted in order to fully understand the construction of perspectives. In previous studio projects, perspectives were the last drawings to be constructed. For this thesis, a “top-down” style, as detailed by Le Corbusier, was used to design the library. Le Corbusier described *du dedans vers le dehors*, or “from the inside to the outside,” as a way of designing architecture. Starting with perspectives was not the only means of working backwards in the design of the library, but the library was in fact designed beginning with the interior and ending with the exterior.
The illusion of the library began with a view looking into a corridor. A series of gray squares was drawn equally proportioned in perspective to represent the load-bearing walls. Deriving the plan from the perspective unraveled the truth of the image. In plan, the squares increase in size, as the walls increase in length and the floor increases in depth. The image became elongated in plan, yet it was not distorted.
Anamorphosis has been referred as *prospettiva inversa* because it reverses the direction of projection. It aligns the vanishing point, the image, and the viewpoint with the picture plane. It fixes the observer’s point of view in an unusual location. From only a single point is the distorted image magically unveiled, as it appears to “lift off” the wall. Jan Dibbets’ *Perspective Correction* is a series of black-and-white photographs that represent distorted images “lifting off” the wall.

“On the wall, a square has been drawn, divided by two diagonals into four triangles. As in every picture in the series, the square disrupts the spatial coherence of its environment. It appears as if it does not fit in the photograph at all; as if it was drawn on the photograph’s glossy surface rather than on the studio wall. Our eyes are confused because we see this geometrical figure as if standing directly in front of it, while we throw an oblique glance, between its lines, at its ground, the wall behind it. What we see is not simply a drawing of a square, but an anamorphic figure; that is it appears as a square only at the point from which the photograph was taken and from which we view it.”

With influence from Dibbets' photograph, the squares were further extended beyond the original perspective planes to spark confusion. It becomes unclear as to whether the squares belong to the planes of the floor and ceiling, or the walls. After drawing the perspective, lines were translated to reveal the plan, which sequentially revealed the truth of the illusion. In plan, the walls resemble those of the first corridor as they gradually increase in length; however, the pattern in the floor appeared distorted, or anamorphic.
Photos of Corridor Study Model
Construction Drawings of Three Corridors
Plan and Interior Elevation of Corridor
THE SITE

The library is located on “Times Square” of historic Old Town Alexandria, Virginia. The site is referred to “Times Square” as it resides within an intersection of three streets: Commerce Street, Fayette Street, and the main street of Old Town, King Street.

The three-block long Commerce Street was constructed in the late 1700s to accommodate large wagons traveling from the western farmlands to the port of Alexandria. The diagonal roadway maintained these wagons from taking sharp right-angled turns onto King Street.

In keeping with the history of Commerce Street, the design of the library retains the original intent of Commerce Street, avoiding any sharp right-angled turns. Consequently, Commerce Street continues as a one-way vehicular street through the ground level of the library. In addition, the northeastern end of Commerce Street shifted slightly south to accommodate a larger entry for the library on King Street.
As one of the few diagonal streets in Old Town, Commerce Street contains some of the most oblique and skewed buildings in the historic district, which made it an ideal site for a library based on anamorphic perspective.

Currently, a rug gallery resides on the site. The building is rectilinear and does not fit within its angled site. The form of the library combined the angles of the surrounding buildings with the angles of three interior corridors of the building. Its triangular shape descended from the simple rotation of the site to allow three exterior perspectival views and to maintain the perspectives of the internal corridors.
Map of Existing Old Town Alexandria
THE LIBRARY
1. Archives
2. Shipping/Delivery
3. Storage
4. Mechanical
5. Mechanical
6. Janitor's Closet
7. Mechanical
8. Courtyard
9. Marionette Storage
10. Book Binding/Repair
11. Workroom
1. Lobby
2. Circulation Desk
3. Gift Shop/Cafe
4. Office Foyer
5. Offices
6. Janitor's Closet
7. Mechanical
8. DVDs/Films
9. Computer Lab
10. Courtyard
Level +1 Plan

1. Suspense/Thriller Stacks
2. Reading Area
3. Storage
4. Mystery Stacks
5. Reading Area
6. Quiet Room
7. Quiet Room
8. Janitor's Closet
9. Mechanical
10. Group Study Room
11. Mythological Stacks
12. Reading Area
Level +2 Plan

1. Rhythmic Stacks
2. Children’s Reading Area
3. Meeting Room
4. Fantasy Stacks
5. Reading Area
6. Quiet Room
7. Quiet Room
8. Janitor’s Closet
9. Mechanical
10. Fairy Tale Stacks
11. Large Conference Room
12. Small Conference Room
13. Story-time Room
Exterior and Interior Section Perspective of Corridor
Two-Point Perspective of Monumental Stair
Photos of Model
Photos of Model
Perspective from Top of Courtyard Looking Down

Perspective from Bottom of Courtyard Looking Up
Perspective of Corridor Illusion
References


