The influence of Anne Tyng

On how Anne Tyng and her architectural objectives were the geometrical conceivers of projects together with Louis Kahn

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17-4-2024
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Abstract

Anne Tyng is an architect who has been strongly influenced by her interest in geometry within the field of architecture. The use of Platonic solids is evident in Tyng's designs. However, for a long time Tyng was undervalued for the influence she had on the designs that Tyng created with Louis Kahn. This thesis explores what Anne Tyng's architectural goals were and what influence Tyng had on the designs Tyng and Kahn made together. For this a literature research is done and nine designs, three by Tyng, three by Kahn and three joint projects, are analysed and compared. In Anne Tyng's designs, Platonic solids, combined geometrical hierarchy and human scale emerge as Tyng's objectives, mainly in the structure of the designs. Louis Kahn, on the other hand, uses more two-dimensional structures, regular polygons, within his floor plans, in addition to focusing on light and central places within the buildings. Comparing the three joint projects, it is clear that the structures are mostly made out of Platonic solids, indicating the influence of Anne Tyng. The designs also focus on light and central spaces, which are influences of Louis Khan. This points to the influence of both architects, with Anne Tyng as the 'geometrical conceiver'.

Keywords: Anne Tyng, Louis Kahn, Platonic solids, geometry in architecture

Inhoud

Introduction

Anna Tyng was an architect and educator. Her career was influenced by her passion for using geometry in architecture. She worked for Louis Kahn for many years, but although she had a big influence on his work, her role was often overshadowed by Kahn's fame. For a long time she did not receive credit for the buildings she helped to design (Schaffner et al., 2011).

In addition to her work as an architect, Tyng was also an educator for 27 years, during which time she wrote essays. One of her essays is 'From Muse to Heroine. Towards a visible creative identity' (Leavitt et al., 1991). Written in 1988, the essay highlights some of the women throughout history who have been undervalued and have fought for their rightful place in the profession. Tyng did not refer directly to her own experiences, although her life and career bear a strong resemblance to the theme.

In recent years, more research has been done on Anne Tyng's collaboration with Louis Kahn, showing how much influence she had on his designs. Càndito (2019), for example, examines projects designed by both architects, but places more emphasis on Tyng's influence. More recently, Càndito and Meloni (2022) focus more on Tyng's life, but also discuss several joint projects by Anne Tyng and Louis Kahn. This body of research delves deeper into the professional and creative partnership between Anne Tyng and Louis Kahn.

However, her contributions to architecture went beyond design, integrating geometric principles into practice and theory. Ligler (2024) delves deeper into Anne Tyng's Space Structures, focusing on Anne Tyng and especially her designs and methods. Similarly, Carrero (2020) focuses on Tyng's methods and gives credit to her innovative architectural designs. Fewer studies explore her writings on theory in architecture.

This thesis focuses on Tyng's architectural objectives and how they influenced her designs and those she created with Louis Kahn. A number of methods are used to establish these aims. The research begins with an analysis of archival material to examine Tyng's own writings on architectural principles.

The following chapters examine a total of nine projects. Starting with three of Tyng's own designs, The Walworth Tyng Farmhouse, Erdman Hall Proposal and Four Poster House. In the next chapter, three of Louis Kahn's projects are examined further to explore how Anne Tyng's objectives influenced the designs the two made together. The projects are: Goldenberg House, the Unitarian Church of Rochester and the Bangladesh National Assembly. In addition, Yale University Art Gallery, Trenton Bath House and The City Tower of Philadelphia are projects that the two architects worked on together and are explored in chapter four. These chapters highlight the design principles, focusing on the geometry of the projects. This is done through literature research and analysis of the projects. By comparing the designs a conclusion can be drawn to the question: What kind of influence did Anne Tyng have on the designs that Kahn and Tyng worked on together?

In conclusion, Anne Tyng was an architect influenced by geometric principles in architecture. For much of Tyng's career she collaborated with Louis Kahn, and while some literature has explored their joint projects, her specific influence on the designs she developed with Kahn has been underexplored. The research question of this thesis is: *'What were Anne Tyng's architectural objectives and how did they influence the designs Louis Kahn and Anne Tyng made together?'*

Chapter 1 Tyng's interest in geometry

Anne Tyng was an architect, an educator and a writer, all of these skills focused on the same interest, geometry in architecture. The subjects of her writings are mostly theories about the relationship between geometry, Platonic solids and architecture (Tyng, 1996). These theories can be found in Tyng's designs as an architect. The origin of this interest and the transition between theory and design is explored in this chapter. The question is: What are Anne Tyng's interests in the field of architecture and how did they develop?

Early life and study

Anne Tyng was born in 1920 in China, where she lived until 1934, when she moved to the United States. Tyng graduated from Radcliffe College in 1942 and from Harvard University in 1944 with an master in architecture. Soon after, Tyng joined the firm of Stonorov and Louis Kahn. Here Tyng mainly designed housing and urban planning projects. In 1947 Louis Kahn started his own practice, which Anne Tyng joined. It was here that Tyng began to collaborate with Louis Kahn on designs (Schaffner et al., 2011). In 1949 Tyng obtained her licence to practice architecture in Pennsylvania.

Figure 1. Anne Tyng with Tyng Toy. ("Put Together Toys From Plywood Parts", 1950)

Anne Tyng's interest in geometry became apparent with the invention of the Tyng Toy in 1947 (figure 1). It is a toy made up of several elements that can be Assembly by children into different pieces of furniture, such as a chair, a car or a horse. It shows that Tyng wanted to inspire children to learn by doing (Tyng Toy, n.d.).

Platonic solids

Platonic solids appear several times in Tyng's writing. Platonic solids are three-dimensional shapes in which all faces are identical, all edges are the same size, and all angles between faces are the same. There are only five Platonic solids: Tetrahedron (4 triangular faces), Cube (hexahedron), (6 square faces), Octahedron (8 triangular faces), Dodecahedron (12 pentagonal faces) and Icosahedron (20 triangular faces), also shown in figure 2. These solids have been used as inspiration by artists and architects (Heilbron & J.L., 2025). Anne Tyng also writes about how the Platonic solids are the basis of her designs.

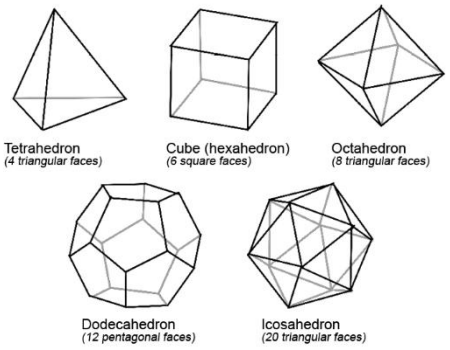

Figure 2. The Platonic solids (own image).

Bucks country elementary school

Bucks Country Primary School is a project designed by Anne Tyng in 1951-1952 and can be seen as the beginning of her designs with geometry. Anne Tyng's growing interest in geometric form led her to an experimental exercise in which she focused on gravity in combination with geometric shapes. The starting shape was a two-dimensional triangle and a three-dimensional tetrahedron, a Platonic solid. With these shapes it was possible to create spaces in the building, making a large element out of several smaller elements. Tyng created the model shown in figure 4. With this design, Anne Tyng materialised her theories and experimented with the possibilities (Carrero, 2020).

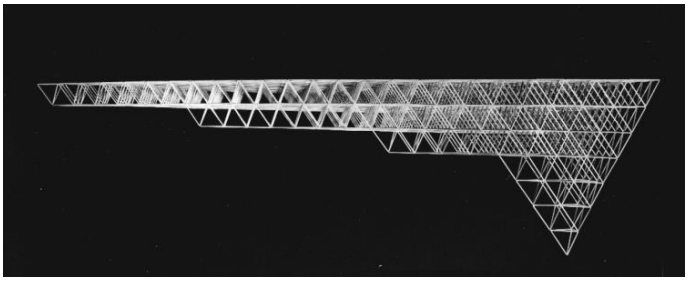

Figure 4. Wooden model, Bucks country elementary school (Tyng, ca. 1952).

Conclusion

Anne Tyng's interests in the field of architecture have mostly been in geometric forms, more specifically in the Platonic solids. These are five specific three-dimensional shapes that can be used as spatial structures due to their characteristics, symmetry and integrity. As her interest grew, Anne Tyng turned the theory into an experimental exercise in the form of Bucks Country Primary School. Here Tyng used the tetrahedron solid to create open spaces for education, creating a system of how this form could be used.

Chapter 2 Tyng's designs

Bucks Country Primary School is an example of Anne Tyng's designs, it is a starting point for Tyng's geometric designs, after which Tyng designed more projects on her own. She did this before, during and after her time in Louis Kahn's office. In this chapter three designs by Anne Tyng will be examined. The question that will be answered is: What was the influence of geometry, specifically Platonic solids, in Anne Tyng's designs?

The Walworth Tyng Farmhouse (1952)

One of Tyng's projects is the Walworth Tyng farmhouse, shown in figure 4. Tyng designed this house for her parents while working in Kahn's office. The brief for the house was to have a pitched roof. To achieve this, the design of the house is a total space frame. The frame is titled so that a square floor plan can be created while still using the strength of a space frame. In 'Synthesis of a Traditional House with a Space-Frame' Tyng (1991), Tyng writes about the design process of the house. Her interest in geometry is clear. As she concludes: 'The Walworth Tyng house was built as a total space-frame structure, a consistent geometry that contains living space within itself and extends in seemingly random asymmetry to form dormers, trellises and an entrance balcony' (Tyng, 1991, p. 273).

Figure 4. Skeleton of the Walworth Tyng Farmhouse (Tyng, n.d.).

Erdman Hall Proposal (1960)

Anne Tyng designed a proposal for Erdman Hall, Bryn Mawr College, around 1960. At the time, Anne Tyng was working in Kahn's office, and the project called for housing for 130 female students with varying housing needs (Càndito & Meloni, 2022). Tyng created a proposal based on the geometry of the Platonic solids: 'Explorations of the 'pure' geometry of the Platonic solids -the beginnings of form - evolved to less literal variation in one of my proposals for Erdman Hall dormitory at Bryn Mawr in Kahn's office in 1961 ´, (Tyng, 1995, p. 80). Tyng created a complex spatial system of squares and octagons that resulted in a design that was adaptable. The floor plan of this system is shown in figure 5. It could be used to create a single unit for one student, or a dormitory for several students. In this design, Tyng brought together three main elements in the hierarchy of geometry, structure and human use (Tyng, 1995, p. 81). Candito (2024), wrote about it as: 'With the adoption of irregular octagons in Erdmann Hall, in fact, the configuration seems to lose regularity, but it gains architectural meaning and flexibility, also from an inclusive point of view that we today can use in the Universal Design discipline that values differences among people'. This expresses how Anne Tyng started with Platonic solids as a base and combined that with the other objectives, human scale and flexibility, creating a adaptable structure.

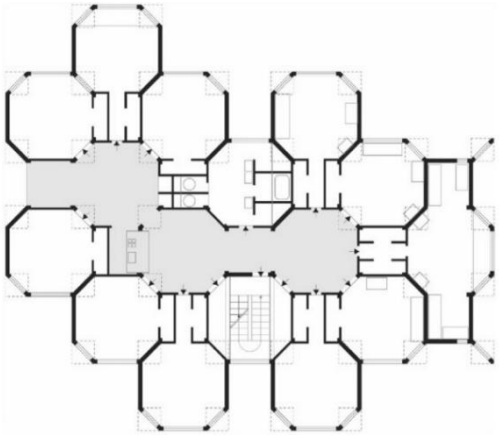

Figure 5. Drawn over floorplan, first sketch by Anne Tyng. (Càndito & Meloni, 2022)

Four Poster House (1971-1974)

The Four Poster House, shown in figure 6, is an unbuilt piece of architecture, but a good example of Tyng's interest in geometry. The project was designed as a summer house and its characteristics can be derived from Tyng's theoretical studies of geometry (Càndito & Meloni, 2022). Tyng herself wrote of it as: "Although not based on 'pure' geometry, the house is defined by a modified octahedron containing a modified cube" (Tyng, 1995, p. 82). The house is raised off the ground by four main pillars, creating a square. With this shape, Tyng designed the supporting structure so that all elements would work as effectively as possible. An order of four can be found several times throughout the design of the house. This design shows that although the house is not based solely on geometric shapes, Tyng is still influenced and starts designing from a platonic solid.

Figure 6. Model of the Four Poster House by Tyng (James Prinz, 2011).

Conclusion

In conclusion, these three designs by Anne Tyng illustrate the interest in geometry in architecture. In table 5.1, the main objective is highlighted. All three projects start with a three dimensional geometric form, a spatial frame or a Platonic solid. From this base, structure and human scale are added. This combination is evident in Tyng's own designs. These three projects show that Tyng uses her theory of Platonic solids to create and design the buildings, using Platonic solids and creating a system that is adaptable.

Chapter 3 Kahn’s designs

In the designs made by Tyng, Platonic solids are the recurring element. The question arises as to whether Louis Kahn's designs would be different without his collaboration with Anne Tyng, and whether the focus would not be on Platonic solids. Louis Kahn designed many projects in his career, also without the help of Anne Tyng. This chapter examines some of Louis Kahn's own designs with the question: 'What was the influence of Platonic solids in Louis Kahn's own designs?

Goldenberg House (1959)

The Goldenberg House, a project designed by Louis Kahn in 1959, is another example of a design that was never built. However, it is regarded as a design that marked the beginning of a new way of designing for Louis Kahn. The model of the design is shown in figure 7. The main focus of the building is the central open square with layers of larger squares around it. In these, the corners of the square are removed to create separate parts in the building. This creates the flow of the building, with a heart at the centre of the building (Hicks, 2021). Kahn says of the removed corner: “*In an ordinary square you always have the problem of these ends which are hard to reach. You must penetrate this (the "functional" areas) to come to the spaces - the final spaces being what they will be,*” (Kahn, 1961). Here he mentions how he uses the basic form, the square, which he alternates to create the desired spaces in the building. In this building, the focus is on the two dimensional shape, the square, in the layout and its alternation.

Figure 7. Model of the Goldenberg House by Louis Kahn. (Kahn, 1959).

Unitarian Church of Rochester (1962)

The Unitarian Church of Rochester was designed by Louis Kahn, a sketch of the building is shown in figure 8. The building was completed in 1962, with an extension added in 1969. Khan talks about the way he designed this building, and identifies five stages that the design went through (Khan, 1961). The first was talking to people and discussing their experiences in the church. From there a scheme could be created. The fifth stage involved light and how that experience could be enhanced. In this text, Louis Kahn explains how the design took shape from the previous experience of the churchgoers. Although he mentions shapes such as squares and circles, Platonic solids are not mentioned in this interview. Fleming (2014) investigates the geometric system of the church design and discusses Gast's (1998) claim that Kahn used a golden ratio in the building. Fleming's calculations show that this is probably incorrect.

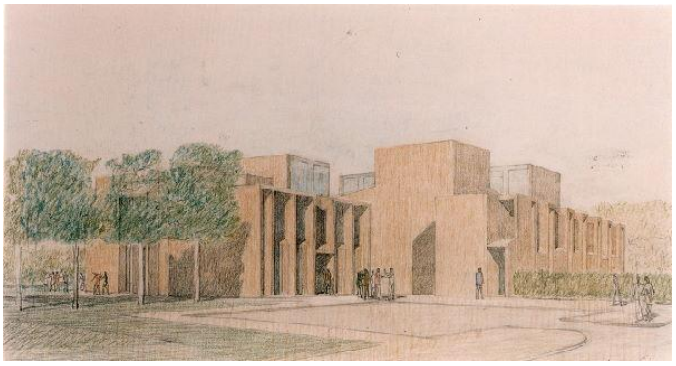

Figure 8. Sketch of the Unitarian Church of Rochester by Louis Kahn. (Kahn, ca. 1961).

Bangladesh National Assembly (1982)

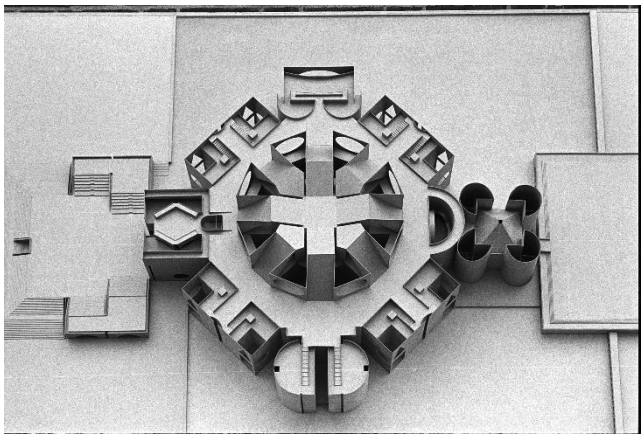

Figure 9. Model of the Bangladesh National Assembly by Louis Kahn (Pohl, ca. 1962).

Kahn began designing the National Assembly building, shown in figure 9, in 1962 and the building was completed in 1982. Kahn died in 1974 before the building was completed. The Assembly is located in Dhaka and houses many different functions, including assembly halls, a mosque, a cafeteria and meeting rooms. The building is seen as the sum of formal research that he experimented with in earlier designs (Càndito, 2022). The plan of the building can be drawn using squares, and by rotating them inside each other, in this way the levels of the building are created. In the centre is an octagon. By using the geometry of the square, a connection can be made between the building and the surrounding houses. However, there is one geometry that stands out in this building, and that is the mosque, which is not aligned with the rest of the building's geometry, but faces Mecca (Càndito, 2022).

Conclusion

A recurring geometric system in Kahn's designs are squares, this is a regular polygon. These are used in the floor plan to create order. Table 5.2 concludes the main objective for each design. In the Goldenberg House, layers are created within the building to suit the function. There is often an open space at the centre of the building, the 'heart'. With this order, adjustments can be made to the shape, which is most often a square. Adaptation can mean removing the corners, Goldenberg House, or rotating the squares, Bangladesh National Assembly. In these designs, Platonic solids are not used as the starting point of the design and therefore do not have much influence on the process. Instead of this geometric system, regular polygons form the basis of the designs and are an influence.

Chapter 4 Tyng and Kahn's designs

During the time that Anne Tyng worked in the office of Louis Kahn, the two designed buildings together. In chapter 2 and 3, the design objectives of Anne Tyng and Louis Kahn are discussed, mainly focused on the geometrical base. Anne Tyng's main focus laid within Platonic solids, where Louis Kahn worked more with the geometric shape regular polygons. In the chapter, three designs that Louis Kahn and Anne Tyng worked on together are discussed. These projects are the City Tower of Philadelphia, the Trenton Bathhouse and the Art Gallery. To research what Tyng's geometric influence was on the together designed buildings, the base geometry may be explored further. These projects are discussed in this chapter, along with the question: What was the influence of geometry, spatial structures and Platonic solids in the joint design projects?

Yale University Art Gallery (1953)

The Yale University Art Gallery, shown in figure 10, is a building designed by Kahn and Tyng and built in 1953. The building is notable for its tetrahedral concrete slab ceiling. Tyng contributed to this project with the design of the triangular staircase and the roof structure. The roof structure can be found in two previous projects by Tyng, the Walworth Tyng Farmhouse and the Primary School. These projects can be seen as pioneering architectural experiments for this project (Càndito, 2019). The rest of the design is by Kahn, where he focuses more on the open spaces created by the roof structure and, for example, the lighting that can be created by it (L. I. Kahn, 1955).

Figure 10. Hall inside Yale University Art Gallery. (Ludwig, n.d.)

Trenton Bath House (1955)

The Trenton Bath House is part of a larger project that was never built, it is designed for the Jewish Community Centre in the Delaware Valley. The building consists of four square base pyramids used as roofs, supported at each corner by a large open rectangular column. Although the square base pyramid is not a platonic solid, it can be seen as a variant of the platonic solid, the tetrahedron, but also as a half of another platonic solid, the octahedron (Càndito, 2019). Using the cube and a variant of the Platonic solids, a structure is created in which four rooms with roofs surround an open atrium. Kahn (1957) writes about the Trenton Bath House mostly in combination with the order in which the rooms are placed, without mentioning the role of Platonic solids.

Figure 11. Picture op the Trenton Bath House. (Kahn, ca. 1955).

The city tower of Philadelphia (1952-1957)

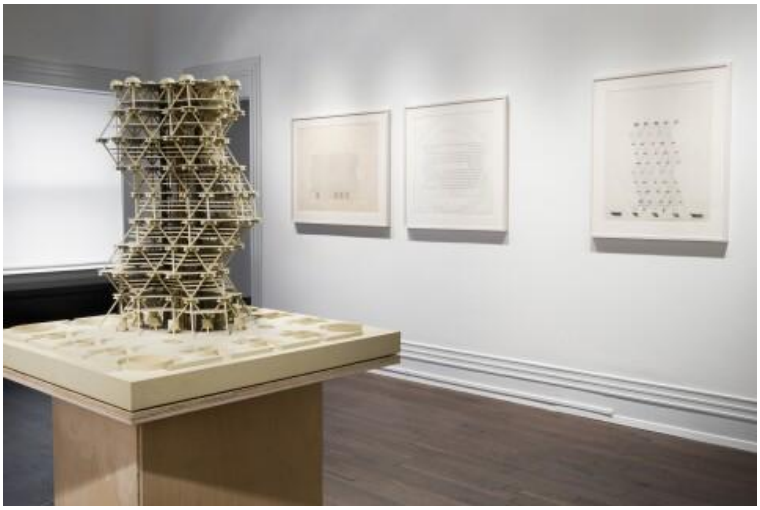

Figure 12. Model of The City tower of Philadelphia by Louis Kahn and Anne Tyng. (James Prinz, 2011).

The City Tower of Philadelphia is a project that Louis Kahn and Anne Tyng designed together over a period of 6 years, 1952-1957. It was a proposal that was never built. It is, however, a clear project to show what Louis Kahn and Anne Tyng could design together. The tower consists of a fully triangulated space frame and the design was inspired by the discovery of the DNA double helix in 1953 (Tyng, 1996). With this inspiration, the design of a 'rotating' tower with tetrahedron-octahedron geometry began to emerge. In L. I. Kahn (1953), Kahn talks about the first version of the design, in which the tower is lower than in the final design. In the text he mentions what the results of using the Platonic solids are: mainly structure and systems. It is important to note in this building that although Louis Kahn initially took credit for the geometric design, he later recognised that Tyng was the 'geometric conceiver' of the tower (Càndito, 2019).

Conclusion

The tree projects all start the design with the use of Platonic solids. Table 5.3 summarises the main objective for each design. The Art Gallery and City Tower use the same elements, the tetrahedron, and can be seen as inspirations for each other. The Trenton Bath House is also a variation of the Platonic solid. In these designs it is clear that the Platonic solids were deliberately used to create a strong structure and to create open spaces within the project. An addition to the use of the platonic solid is the inspiration from the DNA structure in the City Tower mentioned by Anne Tyng (1996). Other objectives evident in the projects are light and central spaces within the buildings.

Discussion

There are two important limitations to this research. The designs discussed in this thesis were chosen by looking at the generally better known designs of the two architects. This had the advantage that literature had been written about them and more knowledge was available for this research. While these nine projects provide a general representation of the projects the two architects have produced separately and together, they are not all the designs they have produced. This means that conclusions drawn about their overall objectives may differ from other projects by Kahn and Tyng that were not included in this thesis.

The research also faced some limitations in terms of access to sources. Primary sources such as writings and sketches of Tyng and Kahn's designs were difficult to access due to the time and place of the research. Most of the archival material is located in the United States, while the research is being conducted in the Netherlands, which created challenges in gaining access.

Future research could continue this thesis by investigating additional projects and completing a further analysis of Kahn and Tyng's sketches and notes if access to these primary sources is possible.

Conclusion

This thesis answers the main question: 'What were Anne Tyng's architectural objectives and how did they influence the designs Louis Kahn and Anne Tyng made together?'. In order to answer this question, four questions were investigated. Starting with the basis of Anne Tyng's designs, her interest in geometry. Where does this come from and what are Tyng's main design goals? Nine projects are then compared to explore the influence of Anne Tyng on the designs that Kahn and Tyng made together.

Anne Tyng's interest in geometry

Anne Tyng's interest in architecture was mainly in the geometric field of architecture, more specifically the Platonic solids. These are five specific three-dimensional forms that can be used as spatial structures because of their characteristics, symmetry and integrity. Anne Tyng has developed these in theory and used it them in practice. One experimental exercise where the use of Platonic solids was evident was in the design of Bucks Country**.**

Comparison of projects

Comparison of projects nine projects are examined in the following sections. The focus of this research is on the geometric base. The three tables below highlight the main concepts of each design.

Anne Tyng

Table 5.1 shows three designs by Anne Tyng, from which it is clear that Anne Tyng focuses on three-dimensional geometric shapes. All three designs are based on a Platonic solid or a modification of it, confirming the theoretical interest in Platonic solids that Anne Tyng has shown. Another objective that becomes relevant in the Erdman Hall proposal is the creation of a system from a hierarchy in geometry, so that an adaptable structure can be created. In this proposal, Anne Tyng started with a base of Platonic solids and added structure and human scale. Within this, she creates an adaptable system from geometric shapes and hierarchy to adapt to human needs.

Table 5.1. Design objectives, projects of Tyng

Design	Starting focus	Dimensionality	Other important focus
The Walworth Tyng Farmhouse	'Total' space-frame, existing of tetrahedron	Three dimensional (Platonic solids)	
Erdman Hall proposal	tetrahedron and octahedron	Three dimensional (Platonic solids)	Hierarchy of geometry and grow patterns, adaptability
Four poster house	Octahedron and cube (modified)	Three dimensional	

Louis Kahn

Table 5.2 shows three designs by Louis Kahn without Anne Tyng. All three designs started from a two-dimensional geometric base. In texts written by Louis Kahn and/or about his designs, Platonic solids are often not mentioned. Instead, when talking about geometric shapes, regular polygons, two-dimensional shapes, are mentioned as the basis of his designs. Squares are most often found in the literature, for example Candito (2022) states that the National Assembly of Bangladesh is made out of squares rotated around each other. However, Louis Kahn's other focuses, light and central spaces in buildings, become more evident in these projects.

Table 5.2. Design objectives, projects of Kahn

Design	Starting focus	Dimensionality	Other important focus
Goldenberg house	square	Two dimensional	Central space in the building
Unitarian church of Rochester	Squares and circles	Two dimensional	Lighting
Bangladesh National Assembly	Squares and octagons	Two dimensional	Central space in the building

Anne Tyng and Louis Kahn

Table 5.3 summarises three designs that Tyng and Louis Kahn worked on together. In all three designs the use of Platonic solids is evident. However, these are not the only design objectives for the designs. A geometric structural system is created for the City Tower in Philadelphia, and light and open space were important objectives in all three projects. The design for the Yale University Art Gallery uses Platonic solids in the ceiling structure, but otherwise the emphasis in the floor plan was on a central space and the use of the ceiling to create good lighting (L. I. Kahn, 1955). The City Tower of Philadelphia, on the other hand, has its focus on the structure, with its triangulated space frame. Louis Kahn said here that Tyng was the 'geometric conceiver' (Càndito, 2019). These three projects show the influence of both architects in the different designs. When focused on the structure, a lot of three dimensional shapes, mainly Platonic solids are used.

Table 5.3. Design objectives, projects of Kahn and Tyng

Design	Starting focus	Dimensionality	Other important focus
Yale University Art Gallery	Ceiling: tetrahedron	Ceiling: Three dimensional	Lighting and open spaces
Trenton Bath House	Square based pyramid	Three dimensional	Space between the structures
The city tower of Philadelphia	Triangulated space frame	Three dimensional	

Influence of Anne Tyng

In order to answer the question: 'What were Anne Tyng's architectural objectives and how did they influence the designs Louis Kahn and Anne Tyng made together', all chapters have to be combined. Starting with Anne Tyng's architectural aims, the main focus of Anne Tyng's work is on geometric forms in architecture, mostly focusing on Platonic solids. This is evident in Tyng's research into her own designs, along with the aim of creating an adaptable structure combined with human scale.

Louis Kahn, on the other hand, focuses more on the floorplan, with a two-dimensional geometry, the polygon, which is evident in the three designs studied in this thesis. Other major objectives in his designs are lighting and a central space within a building.

Comparing the aims of the two architects with the three designs that Tyng and Kahn made together, the influence of both becomes clearer. The structural system of the three designs focuses on the Platonic solids, or a modification of them, demonstrating the influence of Anne Tyng. However, other objectives can also be found, such as light and the search for a central or open space in the buildings. This indicates that the influence of both architects was present in the design of the building.

In conclusion, Anne Tyng's architectural objective was mostly to create a geometric structure, often based on Platonic solids. These structures can be found as the basis for the designs that Anne Tyng and Louis Kahn created together, indicating that Anne Tyng had a strong influence as the 'geometric designer' of the projects.

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Leavitt, J., Berkeley, E. P., & McQuaid, M. (1991). Architecture: A Place for Women. *Journal Of Architectural Education*, *44*(4), 237. https://doi.org/10.2307/1425146

This collection tells the story of what several women in architecture have achieved, how they see themselves and how they see others. The collection also includes an essay by Anne Tyng: From Muse to Heroine. Towards a visible creative identity. In this essay, she does not talk about her own experience, but sheds light on some other women's stories. However, she does talk about the future of women in architecture and her own position on muse and heroine.

For my thesis it is interesting to have an essay written by Anne Tyng herself on a subject close to my research. Although she does not talk about her own situation, I wonder if the future she sees for women in architecture also describes her own future. It might be interesting to compare her own experiences with what she says in this essay.

Càndito, C. (2019). The Role of Geometry in the Architecture of Louis Kahn and Anne Tyng. In *Lecture notes in networks and systems* (pp. 57–66). https://doi.org/10.1007/978-3-030-29796-1_5

Càndito, C., & Meloni, A. (2022). Geometry and Proportions in Anne Tyng's Architecture. *Nexus Network Journal*, *24*(2), 463–480. https://doi.org/10.1007/s00004-022-00599-8

Geometry and Proportions in Anne Tyng's Architecture is about Anne Tyng and her fascination with geometry. It mentions a number of projects where Anne Tyng and Louis Kahn worked together. But it also gives information about her youth and the time after Louis Kahn.

This paper could be interesting for my thesis because it tells a lot about Anne Tyng and her motivations. It also tells a lot about her whole history and sees Tyng as her own person, not just someone who worked with Kahn. It went deeper into the opinions of Anne Tyng.

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James, K. (1995). Louis Kahn's Indian Institute of Management's Courtyard: Form versus Function. *Journal Of Architectural Education*, *49*(1), 38. https://doi.org/10.2307/1425375

This article looks at some of Louis Kahn's designs. And compared to each other as opposed to form versus function. This could be an interesting article for my thesis, as it also mentions some works by Louis Kahn and Anne Tyng.

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This article is mainly about the design of the City Tower by Louis Kahn and Anne Tyng. The article mentions both with their own contributions to the design. It also mentions other designs that the two made, and how the interests of both architects are reflected in the never built City Tower design.

It is interesting to have an article where both Louis Kahn and Anne Tyng are mentioned about the design. It goes deeper into the design and who influenced what. Which gives more insight into Anne Tyng's influence on Kahn and the architecture.

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This paper could be helpful in researching Anne Tyng's influence on architecture because it looks at Anne Tyng's design principles. It describes how she used rule-based and logical steps in spatial frameworks and how this could be used today.

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