Chapter 5: Edification
Ending with the “Unmeasurable”

Thus far this dissertation has avoided discussion of the stylistic aspects of Kahn’s built work and focused instead on Kahn’s “forms”. The present chapter turns away from Kahn’s fundamental planning strategies to the visual qualities of his buildings which Kahn claims to address through a process he calls “design”. Can those passages from “Form and Design” which address the aesthetic qualities of Kahn’s buildings, be interpreted and developed in terms of *The Republic*?

Kahn speaks consistently of his buildings as instruments of good. He believes in buildings which are good for their users, viewers and society generally. In terms of *The Republic*, Kahn’s buildings are good because they are conceived as participants in “forms” with comparable names. According to a Platonic interpretation, Kahn’s theory is likely to lead towards the production of buildings with greater utility than buildings conceived by other means. For Plato, buildings appropriately modelled on the Forms corresponding to their class names would perform their respective functions (*ergon*) more efficiently; this is because for every type of thing, there is a corresponding work. In Book 2 of *The Republic* it is argued that just societies provide an environment in which people and things are allowed to perform their particular work or function to their full potential. In turn, properly functioning use items, which are true to their Forms, do not breed ignorance (in the way that imitative poetry or painting does). Since Kahn models buildings on “forms”, his buildings would, from a Platonic standpoint, edify their users simply by working well for them.

The present chapter examines other ways in which the text “Form and Design” may conduce good buildings with the capacity to edify their users. In terms of *The Republic*, edification means leading the minds of users or viewers upwards, towards the Forms, rather than downwards, by encouraging them to contemplate an illusionary and deceptive realm of sensorial experience. This chapter considers the following questions. Does “Form and Design” advocate a kind of architecture that
might liberate users from their attachment to the visible realm? Being sensible phenomena themselves, how can buildings lead users’ minds upwards towards Plato’s purely intelligible realm? In terms of The Republic, can buildings associated with Kahn’s “form and design” thesis be interpreted anagogically?

“Form and Design”, it has been seen, begins with the young architect dreaming of “spaces full of wonder,”¹ but with the first line on paper, “the dream becomes less”.² Following this story, Kahn leaves clues as to the metaphysical status of the young architect’s vision. The dream has been interpreted as belonging to a quasi-religious realm of “forms” which is beheld by the psyche. Through his analogy of the spoon and examples from his own work Kahn also describes the relationship between the realm of dreams and the realm of lines on paper. However, it isn’t until much later in the text that the young architect’s real dilemma is considered. How can a line on paper, let alone a building, retain any of the splendour of that first vision?

Kahn returns to the young architect’s initial inquiry two thirds of the way through his text. First he argues that a great building “must begin with the unmeasurable, must go through measurable means when it is being designed and in the end must be unmeasurable”.³ One paragraph later, he reiterates this view, arguing that

a building has to start in the unmeasurable aura and go through the measurable to be accomplished. It is the only way you can build, the only way you can get it into being is through the measurable. You must follow the laws but in the end when the building becomes part of living it evokes unmeasurable qualities. The design involving quantities of brick, method of construction, engineering is over and the spirit of its existence takes over.⁴

Kahn’s approach begins in a realm which is similar to Plato’s intelligible realm with the realisation of ideal “forms”. These “forms” are then translated into the sensible realm through a process referred to as “design”. Yet at the end of this process Kahn wishes his buildings to retain what he would call “unmeasurable” qualities, or what
Plato would call intelligible qualities.

Many of the accounts at the beginning of this dissertation suggest that Kahn’s buildings possess a spiritual or metaphysical aura. The present chapter, through an anagogical interpretation of Kahn’s text, “Form and Design”, and his built works in terms of The Republic, endeavours to account for the numinous quality which so many scholars recognise in Kahn’s buildings.

A discussion of Plato and spiritually uplifting architecture might call to mind the architectural embodiment of sacred geometry and mathematics which is associated with Gothic and Renaissance church architecture. Even though that tradition is often linked to Plato — via isolated passages in his Timaeus or through figures such as Saint Augustine — it is important within the present context that Neoplatonic impulses and architectural strategies not be confused with the message of The Republic as it can be extended to architecture.

The embodiment within Gothic cathedral plans of proportions based on musical consonants (1:1, 1:2, 2:3 and 3:4), can be traced to Saint Augustine. While in The Gothic Cathedral Otto Von Simson argues that Augustine “shares with Plato both distrust of the world of images and belief in the absolute validity of mathematical relationships”,² there is little in Plato’s middle period dialogues to suggest that he would advocate the inscription of such ratios in architecture. Rudolf Wittkower argues that the use of musical harmonies by Renaissance architects is consistent with Plato’s views on good and bad mimesis. Wittkower writes that the architect who relies on these harmonies “is not translating musical ratios into architecture, but is making use of a universal harmony apparent in music”.³ Plato might laud Wittkower’s appreciation of the metaphysical status of musical ratios, but again, there is nothing in The Republic to suggest that the same ratio which produces a pleasant sound also produces a pleasant sight. It is stated that ugly rhythms and ugly harmonies can spoil architecture and music alike (401a), but this passage is aimed “at producing tough soldiers, experienced enough in intellectual culture not to treat the unarmed citizens savagely, but not so softened by sweet food
and music as to become incapable of fighting the city’s enemies”. This can be read as a ban on florid or Baroque architecture, but it would be difficult to interpret Plato’s ban as a call for the inscription of hidden proportions based on musical harmonies.

The Neoplatonists’ belief that music and buildings ordered according to certain proportions resonate in the ears and eyes of humans who are likewise encoded, can be traced to Plato’s Timaeus. In that dialogue it is proposed that the physical world was shaped by a Demiurge who impressed the Forms upon matter and made all physical things from the same basic admixtures of primary elements. These admixtures produced the following progressions: 1,2,4,8 and 1,3,9,27. Between subsequent numbers in these progressions are harmonic ratios, which intrigued the Neoplatonists. For them other fascinating coincidences were to be found between Plato’s description in Timaeus of a concentric cosmos radiating about God⁸ and the Vitruvian figure,⁹ which is similarly inscribed. The fascination with visible proofs for Plato’s cosmology is, of course, totally at odds with The Republic’s epistemology. If sense knowledge is illusionary, as Plato maintains in The Republic, then how can observations of sensible phenomena prove anything?

The Neoplatonists’ predilections were translated into their architecture. For example, the ribs of Gothic fan vaults are described as didactic displays of the admixtures¹⁰ and the proportions of rooms in a Palladian villa are described as demonstrations of the ratios which exist between the numbers in each progression.¹¹

These examples involve some kind of inscription of omnipresent cosmological principles, as set out in Plato’s Timaeus, into buildings, to give those buildings a divine authority rooted in Plato’s dialogues. As Pérez-Gómez writes, the immutable realm of Being, “symbolized by mathematical proportion, was intentionally embodied in man-made artefacts[…]. The aim was to […] frame human institutions (and power!) with the true order”¹²

That Plato’s creation myth from Timaeus should have had such an influence on Gothic and Renaissance architecture while dialogues such as The Republic were
ignored, is an accident of history. An impression has been created that the admixtures, harmonic proportions, the golden mean, the square root of two and various elementary figures are central to Plato’s thinking and that these can be viewed apart from Plato’s politics and epistemology. While the Neoplatonic tradition in architecture can be judged on its own terms, it has little to do with Plato. Rather, the Neoplatonic tradition in architecture developed rules of its own, quite removed from the original intentions of the figure from whom it claims its authority. In his introduction to *Timaeus*, Jowett warns of the Neoplatonic tendency to elicit doctrines “quite at variance with the spirit of Plato”. As it investigates nature, Jowett points out, *Timaeus* is not expressed through the mouth of Socrates, but by a Pythagorean, since in *Phaedo* Socrates refuses to even discuss physics. Concerned by its undue influence on posterity, Jowett warns that *Timaeus* is not central to Plato’s philosophy, but is like “a detached building in a different style”. Seen in the context of Plato’s philosophical system, the primary role of *Timaeus* is to explain why the physical world is not completely amorphous. Rather, due to the actions of the Demiurge, who impressed the Forms upon matter, the world contains many naturally occurring particulars — people for example — resembling Forms. Most significantly, Plato’s *Timaeus* doesn’t call on craftsmen to be fascinated with numeric coincidences, or their architectural offspring, harmonic proportions, and it certainly doesn’t call for the didactic display of its numerology for theological purposes.

Kahn’s acknowledgment of the tradition in architecture of inscribing buildings with proportions based on musical harmonies is merely oblique. In the following statement, he imagines a space having the character of a sound.

> I imagine myself composing a space lofty, vaulted, or under a dome, attributing to it a sound character alternating with the tones of the space, narrow and high, with graduating silver, light to darkness.

Insofar as the Neoplatonic tradition in Western architecture is concerned, Kahn’s conception of space in aural terms is of some interest, since it recalls the connection
made by architects of that tradition between spatial proportions and musical consonants. As mentioned, Rowe had given Kahn a copy of *Architectural Principles in the Age of Humanism*, as a gift in 1956. Indicative of one prone to reading only the first few pages of books, Kahn appears to appropriate a simplified version of Wittkower’s thesis into his own theory, by attributing a sound character to space. Notably, in the introductory pages to *Architectural Principles*, Wittkower discusses Alberti’s belief that “in music the very same harmonies are audible which inform the geometry of the building”.

Despite his poetic description of space in aural terms, Kahn does not apply music based proportions to his First Unitarian Church and School in Rochester. Studies by the present author of the working drawings for this building have failed to identify ratios of 1:1, 1:2, 2:3 or 3:4 between the heights, widths and lengths of this building’s primary spaces or façades. However, according to Klaus-Peter Gast, Kahn does extend the Neoplatonic tradition by consciously inscribing his buildings with a hidden geometry. According to Gast, many of Kahn’s buildings emanate from what Gast refers to as a “Platonic Form”, the square. Gast also claims that one of Kahn’s frequent sayings, “what will be has always been”, relates directly to Plato. Thus Gast establishes Kahn as a kind of Platonist in word and in deed. On closer inspection, Gast’s study does not support the research hypothesis being explored here, that an anagogical interpretation of “Form and Design” and that text’s allied buildings can be made in terms of *The Republic*.

Before examining Gast’s analysis, consideration of an event which occurred late in the working drawings stage of this project provides some insight into Kahn’s interest, or disinterest, in proportion. Most unlike an architect who is concerned with mathematical proportions, Kahn allows the sectional proportions of this building to be altered late in its documentation stage, at the advice of acoustical consultants. The central ceiling of the sanctuary is flattened out and the four light towers are made lower and wider, so that acoustically they will act as part of the whole sanctuary space (Figure 38).
Figure 38: Acoustics advice to lower and broaden light towers.

In the office correspondence pertaining to this issue, there is no suggestion that any previously calculated proportional system would be affected by such a late change, or that any new proportional system would need to be conceived to accommodate such dramatic alterations.

In his chapter on the church in Rochester, Gast argues that the plan of this building has a strict geometrical order, which derives from a growth process of geometrically dependent extensions. The geometrical reconstruction of the building stems from an imaginary central square, the corners of which are defined by the inner edges of the aforementioned light towers above the sanctuary. The original
square is twice bisected along the long and short axis of the space to form four squares (Figure 39).

Figure 39: Gast’s analysis of First Unitarian Church, step one.

It is then claimed that the sanctuary’s width is determined by a major golden section growth of those imaginary quadrants across the sanctuary (Figure 40). In other words, measuring across the sanctuary, as opposed to along it, a major golden section relationship exists between the distance from the centre line of the sanctuary to the inner edge of the light tower and the distance from that same centre line to the inner face of the sanctuary wall. This line of reasoning is extended, with claims that the geometry of the whole building goes on growing, stemming always from this imaginary square formed by the inner edges of the four light towers.

Figure 40: Gast’s analysis of First Unitarian Church, step two.
If this is true, then upon accepting the acoustical engineers’ recommendation to make those towers wider — this occurs in December 1960, just six months prior to the commencement of construction in June 1961 — Kahn redesigns the entire building, applying a new geometrical system, which needs to originate from what is now a significantly smaller generating square. However, the files for this project contain no evidence that a last minute revision of this kind ever occurred. Between Kahn and his especially perspicacious clients, there are no letters to explain a further delay, or to explain changes to room sizes resulting from such a proportional revision. Faced with this evidence, it is hard to imagine such a major and time consuming revision occurring at all.

In addition, the First Unitarian Church and School in Rochester has been built in accordance with scaled working drawings. According to common practice, these drawings bear an instruction to builders that they work from written dimensions, rather than scaled measurements. It is through these dimensions that Kahn can be considered to formally and legally communicate his intentions. According to the written dimensions on Kahn’s working drawings, the sanctuary is 53’ wide, and 66’ long, and it is enclosed by a hollow blockwork wall with a uniform thickness of 2’. According to Gast, a major golden section growth based on half of the sanctuary’s width provides the radius for a large circle which touches the outer corners of the sanctuary, thus determining the sanctuary’s length (Figure 41).

Figure 41: Gast’s analysis of First Unitarian Church, step three.
In other words, the distance from each of the sanctuary’s outer corners to its centre (that distance will henceforth be referred to as \(x\)), should be 1.618 times greater than half of the sanctuary’s internal width (a distance henceforth referred to as \(y\)).

As detailed in the present author’s article, “Louis Kahn’s Platonic approach to number and geometry”,22 the distance referred to above as \(x\) will first be calculated for the diagonal distance from the outer corner of the sanctuary to its centre. According to Pythagoras’ Theorem,23 \(x^2\) equals half of the sanctuary’s external width (that being 28'-6") squared, plus half of its external length (that being 35'), squared.

\[
x^2 = 28.5^2 + 35^2
\]
\[
x^2 = 2037'-3"
\]
\[
x = 45'-1".
\]

Meanwhile, an identical \(x\) value should be found by multiplying half of the sanctuary’s internal width (\(y\)) by 1.1618.

\[
x = 1.618y
\]

Since from Kahn’s working drawings \(y\) is known to measure 26'-6", then

\[
x = 1.618 \times 26'-6"
\]
\[
x = 42'-11"
\]

This represents a discrepancy of 2'-2" (or 4.8%) against the diagonal calculated above. Perhaps this is negligible. Rachel Fletcher argues that arithmetic precision of the kind which only the mind can behold, is not relevant to architecture, which “is meant to be experienced, it is meant to be lived in, it is meant to be perceived”.24

However, the wall in question is constructed using eight inch cubic concrete blocks and Gast’s analysis is out by more than three block widths. Had Kahn intended to produce a genuine proportional statement, surely he would have done so to within one block width.

The dimensions most effected by Gast’s analysis, namely the length and
breadth of the sanctuary, the thickness of its walls and the width of the ambulatory, are all measured in whole feet on Kahn’s working drawings. They are 66’, 53’, 2’ and 6’ respectively. The odds against complex geometrical constructions producing so many lengths measurable in whole feet are literally impossible.25 The dimensions of the sanctuary and surrounding ambulatory would appear to be modulated according to whole feet for the most pedestrian of reasons; the ambulatory wall is constructed using an eight inch cubic blockwork module and every three blocks create a dimension of two whole feet.

Were Kahn inclined to extend the themes of the Neoplatonic tradition, then he is likely to have been especially keen to extend that tradition through the design of his most substantial Christian church, since the Neoplatonic tradition is closely linked to Christian church architecture. While Unitarians do not align themselves with other Christian denominations and while they do not collectively adhere to any doctrines, their origins can be traced to the left wing of the Protestant Reformation.26 They have historical links to Protestantism and consequently Catholicism. Ultimately, their lineage can be traced to the Christian Platonic and Neoplatonic traditions which have influenced Christian theology and Christian church architecture. Given Kahn’s apparent disinclination to inscribe a Christian building with a hidden system of proportion, he might be even less inclined to design secular buildings using principles borrowed from the Christian Platonic tradition. Further, mathematically testing Gast’s claims about Kahn’s secular buildings adds weight to this claim.

According to Gast, the distance by which the rectangular plan of the Kimbell Art Museum falls short of being a double square, determines the span of that building’s concrete vaults. According to Kahn’s working drawings, the Kimbell is 318’ wide (measuring from north to south) and 174’ deep (measuring from east to west).27 To be a double square, the building would need to be 348’ wide, that is, twice as wide as its depth of 174’. The difference between its actual width and the width it would be were it a double square is 30’ and this is the distance Gast refers to
in his analysis as \( x \), which should also be the span of the concrete vaults. However, 30' is not the span of the concrete vaults. These only span 20' or 22' when measuring from the centres of the supporting columns. This represents a discrepancy of at least 8' (or 40%).

Gast also claims that the separate living and bedroom sections of the Dr. and Mrs. Norman Fisher House are based on two squares sized according to the short width of the living section, that is 23'6". The distance by which the living section square is claimed to have stretched in one direction is meant to be exactly twice the distance by which the original bedroom section square grows in two directions. The living section square is 4'6" longer than 23'6" in one direction, while the bedroom section plan is 3' greater than 23'6" in both directions. Twice 3' is 6', where it should be 4'6" according to Gast’s analysis. This represents a discrepancy of 6" (or 12.5%).

Gast analyses fourteen more of Kahn’s buildings by similar means. Unfortunately, many of these descriptions are difficult to follow since it is often unclear as to whether the analysis is referring to the centre lines or the edges of columns or walls. Most significantly, Gast does not explain his decision to work from “newly reconstructed ground plans”, when extant dimensioned working drawings are available. These weaknesses, which apply equally to Gast’s analyses of Le Corbusier’s works, suggest that Gast would prefer to ignore “the mundane details in favour of the exciting proposition”.

Kahn can be forcibly enlisted into the Neoplatonic tradition, or he can be approached on his own terms. While not wishing to diminish Gast’s greater contribution to the field of Kahn scholarship, the apparent discrepancies in these examples suggest that there could be another way in which to approach the topic of number and geometry in Kahn’s work. In the following section, an alternative approach to number and geometry is proposed which is intrinsic to Kahn’s espoused metaphysics and his stated views regarding proportions.

Consideration of Kahn’s statements about proportion suggests that further
geometrical analysis of his buildings, in search of mathematical relationships, may well be in vain. There is no record of Kahn advocating any interest in mathematical proportions as they apply to architectural composition. It will also be recalled that Kahn prefers Paestum to the Parthenon. The latter, Kahn argues, has been made “deliberately beautiful” through the “dastardly” application of sophisticated proportions. Meanwhile Kahn writes “Paestum is dumpy — it has unsure, scared proportions. But it is infinitely more beautiful to me”.32 Here Kahn specifically states his preference for buildings without a clear sense of proportion. While not rejecting the use of proportions outright, Kahn subordinates this device to a sense of the archaic. It will be recalled that it is for his buildings’ archaic quality that Danto finds Kahn to be even “more in the spirit of Plato than architects whose buildings look like diagrams for geometric theorems”.33

That Kahn should simply be pragmatic when it comes to the dimensions of his First Unitarian Church and School in Rochester is entirely consistent with his “form and design” theory, in which metaphysical significance is primarily conferred on a building’s fundamental planning strategy, or “form”. “Design” meanwhile, is the pragmatic act of building in a circumstantial world. In 1961 Kahn states that, “[d]esign is a material thing. It makes dimensions. It makes sizes”.34 “Form”, on the other hand, “is not design, not a shape, not a dimension. It is not a material thing”.35 According to Kahn’s “form and design” theory, dimensions are related to the measurable, or sensible process called “design”. They are totally unrelated to the “unmeasurable”, or intelligible, concept of “form”, and Kahn does not appear to use dimensions to evoke “unmeasurable qualities”.36 If not through the use of proportional dimensions, how do Kahn’s buildings achieve their numinous quality? What is the basis of Kahn’s claim that a great building “evokes unmeasurable qualities”?37 The following discussion attempts to answer these questions through a reading of *The Republic*. 
Like the Fingers of a Hand

If *The Republic* does not advocate strategies associated with the Neoplatonic tradition in Christian church architecture, what claims does it contain concerning mathematics and what edifying architectural devices can be extrapolated from them? It has been seen that *The Republic* advocates the need for rulers and their citizens to be liberated from their attachment to the world of sense experience (which is sensible but unintelligible), and turn their thoughts towards the realm of archetypal Forms (which is intelligible, but cannot be sensed). Within this context, *The Republic* ascribes two functions to mathematics. Firstly, it is a practical discipline, since it can be applied to the organisation of armies and the pitching of camps (525b and 526d). It also serves an epistemological purpose, since it tends “to draw the mind to the truth and direct the philosophers’ reason upwards [towards the Forms], instead of downwards [towards sensible particulars]”. However, *The Republic* provides few specific instructions to craftsmen regarding the embodiment of mathematics within human artefacts, aside from various prohibitions, such as the ban on florid human creations (400-401). Other than what should *not* occur, what active role might embodied mathematics play in leading viewers’ minds upwards?

In Book 7, Plato suggests that there are some perceptions which don’t call for any further exercise of thought, because sensation can judge them adequately, but others which demand the exercise of thought because sensation cannot give a trustworthy result.

He argues that the sight of one’s own fingers does not stimulate thought insofar as counting fingers is concerned, since “at no stage has sight presented the finger to [the mind] as being also the opposite of a finger”.

But what about the size of the fingers? Can sight distinguish properly whether they are large or small? Does it matter which one is in the middle or at the end? And can touch distinguish thickness and thinness or degrees
of hardness and softness? Aren’t all the senses in fact deficient in their perception of such qualities?\footnote{Of course, the senses can be said to be insufficiently developed in the case of qualities like softness and hardness.}

As Julia Annas explains,

> [What we see enables us to say that the finger is large, but also, and equally well, to say that it is small. So in these cases the mind is forced to reflect, and to come in to settle the problem [...]. When the mind comes in to reason things out (524b) it declares that the contradiction is only an apparent one; ‘large’ and ‘small’ cannot really apply to the same thing, since what is really large is distinct from what is really small (524c). Thus we are moved to ask questions about what sort of thing it could be that could be really large or small, and to grasp that it cannot be the same as the largeness or smallness that we perceive with no effort in something like a finger. Rather, it is something ‘intelligible’, something that has to be worked out and grasped by the mind.\footnote{Plato’s finger analogy can be developed to describe architectural embodiment, such that repetitive elements in a building edify the viewer as fingers do. A viewer’s sensory apprehension of a particular building may be adequate to say that it has ten windows, but consideration of which are large, and what is large could, according to Plato’s finger analogy, engage the viewer in thoughts associated with the purely intelligible realm.}

Plato’s logic can be developed to describe architectural embodiment, such that repetitive elements in a building edify the viewer as fingers do. A viewer’s sensory apprehension of a particular building may be adequate to say that it has ten windows, but consideration of which are large, and what is large could, according to Plato’s finger analogy, engage the viewer in thoughts associated with the purely intelligible realm.

The reasoning behind his analogy concerning fingers is the basis of Plato’s mandate that trainee philosopher kings study arithmetic. If the perception of a unit is always combined with the perception of its opposite, and seems to involve plurality as much as unity, then it calls for the exercise of judgment and forces the mind into a quandary in which it must stir itself to think, and ask what unity in itself is.\footnote{The perception of two hands, for example, involves both unity and plurality, insofar as each hand, representing one unit, also consists of five fingers, causing the viewer to ask “what is The Unit Itself?” In the same way, a building comprising multiple bays, each with multiple columns, could engage the viewer in the exercise of pure mathematical reasoning. Once it is recognised that buildings have the capacity to}

The perception of two hands, for example, involves both unity and plurality, insofar as each hand, representing one unit, also consists of five fingers, causing the viewer to ask “what is The Unit Itself?” In the same way, a building comprising multiple bays, each with multiple columns, could engage the viewer in the exercise of pure mathematical reasoning. Once it is recognised that buildings have the capacity to
arouse curious minds in the same way as hands do, it can be seen how Plato’s remarks about arithmetic can be extended to architecture.

This kind of thinking works equally well for two of the remaining disciplines which Plato prescribes for potential philosopher kings, plane and solid geometry. It follows that the sight of a building which appears to be square, but which isn’t quite so, or which only appears to be cubic, can be seen to draw the viewer into contemplating The Square Itself and The Cube Itself.

Of course Kahn was not a philosopher and his own latent dualism is not likely to have led him to the kinds of deeply considered conclusions that Plato reaches. However, either through intuition, or simply by coincidence, there is one sense in which his “form and design” theory perfectly conduces buildings which edify viewers in the same way as hands are claimed to. In the realm of abstraction, one instance of The Hand Itself comprises five instances of The Finger Itself. In the phenomenal realm, circumstantial factors effect the fingers’ size, or perceived size, thus making the viewer think about Largeness Itself. Similarly, in Kahn’s realm of “form”, The Unitarian Centre Itself equals one Sanctuary Itself, surrounded by multiple instances of The Classroom Itself. Circumstances related to the “design” phase of Kahn’s church in Rochester caused each classroom to be slightly different. It could be claimed that these differences prompt the viewer to ask whether each is a classroom and what is classroom, or which is large and what is large.

The effect of each classroom being different, yet classifiably the same, can also be appreciated in terms of John Sallis’ discussion of Plato’s finger analogy. Sallis argues that fingers begin to catalyse mathematical reasoning (dianoia), at the moment when the mind first recognises and begins to compare distinct “ones” from a grouping of fingers.

The distinction between visible and intelligible, the distinction which marks the beginning of philosophy, is first opened up by a “dianoetic leap” in which are posed over against the mixture presented to perception those distinct “ones” that have been separated out from the mixture […].
Thus, in summary, it may be said that, at least in the beginning, *dianoia* is a distinguishing and relating of ones.\(^4\)

The seven ground level classrooms which surround the sanctuary of Kahn’s church in Rochester (Figure 2), could have precisely the effect which Sallis describes. Walking around the corridor, the first impression is of a grouping of classrooms, all with blockwork walls, timber joinery and deeply articulated exterior walls. *Dianoia* takes effect as soon as the viewer begins to notice differences between the rooms, none of which are the same.

Kahn’s “form” diagram for the church indicates a square sanctuary, while circumstances related to the “design” phase caused the built sanctuary to be not quite square.\(^6\) The radial distribution of light towers and entrance points about the sanctuary lead those entering it to believe that it is square. A viewer’s discovery that it is not square after all would, according to the logic of Plato’s finger analogy, cause some mental distress leading to contemplation of *The Square Itself*.

Despite Kahn’s insistence that “form” has no shape, his account in “Form and Design” of negotiations with the building committee in Rochester does betray an integral aspect of his “form” for Unitarian centres. Kahn describes the “form” diagram that he first presented to the congregation as depicting “a square center […] encircled with an ambulatory”.\(^7\) “My first design solution which followed”, Kahn recalls, “was a completely symmetrical square”.\(^8\) He then describes individual committee members eating “away at the rigid geometry. But the original premise still held of the school around the sanctuary”.\(^9\) Although the final building only loosely conforms to Kahn’s original description of a square centre and circular ambulatory, the radial symmetry implied by this description remains a quality of Kahn’s “form”.

It could be argued therefore, that all of Kahn’s “forms” which involve encircling are radially symmetrical by default. Like Kahn’s “form” diagram and his first design proposal in Rochester, such “forms” feature a concentric arrangement of polygons or circles. While a particular Unitarian centre needn’t be radially
symmetrical for it to be an instance of its corresponding “form”, it is clear that Kahn would prefer it to be so. Were this not the case, “Form and Design” would not tell the story of Kahn’s resistance to the committee members’ attempts to deform his early design proposal. Between the off-square shape brought about by circumstantial factors and the regular square of Kahn’s form-diagram there exists a tension which, ultimately, draws greater attention to the unmeasurable square which Kahn had originally intended.

As discussed above, the radial distribution of light towers and entry points to this space gives those entering the impression that it is a square. Indeed, Kahn himself expresses some confusion with regards to the actual shape of the sanctuary in Rochester. His speech at the dedication of the church in December 1962, opens with a lengthy description of the Pantheon in Rome, emphasising the non-directional nature of its circular plan. He states “I had those things in mind when I built this building. Though I had frugal means[...]” He goes on to state “[t]his building is also a non-directional building. It’s practically a square”. Then he proceeds to discuss the light towers in the four corners of the space. According to Richard Forbes of the church building committee, the position of the stage and choir loft required the space to be elongated to give more generous proportions to the uncovered floor area at the centre of the space. It is unfortunate that the vital tension between “form” and “design” is not played out in other central meeting spaces of Kahn’s so clearly as it is in Rochester. Kahn’s own ambiguity regarding the shape of this space clearly draws attention to the idea of the square and the fact that the idea of squareness differs from the squareness which is adumbrated in particular things, like his sanctuary.

In a lengthy discussion, Book 4 of Plato’s Laws considers an ideal model for city plans which involves the radial distribution of country homes and farms about a city centre. When in The Republic Plato argues that knowledge of the intelligible art of geometry is useful when pitching camp (526d), he implies that The Camp Itself is based on some kind of geometrical figure, possibly a circle or a grid pattern. Plato
doesn’t need to mention the obvious fact, that circumstances related to topography would seldom allow particular cities and camp sites to adhere to their Forms’ geometry. Examples such as Joseph Ellicott’s square city plan for the irregular shoreline of Buffalo, create a similar kind of tension between an idea and what circumstances will allow. The kinds of grids which Rem Koolhaas describes as being “indifferent to topology, to what exists”, and which claim “the superiority of mental construction over reality”, create this kind of tension as well, since their implementation is seldom complete.

In terms of Plato’s finger analogy, Kahn’s façade treatment in Rochester is potentially edifying, since the perception of any type of element, to quote Plato, “seems to involve plurality as much as unity”. The masonry alcoves suggest a single storey building made up of six or more tall spaces, but when “the mind calls in reasoning and thought”, it realises that the building’s sides are two stories high and typically, three classrooms long (Figure 42). This façade cannot be read without exercising reason. In a similar manner, the mute internal walls of the sanctuary give no indication that behind them is a second level of classrooms (Figure 43). The viewer must use reason in order to deduce that this wall conceals two levels of corridors.

The Fisher House looks like two double storey forms, but one of those forms has a double height volume (Figure 44). That this fact is not immediately perceptible calls into question the reliability of sensory apprehension and reminds the viewer of the need to use reason. Kahn takes a similar approach with the Phillips Exeter Academy Library. This building looks to be five stories high (Figure 45), until reason informs the viewer that there are nine stories above ground. This illusion relates to the placement of double height spaces around the building’s perimeter. These spaces are served by large windows which are equivalent to two stories in height. (Figure 46). Equally confusing are the outer form and inner atrium space of this library, which both appear to be cubic, but which are not (Figure 47).
Figure 42: First Unitarian Church and School, south elevation.

Figure 43: First Unitarian Church and School, sanctuary wall.
Figure 44: Fisher House

Figure 45: Phillips Exeter Academy Library, exterior view.
Figure 46: Phillips Exeter Academy Library, 4 typical windows.

Image removed for copyright reasons

The full thesis is available in the Auchmuty Library

Figure 47: Phillips Exeter Academy Library, section.
A viewer may expect the vaults of The Kimbell Art Museum to be elliptical, until reason informs them that these are cycloidal. With the crescent shaped glazing strips at the ends of each vault, Kahn makes it clear that he wants the viewer to think, to use reason. The upper chords of these windows are cycloidal, while the lower chords are defined by an ellipse (Figure 34).

As seen from a distance, the fenestration of the National Assembly in Dacca is dominated by monumental triangular and circular openings in an outer skin, which shade and disguise any reading of floor to floor heights, windows, external doors or other familiar scale indicators (Figure 48). The example of this building raises a salient characteristic of Kahn’s built works. They could edify viewers by being ambiguous in scale. In other words, they could bring on the same kind of mental distress caused by buildings which do not reveal their height in stories or shape in terms of known geometry.

In his article, “Louis Kahn in Wonderland”, Renzo Vallebuona describes Kahn’s treatment of the site for his National Assembly complex in Dacca “as if it were possessed of no relevant dimensions”. Specific aspects of Kahn’s National Assembly Complex contribute to its sense of scalelessness. Vallebuona refers to the unnatural shaping of earth berms and man-made water features which indicate no
known scale.\textsuperscript{59} The building thus “decontextualizes the immediate landscape (i.e. the context) in order to integrate it into a more complexly articulated ensemble neither larger nor smaller than what had existed there previously. It is really and truly big”.\textsuperscript{60} With reference to the disorientating changes in scale which Alice endures in Wonderland and to out-of-scale objects in the works of Claes Oldenburg, Vallebuona makes the point that the National Assembly complex is big, not in spite of, but because of its ambiguous scale. Echoing Vallebuona, Vincent Scully links the “scalelessness and timelessness Kahn […] build[s] in the housing at Dacca”, to an earlier sketch by him of Siena’s Campo in which “all details such as doors and windows that could suggest any particular scale or function were blotted out”.\textsuperscript{61} According to the logic of Plato’s finger analogy, The National Assembly building’s ambiguity in scale might cause viewers to ask if the buildings are large, and what is large.

Without enlisting Platonism as an interpretive tool, none of these readings of Kahn’s buildings would be so consistently explained in relation to his possible intentions. Being in the habit of thinking dualistically, Kahn may delight in the fact that visual apprehension alone does not reveal his buildings’ height in stories, their width in rooms, their shape in terms of expected geometry, or their size.

**Sunlight and The Good**

The previous section has shown one way of viewing Kahn’s buildings in terms of Plato’s illustration using fingers. That illustration is not, of course, about fingers, but about a redeemable aspect of vision, its ability to distract the mind and thus force viewers to exercise reason. As such, its principle can be applied to buildings just as well as it can to fingers. Can a similar dialogue be held between Kahn’s remarks about sunlight and the analogy which Plato draws in *The Republic* between sunlight and the super-Form of *The Good*?

Kahn’s veneration of sunlight is a defining feature of his design philosophy.
His attitude is evidenced by his insistence that the Kimbell Art Museum and the Yale Centre for British Art be naturally lit, despite curators’ concerns about the effects of ultraviolet sunlight on paintings. He is also known to have worked by a window, refusing to switch on an electric light, even on the darkest of days. As in the following quotation from 1973, he often refers to sunlight in high poetic strains.

[W]hat’s marvellous about a room is that the light that comes through the windows of that room belongs to the room. And the sun somehow doesn’t realize how wonderful it is until after a room is made. So somehow man’s creation, the making of a room, is nothing short of the making of a miracle. To think that a man can claim a slice of the sun [...]. Without light there is no architecture.

In “Form and Design”, Kahn writes

[To the musician a sheet of music is seeing from what he hears. A plan of a building should read like a harmony of spaces in light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Each space must be defined by its structure and the character of its natural light. Of course I am not speaking about minor areas which serve the major spaces. An architectural space must reveal the evidence of its making by the space itself. It cannot be a space when carved out of a greater structure meant for a greater space because the choice of a structure is synonymous with the light and which gives image to that space. Artificial light is a single tiny static moment in light and is the light of night and never can equal the nuances of mood created by the time of day and the wonder of the seasons.

Kahn begins to think about the space defining ability of sunlight after a trip to Luanda, Angola, where he notices that “when you were on the interior of any building, looking at a window was unbearable because of the glare. The dark walls framing the brilliant light outside made you very uncomfortable”. In 1961, shortly after going to Luanda, he describes an entirely different approach to interior illumination in his First Unitarian Church and School in Rochester.

The getting of light below was a problem...though one could get light to shape this room above, it was difficult to get light to shape this room
below. So I devised four wells for light in the four corners. The light came in above and went down to define this space below. This space being an oblong…only two sides in light was not sufficient to express the oblong…and therefore I felt that getting the light from above and down a well into the corners of the space gave expression to the form, to the shape, of the room chosen.66

Light through openings does more than merely illuminate this space. Kahn is also concerned that sunlight should define the space so that the viewer may perceive its shape, which in this case is an oblong and not a square as it may first appear. Referring to a similar use of gradated natural light in his Mikveh Israel Synagogue proposal, Kahn states that “[t]he whole idea comes from realizing that contrast of walls in darkness against openings in light renders interior shapes illegible and turns the eyes away”.67 On another occasion, Kahn states that “[s]tructure is the maker of light”, and that “[a] square building is constructed like a square and its light must give evidence to the square”.68 Graphic studies by Urs Büttiker demonstrate how Kahn’s approach to natural sunlight is manifest in many of his buildings.69 In each example, softly gradated sunlight is reflected onto the walls of a space to define its shape (Figure 49). Illumination at task level is secondary to the definition of the structural walls which define interior spaces.

Figure 49: Büttiker’s analyses of sunlight in Kahn’s interiors.

Plato’s analogy between sunlight and The Good also relies on the ability of sunlight to define shapes, thus making shapes palpable to sight. The background to this analogy is an argument forming the capstone of Plato’s metaphysics. It has been seen that for every class of particular which is spoken of universally, Plato would advocate the existence of a Form. In an earlier discussion of the problem of the third
man it was also seen that Forms, if they are allowed to, can give rise to super-Forms creating a problem of infinite regress, unless, for example, Forms are thought of as recipes. However, there is one sense in which Forms cannot avoid giving rise to a super-Form. The House Itself, The Spoon Itself, Justice Itself and all of the other Forms mentioned thus far in this thesis constitute a class of things; they are all Forms and thus give rise to a Form corresponding to Forms.

This super-Form could be called The Form Itself, but there is another rationale for its title. When looking around at the world of particulars, trying to distil their essences, it would be normal to look for whatever makes particular things good examples of their kind. The beginnings of a mental picture of The House Itself can be gleaned from a sampling of good houses, as a similar image of The Spoon Itself can be gleaned from a sampling of good spoons. Bad houses and spoons which do not perform their functions would be useless in divining the ideal house or the ideal spoon. Therefore, what all Forms have in common is that they describe the goodness in their respective particulars. This is why Plato gives the title, The Good, to the Form corresponding to Forms.70

In The Republic, Socrates is asked by Glaucon to describe The Good in the same way that he has previously described other Forms (406b-d), but since The Good is metaphysically higher than the other Forms it cannot be described directly. Were it effable, it might constitute yet another class of object, itself requiring a Form, and so on to infinity.71 Hence The Good is described in terms of its visible counterpart, the sun. Plato first makes the observation that sight is the only sensorial faculty which requires the presence of a third element, light, in order for it to function (507e). The Good, “has begotten it [the sun] in its own likeness, and it [the sun] bears the same relation to sight and visible objects in the visible realm that the good bears to intelligence and intelligible objects in the intelligible realm”.72 As sunlight allows particular things to be seen, so the The Good illuminates Forms so that they can be intellected.

Plato also describes sunlight as the cause of earthly things, and The Good as
the cause of Forms. In a remote sense Plato’s description of *The Good*, as the source of the visible world, prefigures a view which Kahn would express late in his career, that material is “spent” light, or “light which has become exhausted”. In treating light as a constituent element of the phenomenal world, Kahn follows a tradition spanning not only works by Plato, but also Thales, Pythagoras and Aristotle. In architectural theory this tradition finds application in the work of Vitruvius. Interestingly, Kahn’s conception of matter as spent light resonates especially well with Plato’s creation myth in *Timaeus*, where light (fire), and matter (earth) are portrayed as the primary elements of the universe.

Now that which is created is of necessity corporeal, and also visible and tangible. And nothing is visible where there is no fire, or tangible which has no solidity, and nothing is solid without earth. Wherefore also God in the beginning of creation made the body of the universe to consist of fire and earth.

Looking beyond such coincidences, the greatest resonance between Plato’s and Kahn’s approach to light relates to the simple fact that without light, buildings could not be seen. Desmond Lee illustrates Plato’s analogy between the sun and *The Good* with the table below. According to Plato’s primary analogy between *The Good* and sunlight, *The Good* illuminates and defines Forms so that the mind may comprehend them, as sunlight illuminates and defines particulars (including buildings) so that the eyes may perceive them.

<table>
<thead>
<tr>
<th>Visible World</th>
<th>Intelligible World</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Sun</td>
<td>The Good</td>
</tr>
<tr>
<td><em>Source of growth and light</em> which gives <em>visibility to objects of sense</em> and <em>the power of seeing to the eye.</em></td>
<td><em>Source of reality and truth</em> which gives <em>intelligibility to objects of thought</em> and <em>the power of knowing to the mind.</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visible World</th>
<th>Intelligible World</th>
</tr>
</thead>
<tbody>
<tr>
<td>The faculty of sight.</td>
<td>The faculty of knowledge.</td>
</tr>
</tbody>
</table>
Kahn’s use of sunlight to define the shapes of architectural spaces is in profound sympathy with Plato’s analogy, as the following adaptation of Lee’s table illustrates.

<table>
<thead>
<tr>
<th>Visible World</th>
<th>Intelligible World</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Sun</td>
<td>The Good</td>
</tr>
<tr>
<td>Illuminates spaces within Kahn’s buildings rendering their shapes visible to the eye</td>
<td>Illuminates Forms rendering their natures intelligible to the mind</td>
</tr>
</tbody>
</table>

Of course it is highly unlikely that a typical viewer of Kahn’s buildings would ever relate these works to little known Platonic doctrines in the manner outlined here. However, as the following quotations from Sherri Geldin and Andrea Dean indicate, viewers are struck by the numinous power of Kahn’s spaces. When they are, Platonism provides a possible explanation for their experience. Relating Kahn’s treatment of sunlight to his view that great buildings somehow retain “unmeasurable” qualities,78 Geldin writes that “once we have penetrated such wondrous spaces and basked in such uncommon light, his meaning is revealed. For how, ultimately, does one measure the sublime?”79 For Geldin, Kahn’s handling of sunlight has a numinous effect, raising the viewer’s awareness of a transcendent realm of inspiration which Kahn refers to as the “unmeasurable”. Expressing a similar view, Dean describes sunlight as the primary ordering device of Kahn’s Yale Centre for British Art. “It is the quality of that light”, Dean writes, “which makes Kahn’s last building transcendent”.80 From Plato’s standpoint in The Republic, these buildings are not actually transcendent, but their relationship to the sun does parallel the relationship which exists between their parent Forms and The Good. To the extent that they are conducive to an appreciation of Plato’s analogy for The Good, it can be argued that spaces rendered palpable by sunlight have the potential to edify their viewers by tending to lead their thoughts upward towards the Forms.

The confluence proposed here raises four questions. Could the congruency
between Plato’s analogy and Kahn’s treatment of light serve to edify viewers of Kahn’s buildings? Can particular buildings, which have their shapes rendered palpable by sunlight, cause viewers to think of those buildings’ parent Forms? Could the play of sunlight within such spaces cause viewers to think of The Good, which Plato calls the parent of sunlight? The numinous potential of such phenomena depends on the ability of sight to edify viewers in the first place.

At this point it is important not to overestimate the value of sight in The Republic. In Timaeus, a later work, sight is praised as the sensorial faculty, “of greatest benefit to us, for had we never seen the stars, and the sun, and the heaven, none of the words which we have spoken about the universe would ever have been uttered”. Her reading of Plato’s Timaeus leads the architectural theorist Indra Kagis McEwan to go so far as to describe sight as the “source of all knowledge” within Plato’s philosophy. However, such a conclusion is far removed from the message of The Republic. In that dialogue as well as others of Plato’s middle and early periods, the visible world is consistently described as an illusion. Sight only contributes to knowledge when its deficiencies aggravate the mind, causing viewers to exercise reason. With regards to the interpretation of Kahn’s natural lighting strategies, Plato’s finger analogy is of no use; Kahn’s treatment of light is designed to reveal spaces and structure, not create mental conflict. Beyond the finger analogy, The Republic does not ascribe any other value to sight, at least not explicitly.

However, it must be reiterated that sight is inherently important to Plato. He uses it in all of his major analogies for the intelligible realm. Were it not for the existence of particular things rendered visible by sunlight, Plato may have no way of describing The Good to others. The visible world and his audience’s familiarity with it, provide Plato with an opportunity to describe the intelligible world using analogies.

In terms of The Republic therefore, the numinous value of Kahn’s naturally lit spaces might lie in their ability to illustrate Plato’s point. In the unlikely event that a person sitting in the sanctuary of Kahn’s Unitarian church stopped to
contemplate Plato’s analogy between the sun and *The Good*, they might suddenly realise that the very space in which they are sitting provides a perfect illustration of Plato’s argument. Sunlight strikes the outer corners of the space, revealing an oblong shaped sanctuary to the viewer’s eyes, just as in the intelligible realm, *The Good* illuminates *The Oblong Itself* and *The Sanctuary Itself* for the mind to behold. Admittedly, this is an unlikely scenario.

A different approach to this issue suggests that a study of Kahn’s built work could lead to a better understanding of Plato’s decision to name the Form of Forms *The Good*. Kahn designed a number of art galleries and a number of chapels. It could be argued that what is good about Kahn’s best art galleries and his best chapels is their conformity to corresponding “forms”. Therefore, what Kahn’s “forms” corresponding to art galleries and chapels have in common is that they are both good. Should Kahn’s design philosophy be further interpreted along the lines of Platonism, a “form” of “forms” simply named “good” might be conceived as a capstone for Kahn’s metaphysics.

It has not been argued, and neither could it be, that Plato’s analogy influences Kahn’s approach to sunlight. Yet, the possibility that Kahn may have inherited attitudes towards sunlight via Neoplatonic sources cannot be denied.

In their respective commentaries on Gothic cathedral design, Otto von Simson and Wim Swaan detail the influence of Neoplatonism on architects’ attitudes towards light. The Abbot of St. Denis, Suger (1081-1151), emerges as a central figure for his deification of natural sunlight. Suger promoted the sainthood of the fifth-century Christian Platonist, Dionysius the Pseudo-Areopagite, a man so taken by Plato and the Bible’s apparent concurrence regarding light that he developed a theology of light. This later justified his dramatic use of stained glass in his modifications of the Abbey of Saint Denis, from where the Gothic style would spread. The veneration of sunlight by Byzantine architects and mosaic artists can also be linked to the coincidence which exists between Plato’s sun analogy and the metaphoric interchangeability of light for God’s goodness throughout Scripture.
Recalling the manner in which Christian Platonists equate sunlight with God, Kahn, in 1970, mentions sunlight and Christ in the same context.

The most wonderful aspects of the indoors are the moods that light gives to space. The electric light bulb fights the sun. Think of it.

I am reminded of Tolstoy, who deviated from faithlessness to faith without question. In his later state he deplored the miracles, saying that Christ has radiance without them. They were holding a candle to the sun to see the sun better.87

While his deification of sunlight may appear to connect Kahn to Plato, within the present context it must be remembered that in The Republic sunlight is no more than a sensible phenomenon. While Plato’s analogy in The Republic portrays The Good as something of remarkable splendour (509a), nothing is said of the sun which could not be discerned by any other observer — it illuminates objects and so makes them visible and it is the source of all terrestrial life and nourishment. While it could be argued that to some extent Plato deifies The Good, he does not also deify that Form’s visible counterpart, the sun. In and of itself, sunlight holds no elevated position insofar as Plato’s metaphysics is concerned. Although it is described metaphorically as the child of The Good, sunlight remains a sensible phenomenon and is therefore metaphysically inferior to even the most paltry of the Forms. Therefore, by deifying sunlight, Kahn’s philosophy departs from the spirit of The Republic.

Buildings as Mirrors to the Forms

On a number of occasions “Form and Design” describes buildings, evoking or reflecting the “unmeasurable”. When a “building becomes part of living it evokes unmeasurable qualities”88 Schools often don’t, but they should “reflect the spirit of the man under the tree”.89 Also, a house which has “the character of being good for another […] in this way reflects its trueness to Form”.90 The ability or otherwise of Kahn’s buildings to reflect a transcendent realm, can be measured beside Plato’s
success in reflecting a transcendent realm in *The Republic*. It will be clear by now that *The Republic* offers no direct guidance to architects hoping to cause viewers of their buildings to think rationally. This kind of edification is *The Republic’s* own intended effect on its readers. Another way, therefore, to discern how buildings might cause viewers to think more rationally, is to ask how *The Republic*, as a piece of literature, edifies its own readers and consider whether Plato’s approach to the creation of a piece of literature can be emulated in architecture.

In reflecting the intelligible realm, *The Republic* describes all earthly things as poor reflections of that realm. Yet as a piece of literature, *The Republic* is itself an earthly thing. It even contains mimetic depictions of Socrates and other characters, the very kind of portrayals which Plato finds so damaging in the works of Homer and the poets (599d). Why doesn’t the first sentence of *The Republic* instruct readers to leave the book and pursue their own enlightenment?

While as a piece of literature *The Republic* is merely a reflection of the intelligible world, the reflected image which it provides is trained back on the intelligible world. Pappas likens the dialogue’s image of the intelligible realm to the reflected image of his face when he looks into his own shaving mirror. He uses the mirror to shave his “flesh-and-blood face, not the reflected one”. In other words, printed copies of *The Republic* are aids to purely intellectual activity, as a mirror image can assist a physical activity.

*The Republic* uses poetry and dramatic portrayals, but Pappas argues that it differs from poetry in that the latter charms its audience (601b-607c). From the standpoint of architecture, Pappas’ next point is most interesting. He argues that *The Republic* is more like a triangular tile pattern on the floor than a seductive poem. The tile pattern has the potential to lead some viewers into intellectual inquiry, whereas “the defining characteristic of artistic imitations resides in their power to stop their audience from asking rational questions about them”. While a mason might only see the tiles in terms of their mass or brittleness, to a geometer, the tiles could act “as a visual aid for thinking about […] the properties of triangles”.

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According to Pappas’ reading of *The Republic*, any building which displays geometrical figures, or numbers of elements which can be added or counted, could act as a visual aid to intellectual activity. Does this mean that the mere presence of a right angle or course of brickwork would be sufficient to lead mathematically inclined viewers to count, add, or ponder the idea of perpendicularity? While not denying the possibility that almost every building could present certain viewers — those who would find geometry and arithmetic anywhere — with an edifying sight, it should be noted that Pappas illustrates *The Republic’s* edifying effect with a striking kind of tile pattern. Compared to tile patterns generated from squares or rectangles, tile patterns based exclusively on triangles are rare and therefore noteworthy. It is when prominent, salient or uncommon aspects of buildings actively invite intellectual activity that they can be thought of as visual aids, or prompts, in the sense that *The Republic* prompts its readers to think.

Before looking at ways in which Kahn’s buildings reflect the intelligible realm, a distinction also needs to be made between sights which act as visual aids or prompts and buildings inscribed with hidden geometrical patterns in the manner associated with the Neoplatonic tradition. There is an enormous difference between geometrical patterns which are presented to the viewer in a visually explicit manner and those which cannot prompt thought because they are imperceptible to anyone not actively looking for geometrical or proportional relationships.

Kahn’s work will first be surveyed for visual aids to three of the five mathematical studies which Plato prescribes for philosopher kings: plane geometry (526c-527c), solid geometry (527d-528d), and harmonics (530d-531c). The remaining two mathematical studies, arithmetic (524e-526c) and astronomy (529a-530c), yield few insights into Kahn’s work.⁹⁴

Although Danto does not see Kahn as an architect “whose buildings look like diagrams for geometric theorems”,⁹⁵ it remains true that many of Kahn’s buildings feature elementary geometrical figures. Prominent examples include the Bath House
in Trenton (Figure 50) where a circular pond is placed at the centre of four radially distributed pyramidal pavilions and The Phillips Exeter Library (Figure 51) where four large circular wall openings face the internal atrium.

Figure 50: Trenton Bath House, showing circular pond. (The pond has since been removed.)

Figure 51: Phillips Exeter Academy Library, atrium.

Notable also is Kahn’s first design proposal presented to the building committee in Rochester (Figure 1), which features a polygonal ambulatory inscribed within a square plan. Were it not for his clients’ specific rejection of this building’s inherent squareness and fiscal constraints, the built church would almost certainly resemble his first proposal in this regard.
A conspicuous example of solid geometry in Kahn’s work is his proposed Memorial to the Six Million Jewish Martyrs in New York City. This is composed of seven glass cubes on a platform (Figure 52).

Other regular solids such as the tetrahedron and the dodecahedron feature strongly in Kahn’s unbuilt work of the late 1940s and early 1950s. Like a triangular tile pattern, all of these figures can act as visual aids for viewers, so inclined, to contemplate purely intelligible geometrical constructs. Unlike poems or representative art works, they do not charm viewers with seductive representations of worldly phenomena, or stop viewers from “asking rational questions”.96

Given Plato’s love of geometry — he is believed to have placed a sign across the entrance to his academy barring anyone not expert in geometry from entering97 — *The Republic* has surprisingly little to say on the topic, so it remains unclear what other geometrical figures could be inscribed within architecture in a manner compatible with the grain of that dialogue. Even looking beyond *The Republic*, specific references to geometry are mostly vague, as in *Cratylus*, which simply mentions “geometrical diagrams”.98 In *Meno* (82-84) Socrates works through a geometrical exercise of doubling a square, from two by two, to four by four. Prefiguring a common motif in Kahn’s work (Figure 53), *Meno* (87b) also describes the inscription of a triangle within a circle.
Plato’s most comprehensive discussion of geometry occurs in *Timaeus*\(^99\) which couples each of the four elements (earth, rain, wind and fire), and also the universe as a whole, with a regular solid.\(^100\) One commonly used example of a regular solid in Kahn’s work is the tetrahedron which is used in the ceiling of The Yale University Art Gallery (Figure 54). *Timaeus* also specifically refers to the sphere.\(^101\) Notably, Plato makes no mention of more complex solids such as cones or cylinders, despite these solids being commonly referred to in architectural discourse as Platonic solids.
Whereas Kahn’s clients in Rochester thwarted his preference for elementary polygonal plan shapes, his clients in Exeter and Dacca gave Kahn greater freedom. This he readily exploited. Assuming their corresponding “forms” involve encircling — of reading carrels about book stacks, or of offices about an assembly hall — each of these buildings reflects the “unmeasurable” by being a statement of its corresponding “form”. Being conspicuously polygonal, these plans could act as a visual aid for those contemplating the ideal library, or the ideal political assembly. Although the tension between the ideal and the actual which is exhibited in Rochester is lacking in these examples, they do invite the contemplation of purely intelligible polygons.

Lest this chapter appear to be offering contradictory interpretations of the role of geometry in *The Republic*, the salience of the above examples from Kahn’s work must be emphasised. What makes regular geometrical figures in much of Kahn’s work edifying from a Platonic standpoint is the fact that, where they do occur, they are conspicuous. They are not buried within Kahn’s work waiting for geometrical analysts to discover. Rather, they are brought to the surface where they are expressed in a didactic manner.

According to Reyner Banham, the following passage in Plato’s *Philebus* which argues in favour of Euclidian geometry has a close association with Modern architecture. Although the passage in question is not from *The Republic*, it is of sufficient importance to twentieth century architectural discourse to warrant attention here.

> Straight lines and circles, and the plane or solid figures which are formed out of them by turning-lathes and rulers and measures of angles; […] these I affirm to be not only relatively beautiful, like other things, but they are eternally and absolutely beautiful.

Such an affirmation of the absolute beauty of earthly patterns would be quite out of place in *The Republic*, but *Philebus* is a later work and it does not adhere to the strict metaphysical distinctions of Plato’s middle period dialogues. Despite its
metaphysical basis, this quotation from *Philebus* does hint at a life-long admiration by Plato for Euclidian geometry. The prevalence of figures formed using straight lines and circles in Kahn’s National Assembly Complex in Dacca suggests that Kahn may share Plato’s fondness for such shapes (Figure 55). Plato’s *Philebus* also provides an insight into his appreciation for the art of building, but this aspect of his philosophy provides no special insight into Kahn’s work above that of any other architect.106

![Image removed for copyright reasons](https://example.com/image.jpg)

*Figure 55: National Capital, Dacca, hostels.*

Returning to *The Republic*, an edifying architectural corollary cannot be readily found for the last of that dialogue’s mathematical studies, harmonics. Even if harmonic proportions could be found in Kahn’s architecture, Plato wouldn’t acknowledge an edifying effect; harmonic proportions are barely audible in music, Plato argues, and so they could hardly affect the viewers of buildings. Neither can the inscription of harmonic proportions be thought of as attention grabbing in the way that a triangular tile pattern is.

More guidance can be drawn from a passage in *Laws* (819-820) in which Plato states that the height, length and width of things such as buildings should be commensurable with one another. In a mathematical culture such as Plato’s, where all things are measured in units or whole numbers, architectural spaces would need to be proportioned according to a module in order that their dimensions be commensurable in this way. Not being palpable to sight, Classical modules which
define the proportions of the orders do not aid in the perception of commensurability, but square grid patterns or cubic modules could do so.

The separate wall panels making up the sanctuary of the First Unitarian Church and School in Rochester happen to be built from 8"x8"x8" cubic blocks which provide such a module. While no significant harmonic relationship exists between the height, length or breadth of this space, viewers are able to compare the dimensions of wall panels by counting blocks. However, since only the most persistent of viewers would be compelled to undertake such a task, the visual commensurability of these panels cannot be thought of as one of their edifying attributes.

Just as a triangular tile pattern can act as a visual aid to one interested in contemplating *The Triangle Itself*, Kahn’s buildings could encourage certain viewers to contemplate plane and solid geometry. Admittedly, the examples provided thus far do not indicate that Kahn’s buildings are especially conducive to these kinds of intellectual activities. Yet there remain other ways in which his buildings could overtly conduce the kind of rational thoughts which Plato associates with the purely intelligible realm.

It should be noted that by adumbrating certain geometrical figures, Kahn’s buildings merely allude to entities of the lower portion of Plato’s intelligible realm. Plato’s divided line illustration in *The Republic* (509-510) subdivides the intelligible realm of knowledge according to two kinds of thinking. In the lower portion of the intelligible realm, the mind uses tools of worldly origin, such as geometrical figures, and with them makes assumptions, in order to deduce conclusions. In the upper portion, which relates to *episteme*, the intellect grasps the Forms themselves, without the aid of representable illustrations. Plato claims that this upper portion is concerned with dialectic, while the lower portion is concerned with mathematical reasoning and relates to *dianoia*. The previous chapter showed how buildings can participate in entities from the higher portion of the intelligible realm, while the following discussion shows how buildings might reflect some of those entities’
many attributes.

Through their symmetrical planning, Kahn’s library in Exeter and his assembly building in Dacca could be seen to draw attention to the Forms’ immunity to earthly circumstances. While Aristotle and more recent figures such as D. M. Armstrong109 advance theories of Forms or universals which are dependant on particulars and/or humans for their existence, Plato’s Forms are atemporal and therefore autonomous. From a Platonic standpoint the siting of Kahn’s buildings could similarly draw attention to the Forms’ autonomy from the temporal realm. Many of Kahn’s buildings, including his church in Rochester, are conceived as edifices to be viewed in-the-round. They are oblivious to external forces which might otherwise give them a front or a back or a sense of connection to their urban or natural contexts.

Though Kahn’s Unitarian church deforms in response to a detailed program, it does not yield to its physical context, adopting an identical language for all four elevations. The same hoods which control glare on the southern side of the building are applied to the northern side where this functional aspect of their design is redundant. Jencks observes that on first approaching this building

the overall impression we have is of massive hoods carrying on an equal discussion back and forth between four points. Whatever angle we see this church from, the anthropomorphic shapes seem to be dominating the whole.110

Kahn does not always ignore site specific circumstances in his works. At the Indian Institute of Management, he orientates hostels to capture prevailing breezes. Likewise, the Salk Institute for Biological Studies is orientated towards views of the ocean. However, this degree of concern for localised site conditions is not evident in his radially planned buildings. The Unitarian church, the National Assembly in Bangladesh and The Exeter Library, along with The Erdman Hall dormitories and the Hurva Synagogue proposal, are orientated about their central spaces and not towards their temporal contexts. In this way they are able to draw their viewers into
contemplating the intelligible idea of encircling. Meanwhile, they do not encourage viewers to contemplate the kinds of site specific phenomena — approach routes, prevailing breezes, significant landmarks and the like — to which buildings frequently respond. Using Plato’s terms, this aspect of Kahn’s radially planned buildings could lead the minds of some viewers upwards, not downwards.

Whereas the Beaux Arts tradition is often concerned with axes drawn along the ground, a radially symmetrical building is planned about an axis rising vertically to some infinitely distant point in the sky. Unlike a horizontal axis which connects a building to some terrestrial point, such as a landmark, or an approach route or some other physical place, a vertical axis can be interpreted as a symbol of a building’s indifference to terrestrial matters.

In Dacca, Kahn uses the added device of moats to symbolically separate the National Assembly building from its terrestrial setting. Bruno J. Hubert argues that the water surrounding this building “creates a sense of removal, an effect that Kahn had initially wanted at Ahmedabad and one that he felt calmed the mind, preparing it for concentration”.[1] Also, with this building a most telling interruption to an otherwise radially symmetrical composition is made; the prayer hall through which parliamentarians enter the assembly chamber is skewed to face Mecca (Figure 21). While the imaginary axis of alignment between Mecca and Dacca is in one sense terrestrial, being drawn between two points on Earth, it is also an evocation of religion. In a sense, Kahn’s alignment of the prayer hall is in response, not to a terrestrial factor, but to a transcendent influence.

During an earlier discussion about mimesis, Danto’s view that Plato’s republic would be “minimally subject to alteration”, was mentioned. His argument in its entirety is that

Platonic metaphysics was designed as an antidote to change: forms outside the temporal order, were immune to alteration and decay. The Republic projects a state minimally subject to alteration. It is a profoundly conservative vision, and one must seek to imagine how terrifying change
Danto extrapolates this characteristic of *The Republic* to the field of architecture, arguing that “[i]f there were a Platonic architecture, it would specify buildings as minimally subject to change as possible”. This specification also describes Kahn’s architecture, where the quality of permanence can be found at many levels. The immutable quality of Kahn’s work will be discussed shortly, but first, a crucial step in Danto’s argument should be examined in closer detail.

In the above quotation, Danto states that “forms outside the temporal order, were immune to alteration and decay”. In the following sentence, this immunity is transferred to the terrestrial state projected in *The Republic*, as though this characteristic of the Forms should automatically apply to their earthly participants. One problem with this is that the so called theory of flux, whereby Plato argues that particulars are constantly changing while the concepts they stand for remain unchanged, is not, according to Annas, specifically put forward in *The Republic*. Even if it is accepted that *The Republic* implicitly treats the Forms as fixed and unchanging entities, that dialogue does not specifically instruct craftsmen to make durable artefacts. There is nothing in the parable of the bed maker, for example, to suggest that the craftsman’s bed be resistant to change. It can only be concluded therefore that, while Danto’s extrapolation seems to exceed Plato’s own ruminations in *The Republic* on the topic of human production, it is nonetheless made in the spirit of Plato’s “profoundly conservative vision”.

It is owing to the use of load bearing masonry wall elements that Kahn’s buildings are least subject to change. This aspect of Kahn’s work is often related to ancient and medieval European precedents. For example, David De Long links the massive quality of The First Unitarian Church and School in Rochester with Kahn’s “well-known fascination with [the] plans of Scottish castles”, citing the following remark by Kahn.
Kahn also makes a distinction between the ephemeral elements of a building and its more permanent masonry structure. With reference to the unbuilt residences associated with The Salk Institute for Biological Studies, Kahn states in 1962:

I am developing walls around buildings to take care of the glare. I do not think that Venetian blinds and curtains and all kinds of window devices are architectural. They are department store stuff and don’t belong to architecture.\textsuperscript{119}

In this quotation, what does qualify as architecture are concrete and masonry walls, those elements which could survive a building’s period of inhabitation and, in some imaginary future, remain as ruins. The clear delineation in Kahn’s mature works between non-permanent elements (timber panelling for example), and more solid walls can be linked to this attitude. That the in-situ concrete structure of the Salk Institute for Biological Studies is not rebated to accommodate windows and timber wall panels, suggests that Kahn envisions this structure as a complete entity in its own right (Figure 56). As Forms themselves outlive their earthly manifestations, that which Kahn defines as architecture is built to survive many inhabitations.

\begin{quote}
\textbf{Image removed for copyright reasons}
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The full thesis is available in the Auchmuty Library.

\begin{quote}
\textbf{Figure 56: Salk Institute for Biological Studies, panel wall detail.}
\end{quote}
There is one sense in which Kahn’s statements concerning immutability seem to be directed towards the realm of “form” itself. Contrasting what he considers to be the timeless nature of a Shakespearean play with the ephemeral nature of its performance, Kahn argues in 1966 that “everything that lives cannot live again, and any action which has happened cannot be re-acted. Forms simply are still”. Here Kahn applies the word “form” to the underlying premise of a Shakespearean play. Kahn treats such premises as atemporal entities, in the same way as he views the “forms” relating to building types as atemporal entities. These entities do not belong to the artists who utilise them. Following on from his remarks concerning a Shakespearean play, Kahn states that, while “men as living things” may “go” — that is die — “Man’s works belong to eternity”. What does he mean by this? Surely Kahn doesn’t anticipate that human artefacts themselves will last eternally. Rather, Kahn’s statement implies the participation of eternal entities in human artefacts. After a theatrical performance has ended, its premise remains. Artefacts deteriorate, but the “forms” on which they are based remain.

The central premise of Kahn’s article “Form and Design” conduces buildings capable of outliving the clients who commission them. Kahn argues specifically that “this house created for the particular family must have the character of being good for another”. By not tailoring houses too precisely to the short term needs of his clients, Kahn hopes that they will continue to be useful houses for successive owners. If Plato’s is a “profoundly conservative vision”, then, on this point, so too is Kahn’s.

Coupled with the previous idea is Kahn’s tendency to suppress details which testify to individual clients and their short term requirements. Hence Kahn tends to reduce a building’s program to the briefest possible expression of its type. He is far more concerned with the generic class names and the fundamental nature of spaces corresponding with the commissions facing him, than he is with his client’s precise needs. Neither do his buildings lend themselves to future alterations since Kahn shows a preference for internal load bearing walls.
Ellen Morris proposes that Kahn’s disinterest in the circumstantial details of a building’s program is a reaction against the pseudo-scientific pedagogy promoted by Christopher Alexander at Berkeley in the mid 1960s.\(^4\) Morris describes Kahn’s approach to design as the antithesis of deterministic design methodologies, which would treat a building purely as the outworking of its program. As a building’s program relates to its client’s corporeal and tangible needs, it pertains to what Plato calls the sensible realm. In Rochester, Kahn’s reluctance to address what he views as the mundane details of his client’s program (including the precise number and size of the required class rooms), indicates a general disinterest on his part for something which he views as circumstantial. From a Platonic standpoint, Kahn’s tendency to suppress evidence of a building’s circumstantial program, can be thought to lead viewers’ minds upwards by drawing their attention towards the Forms.

Kahn’s buildings may also cause viewers to contemplate the immutability of the Forms through their own static quality. Indra Kagis McEwen, who discusses the immutability of Plato’s Forms in *Socrates’ Ancestor*,\(^5\) notes that Socrates has an ability to set arguments in motion, by disrupting the ground on which they rest. However, in *Euthyphro*, Socrates ardently wishes for the wisdom of Dædalus to be able to detain arguments and keep them fixed, like one of Dædalus’ statues.\(^6\) By symbolically fixing his statues with cords or chains, Dædalus, according to Socrates, reveals their divinity, since the state of being fixed can be equated with the Form realm, while movement is a characteristic of the sensible realm which is in a constant state of flux. McEwen makes the point that Socrates’ interpretation of these statues represents a sea change in Greek thought since, according to his predecessors’ interpretation, those same chains had animated Dædalus’ statues, celebrating life, rather than immobility. Yet it is what these statues mean to Socrates that is relevant here. The statues are static, fixed and resolved, like complete arguments and like Forms. The same adjectives could also apply to Kahn’s static, motionless and massive buildings.

Certain roofs by Kahn that seem to float are an exception. Unlike traditional
Roman vaults, the vaults of Kahn’s Kimbell Art Museum are supported at their four corners only (Figure 57). This is made possible by a sophisticated pattern of steel reinforcing cables concealed within their concrete shells. Illuminated by solar reflectors, the vaults of the Kimbell Art Museum appear to be buoyant. In contrast to the palpable structure of its walls, it is unclear to the viewer whether the sanctuary roof of Kahn’s First Unitarian Church is supported by sheer walls at its periphery, or by three columns at each edge. It actually bears on four cruciform T-beams (Figure 58).

Figure 57: Kimbell Art Museum, model of vault.

Figure 58: First Unitarian Church and School, isometric showing T-beam roof structure.
Aside from their ambiguous structural support, the greatest factor which contributes to the floating quality of these roofs is the play of natural sunlight upon them. According to Robert Coombs, the refraction of light from clerestory windows in Rochester gives the sanctuary space “an expansive yet serene buoyancy which obviates the weight of the structure”. Pointing to the contradictory nature of this space’s cruciform roof truss, which is shallowest at its mid point, Coombs writes that “contradiction triumphs over accepted logic both in the structure and lighting of the meeting hall”. Kahn crowns this space with a dynamic rather than a static roof structure, apparently in an attempt to replicate the otherworldly ambience of Gothic and Byzantine churches. His preliminary proposal, Coombs writes, is “basically Byzantine in character”. Betraying his own intentions, Kahn himself remarks that the completed work is “very Gothic, isn’t it!” Emulating the static quality of Plato’s Forms, all walls in Kahn’s First Unitarian Church and School and the roofs of less celebrated spaces, such as class rooms, are static, conveying no sense of movement.

If an anagogical interpretation can be made of this building’s sanctuary, it would reinforce the earlier point that visual perceptions which cause some mental distress can aggravate viewers, forcing them to use reason. While the concrete roof looks almost weightless, reason tells the viewer otherwise and reason must be called upon to deduce the roof’s real structural characteristics. Aside from such roofs, Kahn’s buildings feature no other expressive devices which convey a sense of movement.

McEwen’s discussion of Dædalus’ statues also highlights the place of Forms in Plato’s epistemology where they constitute the bedrock, or foundation of any argument. The metaphorical ground beneath the Forms cannot be disrupted. In an abstract sense, Kahn’s buildings reflect the foundational quality of the Forms through the expression of their mass bearing on solid ground. This quality of Kahn’s buildings can be illustrated in a story related by Vincent Scully. Scully recalls a
moment during a trip to Moscow, when he had brought to Kahn’s attention certain Renaissance towers, marvelling at how they point upwards. As Scully retells the story, Kahn replied “[l]ook how they bring their weight down”. According to Scully, Kahn’s reply is indicative of a “profoundly structural sensibility”. In accordance with this sensibility, Kahn’s buildings are mostly built from load bearing masonry walls, bearing directly on strip footings. Emulating Forms, they give an impression of immutability, which is in sympathy with the foundational role of Forms in Plato’s epistemology.

Adumbrating the stasis of the Forms, Kahn’s buildings do not feature operable walls on their exteriors or similar large moving elements. He also disguises those small moving parts of a building which cannot be avoided. For instance, with the Dr. and Mrs. Norman Fisher House, Kahn conceals opening windows, insect screens and shutters within recessed boxes (Figure 59). The exterior appearance of this house is unchanging, since only fixed glass panes and vertical boarding are expressed at its surface (Figure 60).

Figure 59: Fisher House, window box detail.
Kahn achieves a similar affect with many of his buildings, not the least being his First Unitarian Church and School in Rochester, where moving windows and doors are shaded by, and subordinated to, their static brick surrounds. Scully’s claim that pastels made by Kahn during a trip to Rome in 1950 “recall the surrealist emptiness of [Giorgio] de Chirico’s dream squares”,134 is equally as applicable to many of Kahn’s buildings after this date. The lifeless ambience of the Salk Institute’s central plaza (the Theodore Gildred Court) is a particularly powerful embodiment of this sense of calm, or static quality.

Kahn’s buildings resist change and it could be argued that his theoretical texts represent his search for a design philosophy which is similarly resistant to change. Arguably, Kahn views his theory, not as his own invention but as his discovery of universal and eternally valid principles. According to Milosav Cekic, “Kahn’s is an architecture of a diminished ego. His work calls attention not to itself, but to the ‘unmeasurable’ it tries to reflect”.135 The prophetic tone of Kahn’s rhetoric could also suggest that he views his theory as a binding set of transcendent rules. While Kahn’s work is in some measure inventive and while his theory can be viewed as his own creation, his method of working from a relatively fixed body of principles does partially resemble a trait for which Plato commends Egyptian artists
in *Laws* (656e).

Plato’s protagonist in *Laws*, in this case an Athenian, notes that in Egyptian temples there are patterns exhibiting the rules by which painters and representative artists must work. The Athenian praises Egyptian art for exhibiting no stylistic change or individual influence for over ten thousand years. Presumably Egyptian architecture would also please Plato for its unchanging style and for its adherence to a set of unchanging rules. The relative anonymity and complete lack of stylistic input from individual architects into Egyptian architecture might also be favourably viewed.

Kahn does not precisely fit Plato’s image of an Egyptian artist. Counter claims could be made that his theory is presented, not as a discovery of transcendent principles, but simply as his own invention or decree. Neither is his theory unchanging. Rather it evolves, from a preoccupation with nature and in turn architecture’s underlying order during the 1940s and 1950s, to a concern for “form” during the 1960s. However, it is likely that Plato would admire Kahn for appearing not to exert his personal or stylistic will and working instead according to an apparently timeless corpus of rules.

While it was argued in Chapter 3 of this dissertation that Kahn does not acknowledge historical precedents as influences upon his conception of “forms”, his buildings have led the minds of many viewers downwards, to use Plato’s term, by causing them to make comparisons with important buildings from antiquity, such as the Pyramids, Scottish Castles and sites in Italy and Greece. Historical precedents may not be an acknowledged influence on Kahn’s conception of “forms”, but the extent to which they influence what Kahn calls the “design” phase of a building’s development, historical precedents in Kahn’s work may not be interpretable in terms of Platonism. So what role do they play?

Denying any claim that Kahn’s buildings evoke past buildings, Gerhard Auer
writes that “Kahn endeavours to silence all regional, traditional or technological Zeitgeists, and to forbid any symbols which might be recognisable as well as all visual references to other works, etc”. According to Auer, Kahn consciously avoids any dialogue between his buildings and sensible phenomena, especially past buildings.

Yet Vincent Scully and Jan Hochstim find in Kahn’s mature works visual references to buildings he visits and sketches during his earlier travels in Europe. Although Kahn denies the influence of past buildings on his conception of “form”, by stating in 1971 that architects draw to build, he does imply some link between his travel sketches and his buildings, thus leaving open the possibility that phenomenal precedents inform his “design” phase. Based on the observation of “certain obvious formal similarities between some subjects of his sketches and his architectural works”, Hochstim makes the compelling case that the subjects of Kahn’s travel sketches may have formed the subliminal material for his subsequent architectural designs. Michael J. Lewis argues that Kahn’s feeling for monumentality and his poetic appreciation of light and shadow “lived a submerged existence in his drawings until they emerged bright and diamond hard in the late 1950s to invigorate the mature works” of his late career. From such observations, it would be reasonable to speculate that the buttresses and fortified walls in Kahn’s collection of travel sketches are the subliminal material on which he bases the external appearance of his First Unitarian Church and School in Rochester, with its fortress-like exterior of buttresses. Despite Kahn’s claim in 1964 that by “imitation you destroy the wonderful gift of being a singularity”, it is quite likely that the “design” phase of Kahn’s work does allow architects to copy the superficial appearance of favoured historical precedents. Given the strength of Scully and Hochstim’s analysis, it must be concluded that Kahn’s work is not wholly sympathetic to the thrust of The Republic in this regard, since, in their cosmetic appearance, many of Kahn’s buildings lead the minds of some viewers to the contemplation of phenomenal precedents.
The final way in which Kahn’s buildings can be thought of as reflecting the intelligible world relates to his preference for plastic materials such as concrete. Buildings, rendered in materials which are capable of having any shape impressed upon them, are more likely to be interpreted in terms of their given shape rather than in terms of their structural units. Concrete structures such as the sanctuary roof of Kahn’s First Unitarian Church in Rochester can be contrasted with buildings made using unyielding materials, for example, cabins made from whole logs. Where a log cabin maintains an equal dialogue between its designer’s intention to build a cabin and its designer’s need to use logs, the sanctuary roof in Rochester (Figure 61) invites viewers to consider its designer’s shape-making alone.

Figure 61: Ceiling of sanctuary in Rochester

A comprehensive inquiry into the relationship between Forms and matter does not occur in The Republic, but is found in chapter 49 of Plato’s Timaeus. After outlining the relationship which exists between the Forms (referred to in Timaeus as patterns), and particulars, Plato discerns the existence of a receptacle, the physical stuff or space into which the Forms are impressed. Again Plato uses a terrestrial analogy to explain his concept. The receptacle medium of the sensible realm is
likened to malleable gold which is constantly being transformed into one shape, then another. At any given time, the gold might be referred to by its present shape, although it would be safest to always refer to it as gold. Although it cannot be remodelled with such ease, Plato could have explained this concept using the analogy of concrete.

Plato’s concept of the Chora in *Timaeus* is also described through the analogy of a father, mother and child to represent, respectively, the Form, receptacle and particular. According to this analogy space is like a mother who waits to be impregnated by a Form. Forms are likened to a father’s semen, carrying not half, but all of the data needed to make a child. Finally, this analogy likens a particular to a child, borne by a mother, but conceived by its father.

A crucial characteristic of the receptacle, space, is that it is itself Formless, otherwise

> whenever any opposite or entirely different nature were stamped upon its surface, it would take the impression badly, because it would intrude its own shape. Wherefore, that which is to receive all [F]orms should have no [F]orm; as in making perfumes they first contrive that the liquid substance which is to receive the scent shall be as odourless as possible; or as those who wish to impress figures on soft substances do not allow any previous impression to remain, but begin by making the surface as even and smooth as possible.

For such a substance to receive any Form, it cannot itself be associated with another Form. Neither can space be associated with any of the Forms corresponding to the four elements of Plato’s primitive periodical table, namely earth, air, fire and water. Therefore, the receptacle cannot be thought of as a body of air which may be enveloped by a building, or as a mass of earth which could take the shape of a building. The receptacle is invisible and immaterial. Its very existence can only be discerned by what is often referred to as a kind of bastard reasoning.

Given that Plato views the very existence of the receptacle as a matter for conjecture, he might consider as curious Peter Eisenman’s attempts to materialise it,
that is, to actually build the receptacle. Eisenman refers to the receptacle as Chóra, as does Alberto Pérez-Gómez, another scholar to take an interest in this obscure Platonic doctrine.

In the present context Pérez-Gómez’s treatment of receptacle space is more relevant than Eisenman’s. As will be seen shortly, Pérez-Gómez’s views are in general accord with Plato’s epistemology. However, from the standpoint of The Republic, it is important to first note that Pérez-Gómez does not describe Chóra as receiving the kinds of Forms which Plato has in mind (The Bed Itself for example), when addressing the topic of craftsmanship. Appealing to Plato’s Timaeus as a source and as an authority, Pérez-Gómez describes space as a meeting place or threshold between corporeal reality and some kind of transcendent realm. The latter he associates with such things as religion, culture, myth, and mystical experience, but otherwise that realm remains undefined by Pérez-Gómez. He argues that space, when conceived in terms of Plato’s receptacle, provides architects with a medium through which to communicate concerns other than those which are purely utilitarian or technical in origin. Chóra, referred to as “the space of architectural meaning”, is presented as the remedy for secular instrumentality, the phenomenon which Pérez-Gómez has previously identified as causing the crisis facing modern architecture. Pérez-Gómez seeks to reinstate a conception of space which, if it were widely accepted, would establish a metaphysical framework in which a truly Platonic architecture could succeed. However, from the standpoint of The Republic, he does not adequately describe the transcendent world which the Chóra receives and embodies.

A more philosophical reading of Plato suggests that Chóra is the receptacle of nothing other than the Forms, but Pérez-Gómez’s appreciation of Plato is profoundly affected by what he values as an authentic inheritance, that is, the Neoplatonic tradition in architecture. While exponents of that tradition might have shared Plato’s conception of space, their works are not conceived as instances of Forms. Traditional churches, are not simply instances of The Church Itself; rather,
they convey religious and political meanings. Should the Neoplatonists ever have treated space as a receptacle, then, as Pérez-Gómez states, they did so in order to frame institutions with an order that had been defined by the church.151 Rather than viewing Chóra as the receptacle of Forms such as The Bed Itself or The Church Itself, Pérez-Gómez treats Chóra as a traditional receptacle of dogmas. His primary concern is that contemporary architecture be used as a vehicle for the communication of meaning. He emphasises the role of architecture as a medium, but he is not concerned with the messages which might be conveyed through that medium. Aware that architects are no longer dictated to by the church regarding cosmic order, or religious dogmas, Pérez-Gómez goes so far as to state that the provision of meaning, or the “writing [of] the script[s] for these dramas”, is “a crucial part of the architect’s design activity”.152 To reflect on Plato’s theory of craftsmanship as presented in The Republic is to suggests that Pérez-Gómez’s thesis is not in the grain of classical Platonism at all, but is rather a reinterpretation of Neoplatonic values.

Plato’s philosophy of craftsmanship holds that architects should position such Forms as The House Itself in space, or in Chóra, just as the craftsman in The Republic translates The Bed Itself into a spatial reality. Plato does not give architects the liberty to personally script a narrative that is projected into the spatial medium. Rather, he gives architects the more onerous task of knowing the Forms, an austere, ascetic and mystical activity. Neither does Plato place any significance in the spatial medium itself, mentioning it only briefly in his Timaeus. Rather, his emphasis is always on the Forms. With its emphasis on space as a vehicle for any kind of non-instrumentalist expression — according to architects’ sole discretion — Pérez-Gómez’s design philosophy bears only a slight resemblance to Plato’s. Even then, it resembles an obscure doctrine in an anomalous dialogue. Within the context of this dissertation, where Plato’s Timaeus is treated cautiously — as though when compared to Plato’s other dialogues it were in another style153 — the Platonic conception of space as a receptacle for Forms needs to be viewed as a minor and
somewhat peripheral doctrine.

The value of Pérez-Gómez’s work for the present study lies in its negations. There is an otherworldly dimension to *The Republic* which is irreconcilable with the kind of instrumentalist methodologies which Pérez-Gómez derides. By attacking instrumentalism and promoting alternative epistemological systems Pérez-Gómez makes way for philosophical Rationalism, the epistemology of *The Republic*. Attention should also be given to what Pérez-Gómez refers to as the progressive thinning of space which occurred during the Renaissance. In particular, the development of perspective drawing techniques is cited as a key moment in the reduction of space to a purely empirical phenomenon, stripped of its previous mystical depth. It would be true of Plato’s approach to craftsmanship to argue, as Pérez-Gómez does, that Platonic buildings should not express deterministic, Newtonian, or positivistic world views. He associates these with perspective drawing techniques and the demystification of space.

Within the context of the current dissertation, the concept of receptacle space warrants only minor consideration. In the previous discussion of sunlight it was concluded that sun-lit buildings are conducive to an appreciation of Plato’s sun analogy and, therefore, are conducive to the contemplation of their corresponding Forms and in turn the illuminator of those Forms, *The Good*. In like manner, it could be claimed that buildings which are moulded from plastic materials are conducive to an appreciation of Plato’s malleable gold analogy and are therefore conducive to the contemplation of space as the receptacle of Forms. Meanwhile, materials which, whenever any opposite or entirely different nature is stamped upon them, take the impression badly because they intrude their own shape, are not conducive to the contemplation of Forms. Hence plastic materials, such as concrete, have a greater capacity to edify viewers than materials such as logs, which retain visual and structural characteristics pertaining to their origins.

The interiors of Kahn’s First Unitarian Church and School in Rochester, his Eleanor Donnelley Erdman Hall in Bryn Mawr and the whole of his National
Assembly building in Dacca demonstrate an extensive use of off-form reinforced concrete. In terms of Plato’s conception of space, the concrete elements of these and many other buildings by Kahn could be viewed as the impressions of Forms into a plastic material, not unlike malleable gold. Similarly, individual bricks in Kahn’s work could be viewed as impressions of The Brick Itself into another plastic material, clay.

It has been stated above that Kahn makes a distinction between ephemeral elements, such as window joinery, and concrete and masonry walls which, on one occasion, he defines as architecture. For this reason, the non-plastic nature of timber as it features in his work need not overly detract from a Platonic reading of his buildings. With the exception of his timber houses, Kahn usually uses timber as a lining material or for joinery in his larger institutional buildings, and, as stated, he distinguishes between such ephemeral elements and the more permanent underlying structures of those buildings.

Despite Kahn’s work being generally conducive to an appreciation of Plato’s malleable gold analogy, it should be noted that the plasticity of concrete or brick is not one of his key theoretical concerns. For this reason, the reading of his work offered here is, ultimately, extrinsic to his espoused theoretical position.

Prohibitions

Thus far it has been seen how Kahn’s buildings exploit sight, the only faculty of sensorial perception to which The Republic ascribes any value. Since visual apprehension alone is not enough to determine many aspects of Kahn’s buildings, they stir the mind and the faculty of reason, thus steering the viewer’s mind upwards. Kahn’s buildings also make use of the visible world’s other potentially edifying aspect, that is, its implicit value as a source of analogies for the intelligible world. Primarily, they do this by their relationship to sunlight, which is analogous to the Forms’ relationship to The Good. It has also been seen that Kahn’s buildings act
as visual aids or prompts for intellectual activity. Printed copies of *The Republic* may only be sensible artefacts, but they raise readers’ minds to the contemplation of the purely intelligible Forms. Just as a mirror image is useful when shaving a real face, so a triangular tile pattern can aid in the contemplation of *The Triangle Itself*. Like triangular tile patterns, Kahn’s buildings have the potential to prompt viewers to contemplate certain qualities associated with the Forms, such as their scalelessness, their immutability and their tendency to be geometrical by default.

The only issues left unexamined are those which pertain to *The Republic’s* various prohibitions. Does “Form and Design” or the buildings which can be associated with that text, contravene any of Plato’s bans relating to human production? The prohibitions within *The Republic* which most affect architecture are the ban on simulacrum (epitomised by Homer’s poetry and representative art), a prohibition against the kinds of tricks which artists play with perspective and the ban on florid rhythm and harmony, specifically in music, but also in other kinds of art.

What Plato dislikes most about poetry and other things like it — dramatic productions and representative art for example — is the presentation of mere images which are at two removes from truth. His reasoning suggests that paintings of beds merely call particular beds to mind, while actual beds could lead viewers to contemplate *The Bed Itself*. It follows that a bed which is built to look like something other than a bed — a good example being a contemporary children’s bed designed to look like a racing car — would likewise lead a viewer’s mind downwards by causing them to think of things of the phenomenal world rather than *The Bed Itself*. Like paintings, racing car beds can be viewed as copies of copies. Extrapolating Plato’s ban on simulacrum to the field of architecture, it can be seen that architects who copy things other than the Forms corresponding to the class names of their buildings or building elements, effectively produce artefacts which are twice removed from truth.

From the standpoint of *The Republic*, architects could readily do what bed makers are claimed to do and look to the Forms to make buildings. However, it is
quite often the case that buildings signify or draw attention to earthly phenomena, such as natural landforms or biological structures including plants, animals, or the human body. Whether the resemblance is literal or highly abstracted, such buildings can be thought of as the architectural equivalents of racing car beds. To Plato, buildings which are literal copies of earthly phenomena — *The Long Island Duckling* being one celebrated example — would epitomise the worst possible kind of architecture.

Interestingly, buildings which present images other than those which are intrinsic to their own functions or means of production, are the subject of specific criticism within “Form and Design”. Kahn’s criticises *The Statue of Liberty*, saying

> [t]ake the beautiful tower made of bronze that was erected in New York. It is a bronze lady, incomparable in beauty, but you know she has corsets for fifteen stories because the wind bracing is not seen. That which makes it an object against the wind which can be beautifully expressed, just like nature expresses the difference between the moss and the reed. The base of this building should be wider than the top, and the columns which are on top dancing like fairies, and the columns below growing like mad, don't have the same dimensions because they are not the same thing. This story if told from realization of form would make a tower more expressive of the forces. Even if it begins in its first attempts in design to be ugly it would be lead [sic] to beauty by the statement of form.155

Ignoring the possibility that *The Statue of Liberty* is not even be classifiable as a piece of architecture, or subject to that discipline’s measures, Kahn criticises the statue for signifying something other than its essence as a tower. Rather than signifying its primary essence — it is firstly “an object against the wind” Kahn argues — the statue is perceived as a female figure. Kahn’s position is of course contestable, since it could be argued that his example is essentially a statue, not a tower. What his example does point to is his dislike of simulacrum. Kahn dislikes the way in which *The Statue of Liberty* charms viewers with an image of a human figure and he would prefer viewers to apprehend its essential structure.

Many of Kahn’s buildings can be interpreted as physical representations of
directly related essences, as the craftsman’s bed is simply a manifestation of *The Bed Itself*. It could be argued, for example, that The First Unitarian Church and School in Rochester signifies *The Unitarian Centre Itself*, as the craftsman’s bed signifies nothing other than *The Bed Itself*. However, if Kahn’s remarks about *The Statue of Liberty* reflect a dislike for simulacrum, then such a sensibility is not applied strictly in all of his buildings. The entrance façade to Kahn’s Performing Arts Theatre in Fort Wayne in Indiana (1959-73), patently looks like a theatrical mask (Figure 37). While there is no evidence that Kahn consciously conceives this building’s façade “as a work of imitative imagery”, he frequently describes the auditorium of the same Performing Arts Theatre as a metaphor for a violin (Figure 62). Highlighting a paradox of Kahn’s Platonism, Danto uses these examples to argue that Kahn similarly conceives The Richards Medical Building as a metaphor for laboratory apparatus. While these examples aren’t as literal as *The Long Island Duckling*, they do entail simulacrum to some extent. For example, the auditorium roof proposed for Kahn’s Performing Arts Theatre in Fort Wayne could be interpreted as a representation of violins, which in turn are copies of *The Violin Itself*.

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*Figure 62: Sectional sketch of Performing Arts Theatre in Fort Wayne in Indiana.*
Hence, Kahn’s criticism of *The Statue of Liberty* for its imitation of a female figure and the dislike for simulacrum which this example implies stand in opposition to one or more examples from his work. Even so, Kahn’s argument against simulacrum remains consistent with many of his theoretical pronouncements. Kahn would often ask, rhetorically, what a building or building element wants to be. This kind of question implies the existence of an essence which is specific to buildings. Buildings are not copies of theatre masks, violins or scientific apparatus. Rather, each is a manifestation of its own existence will, a favoured term of Kahn’s. Similarly, masonry arches in Kahn’s work are not described as copies of arches built elsewhere. Rather, as previously seen, Kahn claims in 1972 that arches are demanded of masonry construction, wherever or whenever bricks are used. Kahn’s preference for arches over lintels, that is, his preference for palpable structural systems, can also be interpreted in terms of *The Republic*. In Book 10, Plato argues that craftsmen and the users of their artefacts have a genuine understanding of what objects are and what they do, whereas artists, poets and other such imitators, merely deal with superficial appearances. Plato writes that

> all poets from Homer downwards have no grasp of truth but merely produce a superficial likeness of any subject they treat [...]. For example [...], the painter paints what looks like a shoemaker, though neither he nor his public know about shoemaking, but judge merely by colour and form.\(^{158}\)

In the discussion from which this passage is quoted, a craftsman’s understanding of an artefact is valued more highly than an artist’s impression regarding an artefact’s surface appearance. When extending this principle to architecture, an architect acts as an artist, rather than a craftsman, when their detailing of a building is concerned with that building’s surface appearance rather than its use or its means of production. For example, decorative columns that provide no structural purpose but are merely applied to a building’s surface to achieve a visual effect could be deemed misleading. The actual, measurable, countable and weighable conformity of a
material artefact to its corresponding Form is Plato’s measure of good mimesis. Any design action made simply for the sake of appearances can be viewed as an aberration from a Platonic stand point. The same could be said of hidden steel lintels where masonry arches provide a real solution, as opposed to a cosmetic one.

By stripping ornamentation and by exposing joints, Kahn offers viewers very little opportunity to interpret his buildings as anything other than what they are. In this regard, they’re comparable to the kind of bed which Plato evokes in *The Republic*. The craftsman’s bed is presented as a purely utilitarian object. Although Plato does not describe the bed in detail, the context in which it is discussed suggests that the bed he has in mind is unadorned, irreducible and assembled in a rational and straight forward manner. Its sole function is to support a sleeping body and it communicates no message which is extrinsic to that function.

Kahn’s preference for what he saw as the truthful presentation of structure and materials is first expressed in his 1944 essay, “Monumentality”. Here Kahn advocates structural rationalism and the honest display of the inherent structural properties of building materials such as steel and stone.

Kahn’s writings regarding the honest display of materials and constructional methods are unambiguous. He advocates the rejection of visually deceptive constructional techniques, and for the most part, his built works satisfy this theoretical imperative. Typically, where lintels are used in his First Unitarian Church and School in Rochester, they are not disguised. For example, the depth of lintels above door openings to the central sanctuary is expressed in a quarter height course of blocks which circles the sanctuary (Figure 63). However, at variance to the principle elucidated in his reference to *The Statue of Liberty* and his conversations with bricks, Kahn does use hidden steel angles as lintels above lower level class room windows at Rochester. Another exception to Kahn’s rhetoric concerning palpable building structure, which is remarked upon by Kenneth Frampton, is the outer wall of the Phillips Exeter Library. Although this wall appears to be structural, it only carries its own weight. An independent system of concrete columns supports
the building’s floors. It could be argued that this building violates Plato’s ban on simulacrum by appearing to be a traditional load bearing masonry building.

Despite such anomalies, the honest expression of materials and their structural properties is clearly one of Kahn’s consistent design intentions. The best evidence that he seeks to realise this aim can be found in his Indian Institute of Management, where his so-called composite order of brick arches and reinforced concrete ties provides a clear and honest expression of these two materials’ combined functions above an opening (Figure 36).

The next prohibition of relevance to Kahn’s architecture pertains to the kinds of tricks which representative artists use. In Book 10 of *The Republic*, Plato criticises the visual devices used by representative artists to fool the eye into seeing such things as depth in a two dimensional image.\(^{162}\) When Socrates describes the faculty in humans to which imitative kinds of art make their special appeal,\(^{163}\) he describes a number of deceptive phenomena.
The apparent size of an object, as you know, varies with its distance from the eye [...]. So also a stick will look bent if you put it in water, straight when you take it out, and deceptive difference of shading can make the same surface seem to the eye concave or convex; and our minds are clearly liable to all sorts of confusion of this kind. It is this natural weakness of ours that the scene-painter and conjuror and their fellows exploit with magical effect.\textsuperscript{164}

Socrates then claims that the arts of measuring, numbering and weighing prove such appearances to be false.\textsuperscript{165} According to Socrates, these tools have happily been discovered to help us with these difficulties, and to ensure that we should not be guided by apparent differences in size, quantity and heaviness, but by calculations of number, measurement, and weight.\textsuperscript{166}

Socrates argues that the human mind harbours a weakness on which deceptive kinds of art (illustrative painting, conjuring and poetry), work a kind of magic. That part of the soul which is fooled by deceptions is viewed as inferior to that wiser part of the soul which seeks truth through measuring.

Importantly, Plato’s criticism is directed at those who would compensate for sensorial shortcomings. The sight of a straight stick appearing to be bent by water would actually have an edifying effect; it would aggravate the mind and prompt the use of reason. Hence a straight ramp descending into a pond can be thought of as a particularly edifying piece of architecture. Plato’s ban applies to those who would put a kink into such a ramp at the point where it meets the pond, so that it would appear to be straight. The sight of an apparently straight ramp — one which in reality is bent — would not force viewers to exercise reason, because they would be content with the judgment of their senses. As it was argued at the beginning of this chapter, architectural devices which draw attention to the inadequacy of sensory apprehension have the potential to edify viewers. Plato accuses those of conjuring who would exploit viewers’ sensorial shortcomings in order to convince them that everything is okay despite the inadequacy of their sense perception.
The entasis of columns, commonly associated with advanced classical architecture, is a good example of a deceptive device that an architect might use to satisfy the eye. When seen from a distance against the brightness of the sky, a slightly convex column appears to be straight, while measuring proves otherwise. Since such a column appears to be straight, viewers are disinclined to question their sensory apprehension of it. Meanwhile, owing to the flaring effect of backlighting, a column which actually is straight would appear to be concave. According to Plato, a viewer’s disturbance when confronted with such an optical illusion might cause them to measure a cylindrical column, find that it actually does have a uniform circumference, realise that their eyes have failed them yet again and so be reminded of the need to exercise reason. Erwin Panofsky provides another example of this kind of deception, pointing to a poem by John Tzetzes, in which Phidias “is said to have given objectively incorrect proportions to a statue of Athena”\(^\text{167}\) to account for its apparent smallness when elevated high above the viewer. Panofsky writes that for Plato

\[\text{this work would have been a standard example of that sham art which he blamed, almost as if expressly referring to this statue by Phidias, for setting forth, in deference to perspective proportion, not […] the actual proportions […] but […] those which seem beautiful.}\(^\text{168}\)

At no time does Kahn speak or write of altering his geometrical compositions in deference to perspectival distortion. He does not enlarge objects which are viewed from a distance and his buildings do not display a tendency towards what Plato describes as deceptive semblances. In the case of his First Unitarian Church and School in Rochester, his working drawings document plans and elevations which are perfectly orthogonal, without perspective alterations for the sake of appearance. The clearest demonstration of Kahn’s disregard for the sensory experience of geometry by viewers of his works are the four large circular openings facing the atrium space of his Phillips Exeter Library (Figure 64). From the atrium floor, where people arrive into the space, these four circles appear to the eye to be
squat and elliptical, while measurement reveals them to be circular. Should Kahn be concerned with the judgment of sense, he might wish to correct this phenomenon by creating tall elliptical openings which would appear to be circular from their most common vantage point below.

Figure 64: Phillips Exeter Academy Library, atrium.

From this analysis it can be seen that Kahn’s theoretical statements and much of his built work are in accord with Plato’s ban on simulacrum and deceptive semblances. However, does his work satisfy Plato’s ban on florid compositions?

Earlier in this chapter it was argued that, while architects are not required to emulate the proportions which create harmonious music, *The Republic* (401a) does instruct musicians, architects and other manufacturers to exercise simplicity and restraint with respect to proportion and eurhythm. What can be gleaned from this most cursory of instructions?

Simple and restrained rhythms and proportions in architecture are often achieved at the expense of function. Since craftsmen, in Plato’s scheme, are
primarily involved in the production of useful artefacts, Plato’s instruction could hardly be interpreted as a call for cubic edifices, or uniform façade treatments, where such effects are achieved at the expense of a building’s utility. Given the complexities typically associated with a building’s usefulness, such as the need for rooms of differing sizes and the need for both large and small openings, *The Republic* could only be instructing architects to use rhythm and proportion with as much simplicity and restraint as is possible. Where very simplistic (or monotonous) rhythms can be achieved without compromising usefulness, they should be employed. Otherwise, only as much repetition should be applied as utility permits. Likewise, cubic and square proportions could be used wherever this can be done without compromising usefulness. The example of the sanctuary in Rochester highlights the extent to which utility and geometry are typically at odds.

An example of a simple and restrained rhythm in architecture could be expressed as ABABA. Here A could refer to the width of a typical column and B to the regular spacing between three such columns. Before looking for evidence of simple and restrained rhythms in Kahn’s First Unitarian Church and School in Rochester, it is interesting to note the clear expression of this compositional device elsewhere in Kahn’s oeuvre. The clearest example of this device in Kahn’s work is seen in the rhythm established by the repetitive vaults and intermediate flat roofs of Kahn’s Kimbell Art Museum in Fort Worth Texas (Figure 65).

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**Figure 65:** Kimbell Art Museum, elevation showing vaults.
Notwithstanding the anomaly of the portico vaults not featuring a skylight, the rhythm established by this building’s side façades can be expressed as ABABABABABA. Benedikt notes this and describes the Kimbell as having a “banal repetition of ribs”. Kahn achieves a similarly monotonous effect with the long elevations of his Salk Institute for Biological Studies (Figure 66).

In those instances where Kahn can achieve a monotonous or repetitive effect with ease, as in the design of large projects with many identical components, he does so without hesitation, showing no desire to vary the expression of those components. For example, the Indian Institute of Management features fifteen ostensibly identical dormitory blocks, together with three more special blocks all based on the same planning strategy and utilising an identical architectural language.

Judging by Kahn’s preliminary proposals for the First Unitarian Church and School in Rochester, it was clearly his initial intention to use relentlessly simple rhythms for this project as well. The rhythm established by the façades of his first design proposal of December 1959 can be expressed as ABBA. Since all four elevations are identical, a particularly monotonous rhythm of ABBA, ABBA, ABBA, ABBA can be read when circling the design (Figure 67). Being square, the building has equally simple proportions in plan.
Figure 67: First Unitarian Church and School, preliminary model, 1959.

A later proposal, dated March 1960 (Figure 68), employs a device which Kahn had developed earlier for his (unbuilt) Jewish Community Centre near Trenton, New Jersey (Figure 69). In each of these proposals, identical and radially symmetrical pavilions, each with their own space defined by their own structure, become the building-blocks for a pattern which orders the entire complex.

Figure 68: First Unitarian Church and School, preliminary model, March 1960.
In Kahn’s final and realised scheme for Rochester, a greater emphasis on utility overrides the importance placed on regular rhythms in his preliminary schemes. Despite this, Kahn does achieve a simple and restrained rhythm with his use of the brick blades that flank the main entrance to this building (ABBBCBBB) (Figure 70).

Figure 69: Trenton Bath House.

Figure 70: First Unitarian Church and School, entrance.
The rhythm of the entrance façade might raise the viewer’s expectation that the other facades are regular, but none of them are to the same extent. This of course, is in keeping with Kahn’s view that “design”, which is subject to circumstances, makes dimensions, or, as stated in “Form and Design”, “[i]t is the role of design to adjust to the circumstantial”. Again, an edifying effect may be caused if viewers expect regular rhythms and find them absent. The viewer would be drawn into rational inquiry should they ponder the idea of a regular rhythm and reflect upon the nature of this idea which they had expected the building to adumbrate.

No doubt the building also responds to the clients’ expressed dislike of geometrical order at the expense of functionality. Their view is most clearly expressed to Kahn in a report based on a survey of the congregation in which an overwhelming majority of 68% of respondents chose the word “functional” to describe a suitable Unitarian church, while only 9% chose the word “symmetrical”, and words such as formal, geometrical, rhythmical, or ordered are not mentioned at all. This may have influenced the building committee’s reluctance to recommend Kahn’s first design proposal to their congregation, concerned as they were with that proposal’s “inherent squareness”. However, if the issue of precise dimensional regularity is put aside, immediate impressions of this building tell a different story. Viewers are immediately struck by the relentless or monotonous architectural language which Kahn applies to the exterior of this building. He alternates two main elements, flat brick panels and two storey high window alcoves. These are not regular in width, but neither are the fingers of a hand. Ignoring their width, the rhythm established by these two elements can be expressed as ABABABAB and so on (Figure 71). Although some of the simplicity and restraint of his preliminary proposal is lost, Kahn still makes the façades of his First Unitarian Church and School in Rochester regular and repetitive.
Chapter Summary

In a quotation at the beginning of this chapter, Kahn expresses the view that a building has otherworldly origins, in a so-called “unmeasurable” realm of inspiration. This “unmeasurable” building essence goes through worldly or “measurable” means to become manifest, yet on completion it evokes “unmeasurable” qualities. In this way, buildings can retain some of the splendour of the young architect’s dream.

Plato’s position with respect to artefacts runs parallel to Kahn’s. Plato accepts that artefacts exist in the sensible realm, but he sees them as mere adumbrations of purely intelligible entities. Although they are merely objects of opinion, Plato would be pleased if artefacts edified their users or viewers by conducing the kind of thought which he associates with the purely intelligible realm.

The parallel aims of Plato and Kahn invite an alternative approach to the interpretation of Kahn’s buildings, one which views Kahn’s built works through the lens of The Republic. It could be contended that the hermeneutical approach adopted here involves an improbable conflation, based on evidence which at best could be
described as circumstantial. However, considering Kahn’s oblique and poetic way of elucidating his design intentions, historians have little more than circumstantial evidence on which to base any kind of interpretation of his work. Based on similarities with his travel sketches, Vincent Scully argues that the towers of the Richards Medical Laboratories could be a translation of the towers of San Gimignano. As Michael Benedikt writes, the entry to the Kimbell Art Museum might be intended to harness the chi flowing down that building’s sloping site.

When viewed beside these and the multitude of other readings which Kahn scholars have made of his buildings, the interpretations offered in this chapter remain plausible.

Like The Republic, “Form and Design” presents an ideal realm of Being and a compromised realm of Becoming, and objects of the latter, according to both Kahn and Plato, should attest to the higher realm which they adumbrate. Given this fundamental congruency of thought, it is conceivable that Kahn’s own dualistic philosophising could have led to strategies for transcendent attestation which happen to resonate with some of the arguments which Plato articulates in The Republic.

The tension which exists in many of Kahn’s buildings, between the judgement of visual apprehension and the judgment of rational inquiry, resonates well with the only passage in The Republic (523) in which Plato vindicates sense knowledge. Using this observation, it has been shown that Plato’s finger analogy is a useful tool for relating certain manneristic tendencies in Kahn’s work to his dualistic rhetoric. For example, the radial distribution of light towers about Kahn’s sanctuary in Rochester may lead viewers who are too trusting of their immediate visual apprehension to the erroneous belief that this space is a square, while more inquiring viewers may use reason to conclude that the space is rectangular. According to Plato, the sight of one’s own fingers has a similar effect, since viewers need to think rationally if they wish to make conclusions about each finger’s relative and absolute size. Applying the logic of Plato’s analogy to this and other ambiguous aspects of Kahn’s work, reveals devices with the potential to edify viewers by causing them to
doubt the judgment of sense.

Plato’s analogy in *The Republic* (508) between the sun and *The Good* provides a tool which could account for the numinous quality of daylight within Kahn’s buildings. To the eyes, daylight defines the shape of Kahn’s interior spaces, as to the intellect, *The Good* defines those Forms in which Kahn’s buildings participate. This Platonic interpretation of daylight in Kahn’s buildings reconciles one of the most salient and admired aspects of Kahn’s work with his seemingly otherworldly “form and design” theory.

By first asking how physical copies of *The Republic* direct people’s minds towards the Forms, this chapter proposes other ways that Kahn’s buildings might “evoke […] unmeasurable qualities”. It is argued that attention seizing geometrical figures in Kahn’s buildings could have an immediate effect on viewers, causing them to think of squares or circles for example. Kahn’s buildings might also reflect the Forms’ abstract qualities by being autonomous, immutable, static, or made from plastic materials which bear no impressions other than those of their corresponding Forms. Where Kahn’s buildings differ from the spirit of *The Republic* is in their evocation of historical precedents, for example castles.

Kahn’s expressed dislike for simulacrum parallels Plato’s ban on representative art. Many of Kahn’s buildings and building elements signify nothing beyond their own intrinsic essences. However, this principle is not strictly adhered to since a few of Kahn’s buildings do involve copies of copies. Similarly, due to a reliance on such things as hidden lintels, it could be argued, from a strictly Platonic standpoint, that some of Kahn’s buildings present superficial images.

The absence of distortions in deference to sensorial inadequacies in Kahn’s work is consistent with Plato’s ban on deceptive semblances. Kahn’s buildings also tend to have repetitive and simple rhythms, and this parallels Plato’s ban on complicated music. From the discussion of these issues it has been shown that Plato’s various prohibitions in *The Republic* are useful tools for interpreting Kahn’s built work.
While the interpretations of Kahn’s work which have been presented here may seem obscure, they do provide possible explanations of Kahn’s intentions which are intrinsic to his own espoused metaphysics. Whether speaking of the “measurable” and “the unmeasurable”, “law and rule”, “form and design”, or “silence and light”, Kahn dividing the universe into two realms, one a slave to circumstances and confusion, the other ideal. His discussions of his compromised Unitarian Church often make reference to that building’s “form” diagram, as Kahn encourages his audience to contemplate the ideal, not only the actual. To Kahn, therefore, any device which could encourage viewers of his buildings to exercise reason over perception might be welcomed, since it would shift their attention from a compromised and circumstantial building and towards the unseen realm of “form”.