**Architectural Report About** 

# **SPACE IN ARCHITECTURE**

SPACE INDICATION IN ARCHITECTURAL LANGUAGE

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# Contents

1.	Introduction of Space
2.	Space and Human Dimension
3.	Mechanisms of Perceiving Space
4.	Space and Distance
5.	Ways of Perceiving Space
6.	Space and Time



# **<u>1. Introduction of Space:</u>**

Space is one of the elements of design of architecture, as space is continuously studied for its usage.

Architectural designs are created by carving space out of space, creating space out of space, and designing spaces by dividing this space using various tools, such as geometry, colors, and shapes.

Space ideas must be considered the characteristic quality of architecture, distinguishing it from the arts of the painter or sculptor. Our impression of architecture is more than the sensation created by the mere treatment of surface elevations, or even the modeling of mass, in terms of the outward form. The departure in architecture is the experience of enclosed space, through which we might pass with a multiple series of visual and physical impressions.



*"The physical Environment that we construct is as much a social phenomenon as it is a physical one"* 

Harold M. Proshansky (1920–1990)



### 2. Space and Human Dimension:

There is a global human language of space. Our more conventional spoken and written language comes in many varieties and although a great number of them uses the alphabet.

Whether we are inside a building or outdoor, we are inseparable from space. The space that surrounds us and objects enclosing that space may determine how far we can move, how worm or cold we are, how much we can see and hear, and with whom we can interact.

It may heavily influence the mood we are in, and the way we feel towards tasks we might have to perform and people we might find in our company. So we demand a

great deal from this space. At one very basic level we have specific needs for such things as adequate lighting and fresh air to breathe.

We need to be able to reach furniture, equipment and other facilities to perform some tasks. At a rather higher level, we need space to help us feel right about our current situation.

*"The instinctive idiosyncrasies of the average person are of far greater importance than the deliberate originality of the individual"* 

N.J Harbraken (1928- ...)



A stadium both Full and Empty.

Is this really the same place?! ... It is of course the same Space

### 3. Mechanisms of Perceiving Space:

In order to understand our relationship with space, we first need to explore how we become aware of it. The processing of visual sensations into perceptions of the world around us involves a complex interaction of the eye and brain. Space perception, process through which humans and other organisms become aware of the relative positions of their own bodies and objects around them. ... Space perception provides cues, such as depth and distance that are important for movement and orientation to the environment.



### A. Size and Distance:

Architect must appreciate distance and size in space. Clearly this is a rather subtle and sometimes unreliable process. For Example, I learned early on never to let the client visit the building site when only the foundation were dug, because it always looks far too small at this stage, and several of my clients when shown the ground slab have panicked and questioned whether the builder has got it right or whether I have grossly underestimated the size of space they need!.

So it is with distance. We estimate the distance of an object in space from several important clues. First the size it appears to be, and secondly the way it seems to move in space as we move both our head and eyes.

Finally our brain is able to perform some impressively clever analysis on the information coming from our two eyes, which give slightly different images.



#### B. Scale:

Scale in space it introduced by the subject in order to discover an even more subtle and important component of the language of space. Of course we know that objects do not actually change size as they move away from us the people at the far end of a queue are not actually smaller than the people right next to us.



Architect talk quite specifically about the "SCALE" of building. They don't refer here to the scale at which they draw it. Scale here means the effect the building has on us in terms of relative rather than absolute size. We can have buildings that are on a grand scale, or buildings that are on a more humble scale. As these adjectives suggest, the building seem to be trying to play a role in society with their grandness or humility. As a result, they speak through the language of space to us about the people who paid for, designed or occupy them. The famous Paris Opera was completed by Garnier in 1874 on an enormous scale.



Charles Garnier's Paris Opera is offers an excellent example of huge scale. All the features of space that relate directly to the human form are designed over-size. Everything about this building is quite simply huge – the entrance, the foyer, the famous staircase and the auditorium itself all seem to be grand.

#### C. Sensation and perception:

In order to understand our relationship with space, we first need to explore how we become aware of it. Primarily of course we see it, since it is largely evident to us visually. The processing of visual sensations into perceptions of the world around us involves a complex interaction of the eye and brain. Our own characteristics are such that our visual sensations largely dominate our perceptions, since over two-thirds of the nerve fibers that enter our central nervous system are from the eyes! Because of this we have come to live in a very visually dominated culture, and it is easy to forget that space is also perceived through the sensations of sound, smell and even touch. Perception is actually more than just sensation. Perception is an active process through which we make sense of the world around us. To do this of course we rely upon sensation, but we normally integrate the experience of all our senses without conscious analysis. It is only when something is unusual or out of place that we notice the different sensations, our differential attention to them, and any incongruities.

#### D. Scale of movement:

Our discussion of scale so far has tended to imply that the human viewer is static. Another form of scale is that which relates not so directly to ourselves, but to our pattern of movement. As pedestrians we not only have an approximately constant size but we also maintain a more or less constant speed of movement. The way buildings appear and move across our field of vision is largely dependent on this pace of life. As pedestrians we may walk directly past buildings, perhaps on the pavement of a street. In such circumstances we may not only be able to reach out and touch them, but also to feel their effects in a wide variety of ways. We might sense the change in temperature as they create shade or perhaps shield us from the wind; we may hear the sounds of the city reflected back off the walls; we may even smell the materials of the building or the preparation of food or other processes inside. However, the modern technology of travel has changed this once constant speed of movement and removed this multi-modal sensory perception. When travelling at speed we are likely to be further away from buildings, to pass them more quickly, and to be inside a closed environment such as a motorcar, which insulates us from all the senses but sight. This fundamentally changes our experience of buildings through time. What works in terms of reading a building at walking pace does not necessarily work at the pace of a fastmoving road vehicle.





The laboratory at Penn State University by Louis Kahn.

This is a sophisticated piece of architectural manipulation of scale. Elements simultaneously manage to communicate both the scales of the institute and of the individual laboratory. The communities of scholars who make up a university like this are thus beautifully symbolized.

And there are a lot of factors and mechanisms to perceiving space in architectural language such as:

- E. Scale and the social order.
- F. Foreground and background.
- G. Verticality
- H. Symmetry.
- I. Color.
- J. Number
- K. Meaning.

### 4. Space and Distance:

In the previous I have discussed both mechanism and ways of perceiving space and form. We have so far largely concentrated on the visual appearance of architecture. Like space, distance is not the abstract measure so often assumed in theories of

architecture. In any situation or between people is seldom have а common distance that are that are not for all which we find within our own most interpersonal matter of social based on the of our ability to detect species.

Public Distance

Social Distance

Personal Distance

Intimate Distance behavioral setting, the distance accidental or arbitrary. We understanding of those appropriate and those the normal setting in ourselves. at least culture. However. distance is not just a convention but is essential characteristics fellow members of our

#### Human Distance

We are now ready to explore the meaning of distance within a specifically human language of space. Distance is not abstract, since it quite strongly relates to the way we are aware of our fellow human beings. Under normal circumstances, the senses work in a series of nested spatial bubbles. We can see, hear, smell and touch people in that order.





#### A. Intimate distance:

Inside the distance of half a meter or so, we can touch another person. We may feel body heat and smell body, and we may smell breath and perfume. If facing one another, we can see the face in sufficient detail to appreciate emotion accurately unless very skillfully concealed. This then is a distance of trust and intimate activity. It is a distance that we enter normally only with permission. It is socially difficult to ignore someone within this distance, and some form of acknowledgement at the very least is expected. Indeed it may even be hard to ignore some else's presence simply because of the wealth of ways they can be sensed at this distance.



#### B. <u>Personal Distance:</u>

This distance runs out from intimate distance to about 1.2 meters. I rather dislike the name personal distance for this, since it becomes confused with other terms such as

and personal space so on. Remember that Hediger first used this to refer to the minimum spacing between members of a particular species. The fact is that of the all four distances commonly exhibited by humans can, under certain circumstances, be minimum distances.



#### C. Social Distance:

This distance is generally considered to run from about 1.2 meters to 4 meters. The closer distance here is that which would be used in polite society under normal circumstances. At the minimum social distance we can still see each other's face clearly but not intimately. We can carry out conversation at normal voice levels under most conditions.



#### D. Public Distance:

This is our final distance, and is generally considered to run outwards from the upper reaches of social distance. We will therefore call a distance of greater than 4 meters public distance. At very close public distance we probably find the nearest thing we can to the human version of the animal flight distance we considered earlier. Public distance is normally one at which we ignore other people in space. However, certain formal settings call for this distance to be

used,

these and are usually performances of some kind. Examples include а business presentation to а group of customers, a lecture to students, a concert, or indeed a theatrical event.

# 5. Ways of Perceiving Space:

#### The Classical Rulebook

Look at the illustration of Blenheim Palace just outside Oxford, designed by Sir John Vanbrugh and constructed between the years 1705 and 1720. This whole building is dominated by ideas of formal rules. Whether in plan or elevation, the organization, arrangement and proportions of elements are governed by the rules of the style.



The building is just packed full of geometrical rules. In fact it is a very sophisticated visual essay in the making, respecting, twisting and even breaking of these rules. Of course a scholar of the Baroque period would know about these rules in a very formal way, and could explain how his style was influenced by other architecture of the time.

We might discuss how Vanbrugh's use of this visual formal language developed at Blenheim compared with his earlier, equally well-known palace at Castle Howard in Yorkshire, and how his style changed further as he worked on other buildings.

The ideas behind this style depended on the precedents created by the Renaissance, which in turn depended on the classical language of Greece further developed by the Romans. The Baroque deliberately twisted and distorted the visual grammar of classical architecture. So rich is this very formal material that there can be endless debate on it.



#### **Perception as an Active Process**

This is an extremely important feature of the way we perceive the world around us. We have already recognized that perception is not a passive process but an active one, but just how does this work? Our eyes are not simply cameras recording the scene and playing it back on some mental screen of consciousness, and our heads do not contain some biological cinema playing to an audience of homunculi endlessly watching a projection of the world outside. Such a theoretical model of perception would of course actually get us nowhere. If in our head there really was a screen of



consciousness it would have to be viewed by some other mental power, which in turn would have another screen of consciousness watched by another viewer and so on. So strong is our visual picture of the world and so televisual is our society that it is quite hard for us to understand that perception simply cannot work this way.

#### Order, Pattern and Redundancy

This view of human perception as active and predictive, we can now see that as an experience unfolds we can examine the extent to which we have prior knowledge about it based on our ability to predict it. Let us consider a very simple model in order to explore the way this works.

We are watching a coin being tossed. We know from our previous experience of this kind of event that on about half the occasions this will come down heads and the other half will be tails. Both outcomes are equally likely, and no other result is possible. (Strictly speaking the coin could land on its edge and miraculously stay there, but this

is so unlikely that we can discount it!) So we have some advanced knowledge about the outcome of this event, and if we guess we are likely to be correct about half the time. The actual taking place of the event therefore does not remove all the uncertainty it would if we had no prior knowledge. Similarly, if we are watching a dice being rolled and trying to guess the outcome, we also have some prior knowledge, but rather less. Here only about one in six of our guesses are likely to be correct. The event itself then removes more uncertainty than does the tossing of a coin.





It is, however, much easier to understand redundancy in serial art forms such as literature and music than in the spatial experience of architecture. The poet and the composer decide the sequence of events for us, but the architect cannot do this. For this reason, much

more work has been done to analyses music and literature than architecture in this way. These sorts of studies have generated ways of encoding artistic style. Each composer and writer has his or her owns more popular words and phrases, and by such means it is possible to analyses a newly found sonata or sonnet to help decide if it really was by Bach or Shakespeare. Returning to Vanbrugh's architecture, we now see much redundancy. This of course comes from the basic underlying classical language upon which he bases his work. Certain features and shapes are common, whilst others may simply not be used at all there are no pointed arches for Vanbrugh, whereas Pugin was later to extol their virtue and even claim they were somehow right and truly Christian! But again there is more to it than that. The classical language repeats not only shapes and forms and elements; it also repeats relationships. In particular it relies upon a sophisticated array of proportions, including the fundamental so-called 'golden section'. Centuries later Le Corbusier was to advance a whole theory of architecture based upon the use of a similar proportioning system, 'Le modulor'. Corbusier rather broke free of the repetition of elements and relied for his redundancy much more on proportion.

"Le Corbusier devised a whole system of redundancy for use in architecture. Le Modulor depends not upon the repetition of elements themselves, but of the proportions of elements and their spacing. This allowed for a much more Functionalist agenda to determine the rough location and shape of objects in the building than did the classical sets of rules"

The Good and the Bad Side of Being Redundant!



We have seen then that this kind of redundancy can be a virtue, in contrast to the expectation set up by the more common meaning of the word! In this context, redundancy simply means that every event is not wholly unpredictable. Languages are characterized by having events that are not all equally likely, thus removing from us some degree of uncertainty about what is coming next. In turn this makes them redundant, since we can fairly accurately guess missing words or letters by reading those around them and using our knowledge of the pattern of redundancy. Without the introduction of some redundancy into material, whether it is prose, poetry, music, painting or architecture, we cannot have a discernible and identifiable 'style'. Not only is redundancy necessary to produce architectural style; it also acts in a rather more fundamental way to make space readable and understandable. Just as a telephone line can be noisy, so the visual world around us is full of interruptions and discontinuities.

The boundaries of an urban space may be entirely visible in theory, but are often not so in practice. A town square may reveal part of its surrounding buildings and yet conceal other parts through the canopies of trees. Street furniture such as lighting, phone boxes, umbrellas and so on also contribute to an obscuration of the complete elevations of surrounding buildings. However, the patterning of the individual facades together with a frequently found locally shared architectural style ensures that we can fill in the gaps in the conversation. We can, as it were, hum along with the space, knowing where it is going next and where its important features will be.



"This building facade has enough redundancy in it to be capable of surviving the obscuration caused by the landscape so that we are able to fill in the gaps"

In turn, of course, architects can play with our perception of this. Redundancy sets up expectations about what will happen next or, perhaps in architectural terms, just around the corner. Architects may choose to confirm those expectations or occasionally to surprise us by breaking the rules. Sophisticated architecture can often be seen to have more than one simple set of rules and then to play games with the resolution of these separate systems of redundancy. In a way this is just what fascinated the architects of the Baroque period in which Vanbrugh was so expert. It took the well-understood classical rules of architecture, reinterpreted by the renaissance, and then began to break them. More recently, post-modernism has adopted a similar strategy. The Sainsbury Wing of the National Gallery in London's Trafalgar Square, by Robert Venturi, does this in an almost linguistically serial way.



"The Sainsbury Wing of the National Gallery in London, designed by Robert Venturi. Here a kind of architectural joke is played in which the rules of the original Wilkins Building are followed slavishly at first, and then progressively ignored as we move further away"

Where the new building is closest to the original gallery by Wilkins, Venturi quotes the original architecture almost literally. As we move along the facade away from Trafalgar Square, however, he progressively reduces the accuracy of the quotation and introduces some entirely twentieth century forms and shapes.



The Expression of Romanticism

Compare now the architecture of Antonio Gaudi, approximately 200 years later than that of Vanbrugh with which we began this chapter. Here we see a much more fluid form, which is less dependent on conventional elements and altogether freer in its organization. Again, compare the music of Gaudi's time with that of Vanbrugh's and a consistent characteristic emerges.

At the time Gaudi was designing his famous and yet still incomplete masterwork, the cathedral of the *Sagrada Familia* in Barcelona, so Debussy was composing a fascinating little piano piece that he called *La Catedral Engloutie*.

Literally this means the submerged cathedral, and it tells the story of a cathedral that rises from the water. We hear the bell sound as it rises to reveal its full glory before eventually disappearing again. Debussy's music is incredibly expressive.



The Cathedral of the Sacred Family (Sagrada Familia) in Barcelona, by Antonio Gaudi. Here we see work that has fewer obvious geometrical rules (although more recent analysis has shown they are still there), but rather a concentration on how form and space can evoke feelings and emotions. We think of this sort of work as 'romantic' rather than 'classical'

The obsession in the early nineteenth century then was not of pattern making and the use of abstract rules; it was very much of expression and how art, music and architecture could express some idea, story or scene beyond its formal properties. Of course this greatly simplifies the artistic philosophies and motivations of these great minds, but the underlying differences are undoubtedly there. We therefore find a quite different mode of perception in operation here. What we are responding to now is not just the internal structure of the notes in Debussy's music, but the way they can represent something entirely outside their own world or system. We can somehow hear that this music suggests some image, scene, situation or circumstance. When listening

to La Mer, we may conjure up in our minds some images of the sea. Of course this music represents the sea very vaguely and imprecisely, and in a sense this is the whole point.

They do not need to be architects or musicologists to do this. Our perception is integrative of sensory modality in a way that allows both pattern and structure and external meaning to be appreciated. We struggle to explain this to ourselves, often by using cross-sensory modal words to describe our experience. Goethe famously wrote in his notes: *'Ich nenne die Baukunst eine erstarrte Musik* (I call architecture a kind of petrified music). In the opposite way we often hear musicians talking of the 'architecture' of a composition, referring to its structure and organization. Architects speak of the 'rhythm' of a facade, and musicians talk of the 'color' of a note.

#### Back to architecture!

Buildings are much more complex objects than aircraft tail planes, but we might expect the same principles still to apply. No building can ever be entirely free of symbolic content.



The contrast of perception illustrated a rather commonly found lack of communication and understanding between architects of the late twentieth century and their clients. While the architects tended to concentrate on formal abstract often composition, the users seemed more influenced by their symbolic perception! Of course part of the problem for the contemporary architect here is of setting up visual rules or grammar afresh, since many architects no longer feel it appropriate to use styles from the past. This develops the internal structure and order which give the building enough redundancy be readable and to understandable in its own terms. This is necessary if the building is to look as if it is an entity rather than

random collections of shapes, materials, proportions and colors. However, the architect cannot ignore the external reference side of the equation. This structure must remain capable of a number of external referential tasks. These vary from building to building but might include an attempt to express the nature of the person or organization that owns the building and the activities that it is built to accommodate. Most often we also expect a good piece of architecture to make external reference to its context in terms of neighboring buildings, landscape and the history of its location.



The Engineering Faculty Building at Leicester University by James Stirling.

Both formal and symbolic language is clearly in evidence here. A form free of classical rules is nevertheless heavily redundant and rulebound.

The machine-like shapes also suggest the activities it contains and the professions to which its students aspire.

The Roman Catholic Cathedral of Liverpool, by Sir Frederick Gibberd. Again we see high levels of formal redundancy structuring the forms, and symbolism in the crown of thorns and the centralized plan rejecting conventional the cruciform layout of the Christian Church.



#### The Language of Modern Architecture

Once one is able to get past the initial hostility, which can be very significant, one can often see some of the basis of complaint in terms of what we have been discussing before. Of course all forms of art by their very nature move forward, and thus their contemporary manifestations may seem strange to those less involved in the movement. It is not new to find music, painting, sculpture, literature and architecture alienating and even scandalizing their Contemporary societies. Architecture, however, plays so many other roles beyond that of an art form that this Report suggests we must regard it differently. In the twentieth century architecture adopted a number of characteristics which, when combined together, seemed to lose touch with people. The modern movement abandoned the use of historical styles in the West. It had been preceded by periods in which earlier historical styles had been 'recycled' by architects even as they developed new building typologies thus Scott was able to use largely gothic rules of architecture when building a great railway station like St Pancras in London.

Although this in a way may seem strange now, it enabled people to continue to be able to read the architecture using their implicit knowledge of the redundancy or internal structure of the gothic style.



### 6. Space and Time:

"We shape our buildings, and afterwards our buildings shape us"

Winston Churchill

"All buildings are predictions. All predictions are wrong"

**Stewart Brand** 

#### **Predictions**

Any good and useful language enables its users to communicate about what is happening now, what has happened in the past, and what will or might happen in the future. So languages usually have past, present and future tenses. We do not always know exactly what actually happened in the past, as we have uncertain and incomplete knowledge of it, and this keeps



historians busy. However, our knowledge of the future is uncertain in a much more profound way. We sometimes think we know what is going to happen and turn out to be very wrong indeed. This happens perhaps more often than we care to admit. We are particularly poor at predicting the future when people are involved and, although we know a great deal about ourselves, we are also very unpredictable. This problem besets architecture, since, as Stewart Brand tells us, 'all buildings are predictions'. His claim that 'all predictions are wrong' might be a slight exaggeration, but his point is well made nonetheless.

#### **One-way prediction**

There is a curious paradox in the way architects think about the relationship between people and spaces, which centers on that most over-used aphorism of the twentieth century {form follows function}. The assumption here is that functions are understood and then form is designed around them. This is fine as far as it goes.

The problem is that we do not really understand functions as well as we think we do. The next problem is that functions change with time, get combined with other functions and are sometimes even replaced as society and technology change and develop.

Implicit in the idea is that once a form, or more appropriately here a space is designed, the assumption is that the function will remain exactly as was envisaged. In fact it

hardly ever does, since people actually respond to space, so now function is trying to fit into form. Winston Churchill's famous remark that 'we shape our buildings and then they shape us' was made in connection with the lavout of the chamber of the House of Commons of British the Parliament.





He quite explicitly argued the chamber that damaged by bombing in the Second World War should be accurately reconstructed, since he believed that its shape forced members into the right kind of relationship for debate. Whatever your view on this, the point is made that the layout of the chamber of the House of Commons now constrains some behaviors and encourages others. The implicit assumption made in the 'form follows function' school of design is that people will recognize the intention, and then the function will be kept to that intended by the form. In traditional vernacular architecture the process is quite the other way round people tended to put structures and forms around their behavior and to modify them continuously until they fitted well. Increasingly I hear architects today talking of 'function follows form' and this is a very good first step in changing design theories, but it is only a beginning!







"Seats that are carefully designed, but for one reason or another are simply not in the right place to sit"

#### SPACE IN ARCHITECTURE



"Good places to sit that are not designed as seats are still well occupied"



"This sentry box is entirely symbolic in order to locate the soldier in space. It is not large enough to shelter him, and in any case he is not allowed to stand in it"

PageZ





"Good places to sit will attract people even if they are dangerous, or inconvenient to the authorities! "

"The idea that people will walk where the hard landscape goes is so silly that one wonders how designers can become so detached from reality! "



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