Chapter Seven
The Sensation of Space

‘Architecture masters space, limits it, encloses it.’

In the first few years of the War, with no buildings to build, no regular job, the difficulties of being an alien, his children evacuated to another continent, and a real risk of Nazi invasion it might have been reasonable for Goldfinger to feel frustrated, bitter and pessimistic. In fact though, he threw himself into a range of writing and research with tremendous energy and optimism for the future. Writing in 1941 he declared:

The cities can become centres of civilization where men and women can live happy lives. The technical means exist, to satisfy human needs. The will to plan must be aroused. There is no obstacle, but ignorance and wickedness. Planning means freedom.¹

A photograph by Bill Brandt of Ernö and Ursula in the study in Willow Road in around 1940 shows Ernö seated at a typewriter – not the obvious symbol for a practising architect². But for several years his incredible energy was channelled principally into writing. He published articles and reviews on architectural and town planning issues in a number of papers and magazines. He also found time to clarify and articulate his vision of the nature of architecture and of urban planning. He published three
important articles in *The Architectural Review* on this subject: ‘The Sensation of Space’ (November 1941), ‘Urbanism and Spatial Order’ (December 1941) and ‘Elements of Enclosed Space’ (January 1942). Together these articles constitute his most fully developed theoretical statement.\(^3\) They appeared alongside a series on bomb damage to buildings of architectural value. In contrast Goldfinger’s articles make no mention of the war or its implications for architecture. They focus on perennial themes relating to the human experience of enclosed space.

There is nothing in his subsequent writing to indicate that Goldfinger changed his views about the nature of architecture and art from this moment on. Indeed, many of the talks he gave on the subject in later years were summaries of the ideas more fully expressed in these articles. As with his building solutions, when he found a technique or device that worked, such as the photobolic screen, he saw no reason to look for alternatives, but re-used it wherever appropriate with only minor modifications.

Though for the most part a practical man with a heightened sense of the right way of carrying out any number of physical activities, from tearing up drawings to mixing cement, and even defecation (see p.xxx), his principal excursion into architectural theory he delved into the philosophical and psychological underpinning of his approach. His main contribution to theory here is his incisive analysis of the sensation of space. His basic thesis was that architecture is a way of enclosing space and that the way in which space is enclosed has a psychological effect on
anyone within that space, at least at a subconscious level. This echoes Perret’s aphorisms:

Architecture is the art of organising space. It is through construction that it expresses itself.\(^4\)

and

Architecture masters space, limits it, encloses it, circles it. It has this prerogative to create magical places totally the work of the intellect.\(^5\)

In his article ‘The Sensation of Space’ Goldfinger used the word ‘subconscious’ to describe the effect of enclosed space on the person within it, but this is best understood as meaning pre-conscious – that is, not currently conscious, but capable of being brought to consciousness. \(^6\) This is clear from his analogy with listening to music:

It is not necessary to listen (consciously) to be affected by music, it is equally not necessary to be consciously scrutinising spatial relationships to be affected by them.\(^7\)

By focussing on the sensation of space rather than on the outward shells of buildings Goldfinger put the emphasis on lived experience of architecture rather than aesthetically pleasing formal masses. As we move through a building we are aware at some level of the way in which space has been enclosed, and this produces an emotional effect in us. True to the rational spirit of his approach, Goldfinger gives a hard-headed analysis
of the sources of this emotional response. He is scathing about the invocation of mystery to account for the spatial sensations triggered by buildings. Spatial sensation is a natural phenomenon. We are always in some sense within enclosed space – even our experience of the horizon and the sky contribute to a feeling that we are not entirely free of enclosure. We always have some spatial sensation whether we are consciously aware of this or not. Yet, there is no single organ by which we perceive this sensation: the sensation of space is not simply a visual sensation: it is in part the product of what he calls ‘memorised analogies’. At some level, our experience of the enclosure of the womb may be relevant too – Goldfinger in fact produced an illustration of a foetus in a womb to accompany ‘The Sensation of Space’, but it was considered too risqué to publish in the *Architectural Review*. Our sensations of space, then, come from a range of sources, and are experienced through several senses, and memory too:

The spatial order is built up by an amalgamation of a multitude of phenomena, the perception of which, subconsciously integrated, helps in building up the sensation of space. Memories and experience, not only of visual sensation but also of sound and touch and smell enter into it. The sound and vibration in a hall; the physical touch of the walls of a narrow passage; the atmosphere and temperature of a stuffy room; the smell of a damp cellar; all are, in various degrees, components of spatial sensation. Every element, plastic or pictorial, partially obstructing the view, and people in the crowd rubbing against you, are part of it.
The two main determinants of the spatial sensation are 1) the ‘enclosing agent’ – that is, the wall, fence, or window that surrounds the person; and 2) the enclosed space itself, its shape, height, and so on. Qualitative and quantitative aspects of these two determinants also affect the sensation of space: the dimensions and materials affect the percipient, again usually at the pre-conscious level. The psychological sources of our awareness of space have their origins in the womb, and Ernö originally intended to make this point with an illustration, but the Architectural Review was not prepared to publish such a picture.

One aspect of his account explains why clients were such poor readers of plans and models, something Goldfinger often remarked on. When you reproduce a painting you reproduce it in two dimensions. Consequently the reproduction gives rise to sensations which are in many ways similar to those created by the original image – they are at least sensations of a similar kind in reaction to a similar stimulus. In contrast, a three-dimensional object can only be hinted at in a two-dimensional representation of it, such as a photograph or perspectival drawing. Indeed, Goldfinger pointed out that the illustrations accompanying the article ‘The Sensation of Space’ were only intended as depictions of situations in which particular spatial sensations would be experienced: they were not themselves meant to evoke any sensation of space. The logical implication for an architect trying to communicate the sensation that a building creates might seem to be to use scale models. But Goldfinger points out the serious shortcomings of models as a way of producing spatial sensations: they cannot give the sensation of being within enclosed space that is fundamental to our experience of buildings:
A scale model only adds confusion to the other difficulties by introducing a three-dimensional element of an utterly different order and scale which then gets confused with spatial order. \(^{11}\)

The measure of man that so occupied Goldfinger in his planning could not be replicated adequately on a smaller scale: the whole point of scaling buildings to people would be lost once the scale was reduced.

Having outlined the basic features of enclosed space and its psychological effects on the person within it, Goldfinger, ever systematic, analysed enclosed space in relation to architecture in his article ‘Urbanism and Spatial Order.’ He had a very clear vision of the goal of architecture:

> The object of architecture is to fulfil a specific social function, i.e. to provide an ordered enclosure for human activities. \(^{12}\)

That is architecture’s main aim, but beyond providing physical shelter, it is ‘an instrument of psychological effect’: it produces the spatial emotion. In the process it may also be art.

Goldfinger explained architecture as the result of three integrated factors:

1) functional needs (why is was made)
2) constructional means (the available technological resources)
3) emotional effect (how it is experienced)
For Goldfinger aesthetic issues arise as a normal part of human activity and, like our experience of space, do not require any mystical explanation. The appreciation of beauty is a human phenomenon. Underlying Goldfinger’s whole approach is a historical determinism. Aesthetics must be understood within the ‘general pattern of social conditions and their historic evolution’. Goldfinger was a lifelong Marxist, and his commitment to socio-economic explanations is consistent with this; though, diplomatically, he avoided explicit references to Hegel or Marx in this suite of three articles. In the same spirit, he reminds us that Human beings are ‘time and space bound’; they are ‘chained to the fate of the human adventure’.

This adventure unfolds for architecture as a result of the constant struggle of the conflicting factors outlined above: function, means and the human experience of enclosed space. These conflicting factors impinge on one another and change over time. Consequently there is no unique and static right way to build that once discovered would bring about the end of architecture:

\[
\text{New technics of construction make new functional demands possible and new functions engender new technical answers; interlocked and ever-changing they produce enclosed space which at its best, is architecture.}^{15}
\]

From outside a building has purely plastic effect on the spectator: it is a work of abstract sculpture:
The play of light and shade, the massing of volumes and shapes, can be observed and appreciated.\textsuperscript{16}

So, for example, looking at Trellick Tower from the Westway as I come into London I can appreciate the building for its sculptural qualities, just as I might appreciate a sculpture by Max Ernst, except that, unlike Ernst’s work, this is not a representational object\textsuperscript{17}. Closer to a building, Goldfinger points out that the eye cannot take in the whole, and so the effect is different: it becomes not plastic but \textit{pictorial}. The building is experienced as an organised surface rather than as a three-dimensional mass.

But it is only when the spectator enters the building that he or she will feel the sensation of space in relation to that building. Before that moment the experience of the building is not an experience specific to architecture. The plastic and pictorial sensations, important as they are to the overall effect of architecture by no means exhaust our experience of architecture. For Goldfinger, the sensation of space is all-important. The building experienced from within evokes in the spectator a spatial emotion, possibly in a pre-conscious form.

The building can of course itself evoke spatial emotions even when the spectator is outside the building, since the building’s exterior may be part of a street or conglomeration of buildings that enclose the spectator. The ways in which buildings are placed relative to each other enclose the spectator, providing spatial organisation analogous to the spatial organisation within a building. This is particularly so in a city:
In a city ‘you are in a street even if you are out of doors’

Furthermore, new forms of transport have affected the sensation of space in the city: we can approach a city by air, travel through it at high speeds by train or car. These new forms of travel create entirely different sensations of space from those experienced by the pedestrian. What seems solid and monumental at walking pace can feel light and open when passed by at 50 miles per hour. Within buildings too, technical developments have affected the direction in which people move through buildings: for example with escalators and lifts, devices which, as he explained in ‘The Elements of Enclosed Space’ ‘alter completely the speed and effort involved in displacement and the direction of penetration.’

Consequently urban planning needs to reflect the ways in which space in cities is now likely to be experienced: the medieval street was built for pedestrians and horse riders. Goldfinger suggested that urban planners needed to be sensitive to these factors, just as architects need to be sensitive to the effects their buildings have on those who enter them. When cars and buses started to use streets designed for horses in the early twentieth century, few problems were anticipated; in the modern world, in contrast, Goldfinger argued for ‘the complete segregation of traffic according to speed’.

As we have seen, for Goldfinger architecture by enclosing space creates a spatial emotion: but that is not its purpose. The purpose of architecture is ‘to fulfil a social function with the best means of an up-to-date technology’. When architecture fulfils or attempts to fulfil this purpose the sensation of space is inevitably evoked almost as a by-product. But it
is in the way that the architect approaches the shaping of space and the evocation of spatial emotions that he or she rises above mere technical proficiency. Goldfinger ends ‘Urbanism and the Spatial Order’ by hinting at the relationship between the sensation of space and architecture as art:

It is the artist who shapes this space, to develop it from the crude, mere by-product of enclosure into spatial order, not by adding frills or ornaments, but by making the very enclosed space self-evident and clear i.e. by making it Architecture.\textsuperscript{22}

In a letter to the architect John Brandon-Jones, Goldfinger expanded these intriguing comments about art and architecture. For Goldfinger the essence of art is that it must be a creation which produces a specific artistic emotion in the experiencer of the work, one which the artist intended to evoke through the work:

This ‘artistic emotion’ may be delight, humour or any other emotion which, if the artist were successful, is the one he wished to produce.\textsuperscript{23}

In an aside he explained that he tried to analyse ‘what constitutes the essence of architectural emotion, i.e. the sort of art side of architecture’. In ‘The Sensation of Space’, ‘Urbanism and Spatial Order’ and ‘Elements of Enclosed Space.’ The letter goes some way to clarifying how he saw the relationship:
I therefore consider it to be playing with the unprecise [sic] meaning of the word ‘art’ if the practice of medicine or engineering is described as art. While the primordial function of architecture is to put one in a state of mind (architectural emotion) the two other ‘human activities’ have quite different objects, which are not sensual. The fact that the exercise of a profession fills you with delight (and by Jove don’t I think architecture does…) is not a criterion of it being a work of art.24

The last of his three theoretical articles, ‘The Elements of Enclosed Space’ Goldfinger, again hinted at the relationship between architecture and art, this time suggesting that in order to produce a specific emotional effect through the sensation of space in a building the emotional effect must itself be anticipated by the architect. Furthermore,

It seems to be a constant coincident that only if persons creating a work of art experience an artistic emotion while doing so, are those undergoing its effects enabled to experience an emotion of a similar nature.25

Goldfinger, then, saw his role as an architect as one of fulfilling the social role and finding elegant and rational solutions to the problems set by means and ends; but also as an artist evoking emotions by enclosing space. For him the artist-architect is a kind of champion:
It is the artist who comprehends the social requirements of his time and is able to integrate the technical potentialities in order to shape the spaces of the future.  

Although he nowhere explains precisely why the evocation of specific spatial emotions – often only experienced at a pre-conscious level – is such an important achievement, it is clear that for him this is at the centre of his life’s work. His friend the architect Erich Mendelsohn wrote to him from New York, telling that he was following Goldfinger’s series of articles with great interest (and correcting the caption on one of the illustrations):

Remarkable statements for the brain. Guard of functionalism, pure and true. Congratulations...  

Goldfinger’s reply indicates his reservations about the term ‘functionalism’ and how his adherence to the view that architecture is an art set him apart from the mainstream of modernist architectural theory:

With regard to ‘functionalism pure and true’ I think you are completely mistaken about me, if you associate this term with the efforts of some of your friends. I have been fairly unpopular for the last ten years amongst these very advanced gentlemen as I still believe that architecture is an art, although not of the order termed ‘dynamic’ propagated by some other friends of mine.  

Despite the importance of the evocation of emotions to his understanding of his own activity as an architect, he believed that the *techniques* by which he enclosed space, and by implication how he created the specific
emotions that are at the core of Architecture were an entirely personal affair and not anyone else’s business\textsuperscript{30}.

This approach to his own architecture has had a consequence that he would not have wanted. His attitude to those who worked and lived in buildings he designed was that they would feel the effects at a ‘subconscious’ (i.e. pre-conscious) level. How these effects were produced was not something he ever communicated to them. When he did disclose, for example, the range of rectangles on which his designs were based, it was almost as if he were a magician revealing how a trick had been performed – a matter of letting the listener in upon an arcane ‘secret’.\textsuperscript{31} Indeed, when, in later years he gave talks on his theory of the sensation of space, the title evolved to become ‘The magic of enclosing space’ – in part to emphasise the excitement of the process, but also, perhaps hinting at this arcane knowledge shared by good architects, like members of the Magic Circle. Yet when repairs and renovation to buildings have subsequently become necessary, the clients have often been ignorant of just how important, say, the proportions of a window frame, or the lack of ornament are to the overall experienced effect of the building. It is no surprise then that many of Goldfinger’s buildings have been significantly altered, with local builders and carpenters opting for the most convenient solution, rather than necessarily the most appropriate in terms of the building as enclosed space and ultimately as work of art.

\textsuperscript{1} Horizon, June 1941.
Brandt took a series of photographs of the Goldfingers at home shortly after they had moved into the house at Willow Road. These now exist only as contact prints in the National Trust collection at 2 Willow Road and have not previously been known about by the photographic historians who have documented Brandt’s work. Dedicated copies of Brandt’s first two book, *The English at Home* and *A Night in London* are also in the collection.

Translations of these articles appeared in the French journal *Architecture* in 1953. Goldfinger continued to lecture on the topic throughout his life. He also produced an abbreviated version of his ideas which was used in the catalogue for *This is Tomorrow* and in a privately printed pamphlet.

Perret in *Contribution to a Theory of Architecture*, reprinted and translated as an appendix to Britton (2001), p.231. Goldfinger made his own translation of Perret’s aphorisms which he intended to publish. His draft of this translation is in his desk in the National Trust 2 Willow Road collection.

In the Freudian sense ‘subconscious’ refers to aspects of our psyche which are not directly available to consciousness, but are typically discovered through the indirect means of dream analysis or parapraxes (‘Freudian slips’).

James Dunnett has made an explicit link between the sculpture of Goldfinger’s friend Max Ernst and the appearance of Trellick tower from a distance.
As a philosopher of aesthetics I can’t resist pointing out— in passing—the main philosophical criticism of the type of theory Goldfinger is putting forward here: it is a circular argument. The two key terms, ‘spatial emotion’ and ‘Architecture’ (with a capital A) are each defined in terms of the other: spatial emotion is the type of emotion that Architecture (ie. Art) arouses; Architecture as opposed to mere building is the enclosure of space capable of arousing the spatial emotion. However, by fleshing out what the spatial emotion was, giving independent criteria for recognising it; or similarly by giving independent criteria for recognising Architecture as art without bringing in spatial emotion, he could have got round the criticism of circularity (he might well have done this had he expanded these articles into a fully-fledged theory).

Letter from Erich Mendelsohn (then signing himself as ‘Eric’) , 8.1.42, in GolEr 276. Another admirer of Goldfinger’s theory of architecture was Herbert Read, whom Goldfinger sent copies of the articles when Read was writing a piece about him in 1962—see letter from Herbert Read 5.11.62 in GolEr279/1.

Letter from Goldfinger to Erich Mendelsohn, 22.2.1942 in GolEr 276.

Interview with James Dunnett in GolEr 397/3.

See, for example, corrections to interview, April 1983. in GolEr 397/3.