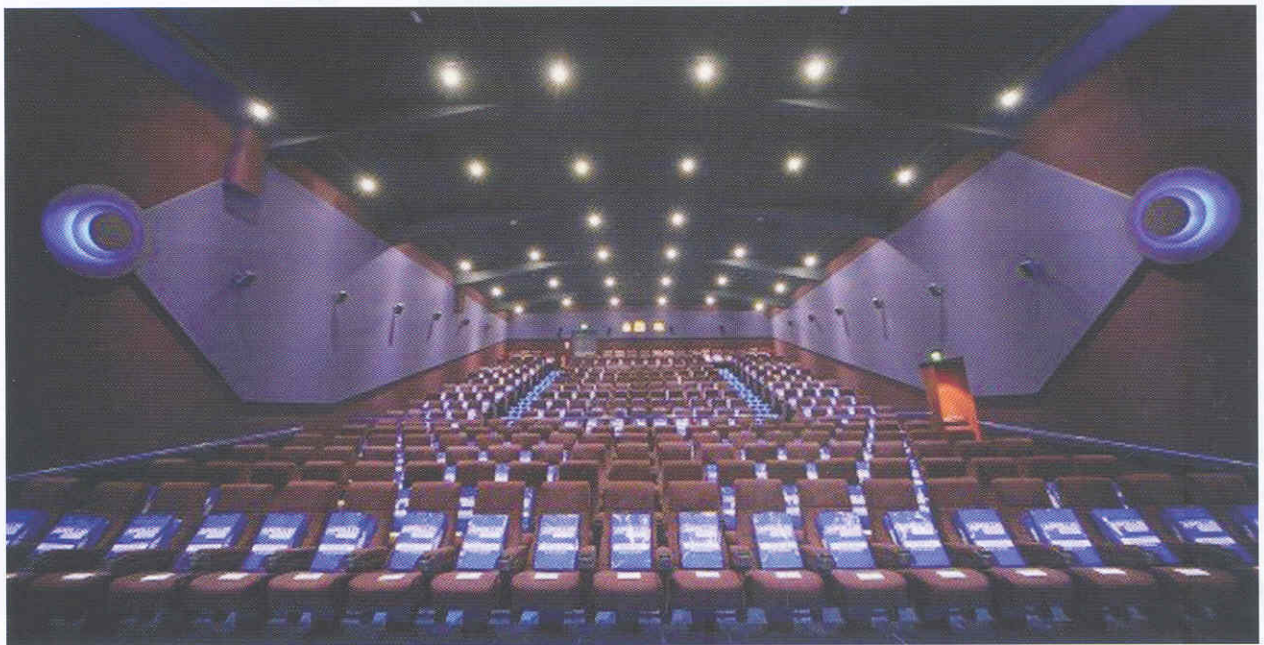


Cinema seating

McFarlane Latter Architects look at the history, ergonomics and legislation



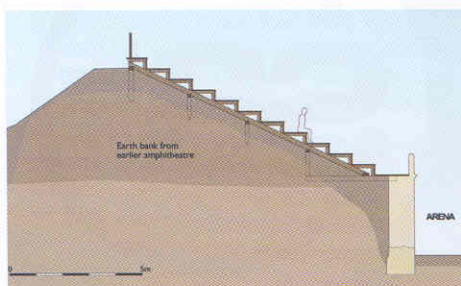
Principles of cinema seating and auditorium layout have evolved during the first 100 years of cinema, but ultimately have reverted to a design much older than film. Perhaps the Romans had it right after all?

The cinema seat is at the root of our business and one of the key factors in the patron's mind if asked to recall their evening at the cinema. Cinemagoers will comment on the film, on the service at the cinema and, not far behind, will be a comment about the seats, leg room, where they sat in the auditorium, the sight lines and general level of comfort. Consequently,

the approach to seat selection and all of the dimensional issues associated with auditorium layout are absolutely critical to the success of the cinema and to ensuring that the recollections of the evening in the auditorium are positive and the cinema remains the patron's cinema of choice.

Are you sitting comfortably?

The perception of comfort is a very subjective issue and what appears perfect to one person will be mediocre to another. The variation will depend on personal dimensions, build and preference for a range of criteria including firmness of seat, angle of back and depth of seat, amongst others. With such a subjective issue it is inevitable there will be compromises as we attempt to design a seat and auditorium, which quite literally fits an average human body, like making an off the peg suit to fit everyone.



Amphitheatre section shows the historical origins of today's stadium seating



History of cinema seating

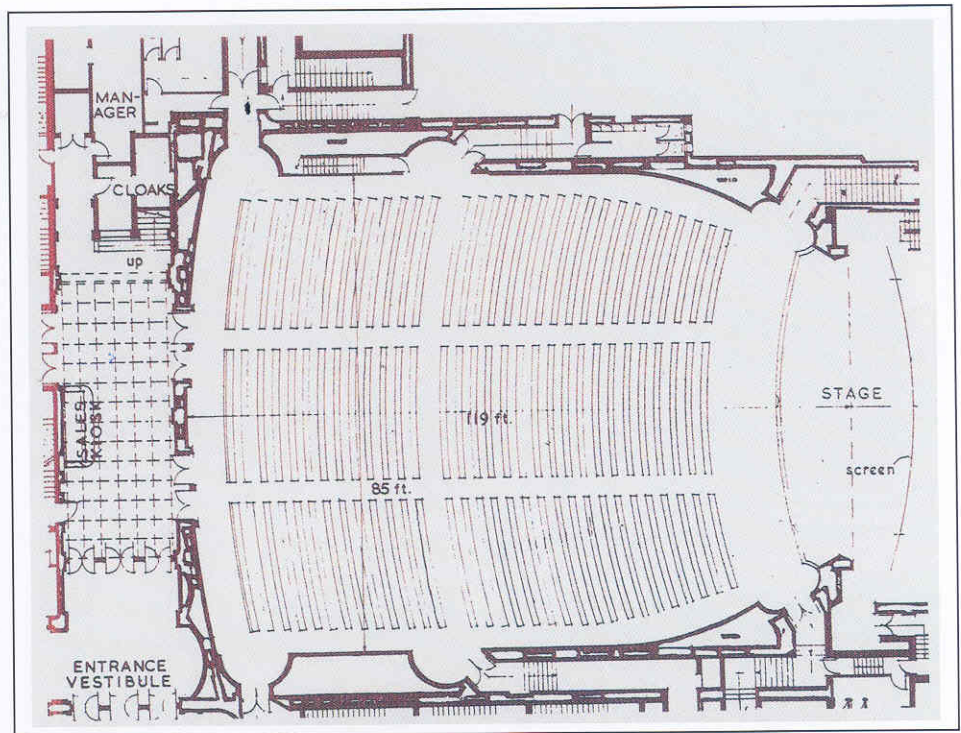
The ergonomics of seat and auditoria design has been key to the design of places of assembly for as long as humans have wanted to gather in a large numbers in a single space for the purpose of worship or entertainment. The same critical dimensions of the average human body have dictated seating arrangements for the stone stepped seating of a Roman amphitheatre and the stadia arrangement of a multiplex cinema.

During the period in between, and most notably in the last hundred years, while we have been gathering in cinemas there have been different approaches to the seating layouts and seat design brought about by various factors including building design, screen size, new materials for seat manufacture, commercial pressures to maximize seat numbers, demand for perfect sight lines and the constraints of statutory regulations governing setting out.

The original cast iron framed seats that were installed in our picture palaces offered a seat that met the expectations of the public at that time, in terms of comfort. They served their purpose for many years allowing people to see the films and later the news in one large single screen cinema. The proportions of the single screen auditorium and screen sizes generally led to a fan shaped arrangement for the seat rows with a centre seat block being the preferred location and two small side blocks continuing the arc but being less attractive due to the acute sight lines. The stepping or ramping of the floor was minimal between rows and it would appear to have been part of the experience to have the lower picture line punctuated by the silhouette of your fellow patrons. Post war seat design developed and we moved towards steel framed seats, but the principles remained the same with a gravity tip up seat cushion, narrow arm rests and a plywood back panel which was usually painted but may have been upholstered in more luxurious venues. These seats were relatively easily maintained by the cinema staff and with a stock of spare standards, cushions, ply backs and pivots etc., most repairs could be undertaken prior to opening times.

Technical developments

The introduction of plastics and development of fabric technology over the last fifty years has allowed the design of seats to progress enormously, in parallel with the rising aspirations of the cinema patron who has come to expect similar levels of comfort as they now have in their homes. Despite all of the options we now have available in terms of materials from which to manufacture and the higher expectations of our cinema patrons we still have the same critical factors to accommodate in the setting out of seats and design of an auditorium, ie the physical comfort of the average size human being, clear sight lines



Layout of conventional theatre with seating accommodation under the circle

to the screen and easy and safe access to the seat within the cinema. Over the last twenty five years auditorium design and accordingly seat layout has been through a number of evolutions in an attempt to fulfil these criteria to a greater degree.

The earliest multiplexes with their 1 in 12 ramped floors or shallow stepped floors were approached differently by the various operators but principally they relied on straight seat rows. This was acceptable as the screen width was similar to the seating block, unlike the conventional cinemas where the screen was relatively small in relation to the auditorium width and the seating was required to be arced to focus the sightlines towards the centre of the screen.

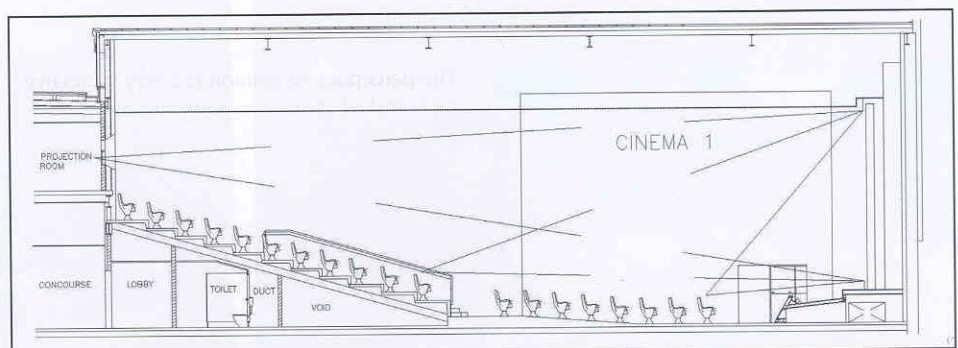
While some multiplex operators preferred a central aisle with two seat blocks extending to the side walls others split the auditorium into a central seat block with two side blocks of perhaps six or ten seats abutting the side walls, arguing that the opposition's central aisle

layout placed the aisle in the optimum viewing position in the cinema. This argument was countered by the opinion that all the seats in a modern auditorium have good sight lines.

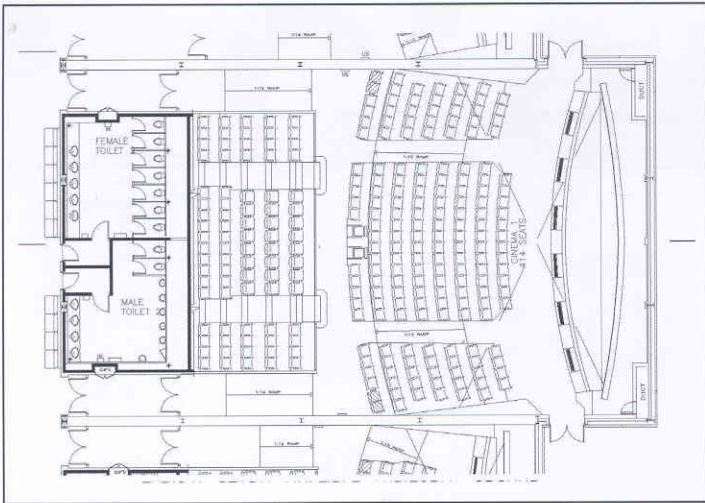
A development of the layout with seats parallel to the screen was to rotate the side seat blocks through an angle of around five degrees towards the screen. The central aisle school of thought also rotated the two seat blocks through a similar angle resulting a very shallow V formation of the seats when viewed on plan.

The shallow stepped and ramped floors with rows typically at around 900mm – 1000mm centres provided a height differential of around 100mm between two rows which was barely enough for your sight line to clear the head of the person in the next row.

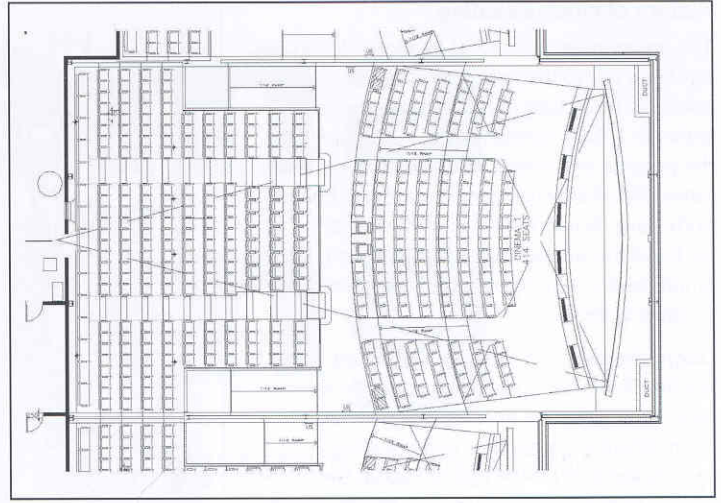
The next stage of the evolution to overcome vertical sight line constraint and probably the most significant step forward in cinema seating was the development of stadia seat layout where two steps were introduced in the aisles



Section through typical stadium seated auditorium. Note the reversion to the older stalls/circle layout, with seating under the circle



Stadium seated multiplex auditorium - ground floor



Stadium seated multiplex auditorium - mezzanine

between rows. While this was a leap forward in terms of cinema design it was strangely a step back towards traditional design of conventional theatre or cinema circle cinemas and previously the large stone steps of a roman amphitheatre. A quirk of history that the backdrop of stadia seating in a amphitheatre has provided so much entertainment in stadia seated cinemas.

The increased the angle of the auditorium floor not only satisfied the desire for improved sightlines and comfort but it was also attractive to the circuits developing multiplexes as it allowed ancillary accommodation to be located in the voids below the cinemas. Effectively reducing the building footprint and improving the economics of the seats per square metre ratio on new build projects.

Luxury seating - the 'laid-back' approach

More recently there has been a move towards a more relaxed arrangement of seats and the design emphasis moved towards the experience rather than the maximum seating capacity. We have recently completed auditoriums in the UK and abroad with a mixture of bean bags, sofas and preview theatre style seats. The bean bags at the front

of the auditorium allow you to completely recline and look up towards the television from floor level at home. The sofas positioned in the lower tiers of the stadia section seat four to six

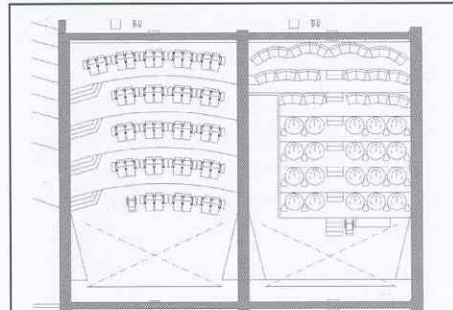
people. These gently arced bench seats provide a feeling of companionship with your guests and perhaps create more of a group experience than watching a film in rigid row arrangements, similar to the home environment. It is an irony that after years of competing with film watching video and DVDs at home, cinemas might be re-creating the group experience by providing the curved sofas and adjacent drinks tables of a domestic lounge environment.

The preview theatre style seats which we have placed in the upper parts of stadia cinemas have provided a wide seat with individual arms and adjacent table.

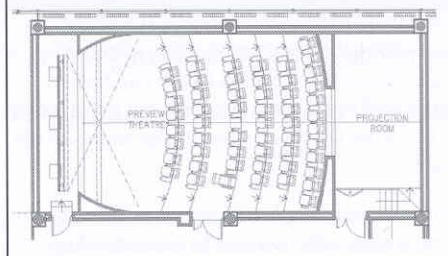
Legislation

Through out all of the developments in cinema seating there has been a growing amount of legislation to negotiate in the planning of seating and auditorium layout, designed to protect people who wish to gather in large numbers, in a darkened room with an uneven floor and limited means of escape.

The critical factors which are constrained by legislation are travel distance to a means of escape, clear walkway width between rows, row length and aisle width, most of which vary according to the number of people assembled



Above: Typical layout when bean bags and sofas are used. Below: Typical preview theatre layout





in the cinema. In addition to these factors facilities must be provided for wheelchair users, which is complicated by the move towards stadia seating and the constraints of the Disability Discrimination Act, particularly in relation to refurbishment of existing cinemas. In a new build situation, these criteria should be considered from the outset, by the architect designing the building, the setting out of each auditorium will grow from multiples of the seat width and preferred row pitch. However in the reseating of a conventional cinema where the original seat blocks may be revised due to changes to the screen or foyer changes affecting the position of the auditorium entrance, all of these criteria must be considered and the legislation satisfied.

Travel distance to an exit will be examined on the basis of the most distant seat from the available exit in the event of a fire, perhaps in the foyer and the only option is a screen exit. The distance will be measured along the row and through the aisles to the exit door. The clear walkway dimension is the distance from the most forward part of the seats in one row, normally the armrest or cup holder and the backrest of the seat in front. The required dimension is dependent upon whether the row abuts the side wall or has an aisle at each end and will increase as the number of seats in the row increases.

The licensing authority will also be interested

to know details of seat foams and the proposed fabric specification. The selection of the fabric for new seats is both a technical and aesthetic consideration. Technically the fabric must comply with licensing requirements in respect of ignition and spread of flame in addition to satisfying the operators own requirements in respect of durability and life expectancy. A worn cinema seat may either be a positive sign of good business in the preceding years or poor selection of materials. Most operators would view replacing seats as a positive indicator for the business. The durability of fabric is usually indicated by the manufacturers results of a Martindale rub test which, as it would suggest indicates the number of rubs required to deteriorate the fabric. The higher the test result the better.

Plus ça change....

While the basic ergonomics and requirements for a human to sit comfortably for a couple of hours to watch a film remain unchanged, the route to achieving that has a considerable number of options which require decisions. All of which will be affected by the business model and image of the cinema, target audience, budget and technical constraints. The seat is key to the success of the auditorium and cannot be viewed in isolation, it is closely integrated with all aspects of the design of the cinema from setting out new auditoriums to suit seat and aisle widths to the assessment of sight lines.

And don't forget..

There are many different things to be considered in the process of cinema seat specification, including:

- Architectural assistance with design and compliance
- Budget
- Dimensions of seat and floor stepplings
- Fabric specification and availability
- Programme and availability of seats
- Seat fixing and substrate; original timber, plywood or concrete
- Durability of seat components and fabric
- Cleaning; Seats and Floor finishes
- Requirements for cup holders, tables, head rests etc.
- Spare Parts; Service contracts and warranty. Foreign manufacture implications for spares
- Technical standards, licensing, building regulations

The author:

David Latter is a Director of McFarlane Latter Architects who have specialized in the design and management of cinema projects for independents and major circuits for over twenty years.

Tel: +44 (0)20 7287 5565
www.mcfarlanelatter.co.uk