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Benefits

Glass can create a **sense of open-ness**, contrasting with the heavy enclosed feel of traditional buildings, which many see as a drawback to the creation of a welcoming environment.

It enables heavy doors to be left open while keeping out cold from the interior. A 'shop window' effect encourages people to look into a space which they might otherwise have avoided.

- The **transparency** of glass enables the designer to create a virtually invisible architecture, creating enclosed spaces without heavy framing or structures

members which might compete with existing historic architecture.

- Glass can provide a greater **sense of safety**: linked internal spaces which are visible are less threatening than those with solid enclosures.

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Glazed doors in existing door reveal combining transparency and security (St Edmundsbury cathedral)

Drawbacks

- Glass is heavier than ordinary construction and often needs special fixings involving some form of suspension and frame.
- Glass is more prone to thermal movement, requiring greater tolerance in fixing details.
- Sometimes unintentional reflections are not anticipated fully at design stage.
- Glass screens show marks more easily and require regular cleaning.
- Totally transparent screens may require some form of ‘manifestation’ such as engraving to warn people it is there.
- Draught proofing with a glass screen can impede air movements leading to a greater risk of condensation and mould growth.
- There is a risk of overheating due to solar glare when glass is used as part of an external enclosure.
- Fire resistance may be an issue, depending on the choice of glass

History and development of architectural glazing

Glass has been associated with churches since mediaeval times. The St Chapelle in Paris, consecrated in 1248, was considered the height of European gothic achievement.



St Chapelle, upper chapel (1248)

Glass can be used structurally, to form walling (see www.structuralglass.co.uk).

The first significant modern use of glazing as a structural element was the Willis Faber building in Ipswich (Foster, 1970/5).



Willis Faber building, Ipswich (Norman Foster)

Today there is a very wide selection of glass on the market, developed to satisfy a growing market for safe, energy-efficient and low maintenance domestic glazing, and for the very large panes demanded in commercial design schemes.

The main manufacturers of toughened plate glass are UK based Pilkingtons and the French/Swiss firm St Gobain. The main structural glazing systems are called “planar” (www.pilkington.com), Theospan (www.hansengroup.biz) and Dorma Manet and Rodan (www.dorma-uk.co.uk).

Mostly these firms process other people’s glass and design fixing systems.



This also allows for the printed images to act as areas of shading within the building to help keep the heat gains from glazed structures down.

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*The Swiss Church in Bloomsbury: new screen using a mix of clear, semi mirrored and mirror glazing
(Christ and Gantenbein, Basle with WCP)*

New Technologies

Manufacturers today can make special glasses with sound absorbent layers, fire resistant finishes, and scratch-proof surfaces, and processors can add finishes to provide or reduce reflectivity, fire protection and energy efficiency.

New technologies are now allowing solar cells to be printed (to almost any design) onto panes of glass, allowing for the generation of electricity for use in the building or to sell back to the grid.