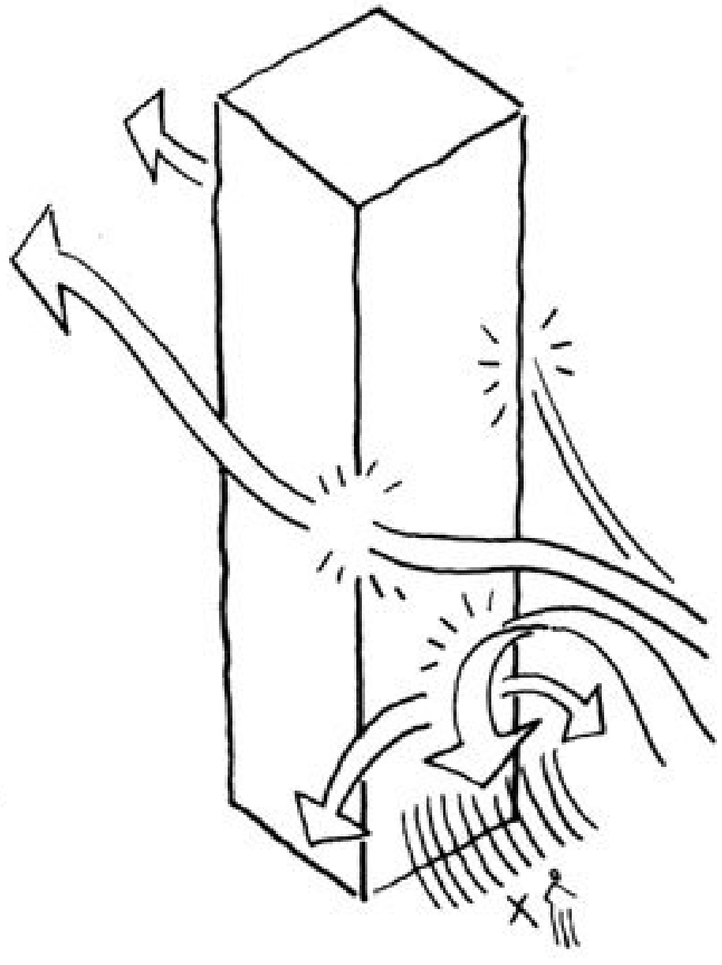
CHANCERY ST JAMES PLC, 30 ST MARY AXE

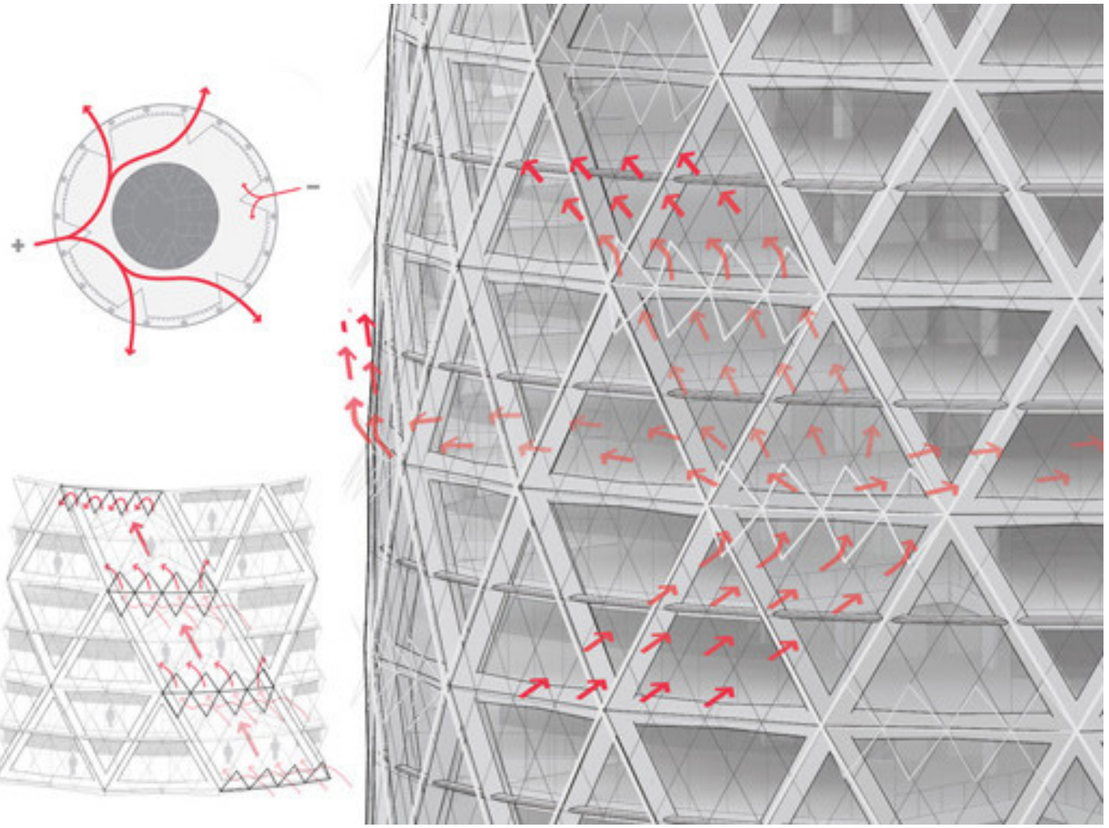
ASSIGNMENT 06

GENERAL CLIMATE IN LONDON

London has a temperate oceanic climate. It has worm and cool summers and not cold winters. London is adjacent to sea and due to this reason, wind and rains are frequently happen in London. Moreover, there are long period of cloudy skies overcast and frequent foggy days.



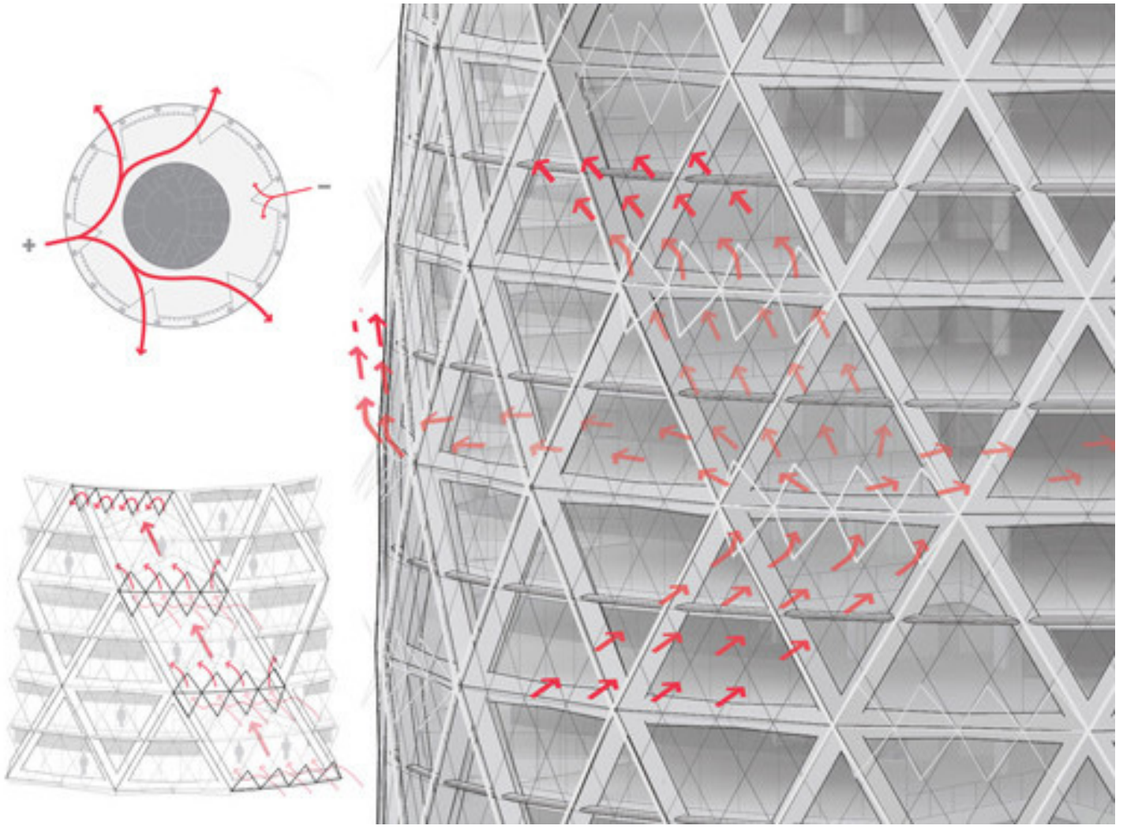
Due to the windy climate, the building was de-sign in this"pinecone" shape to avoid shear force and make the building more stable for high rise towers.
Also, this "pinecone" shape allow air flow in the airspace between exterior and interior curtain wall.

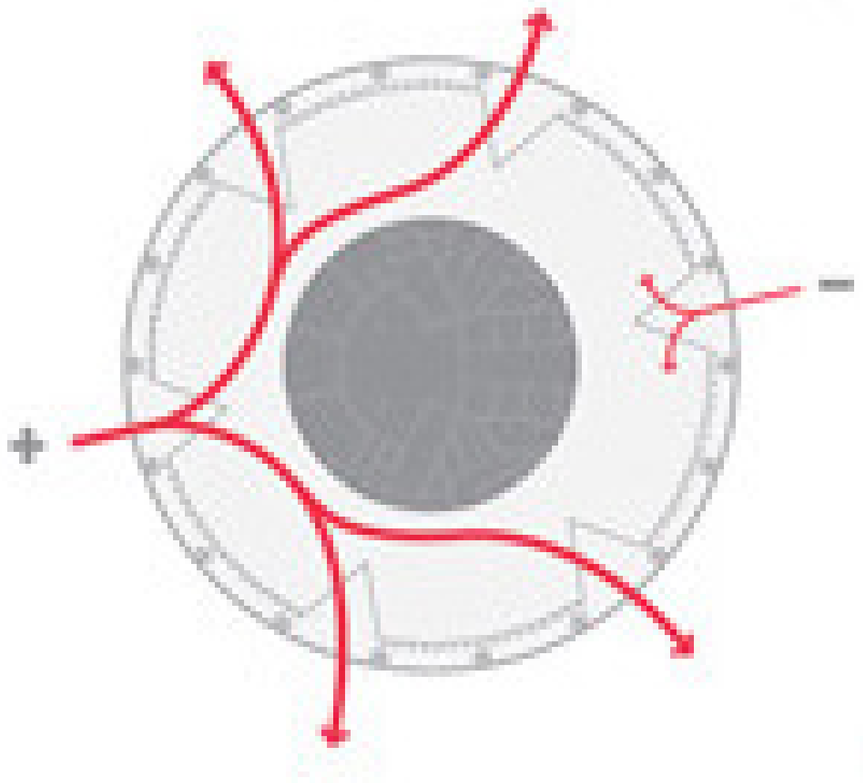


MIX-MODE VENTILATION-GOOD PERFORMANCE IN RETAINING INDOOR COMFORT+ REDUCE ENERGY CONSUMPTION

The building was designed to have mix-mode ventilation to make the building have nature ventilation and mechanically cooled system. The building has two facade: for most of the office space within the building, the exterior curtain wall is double-glazed diamond shape panel, the interior curtain wall is rectangular single glazed panel.

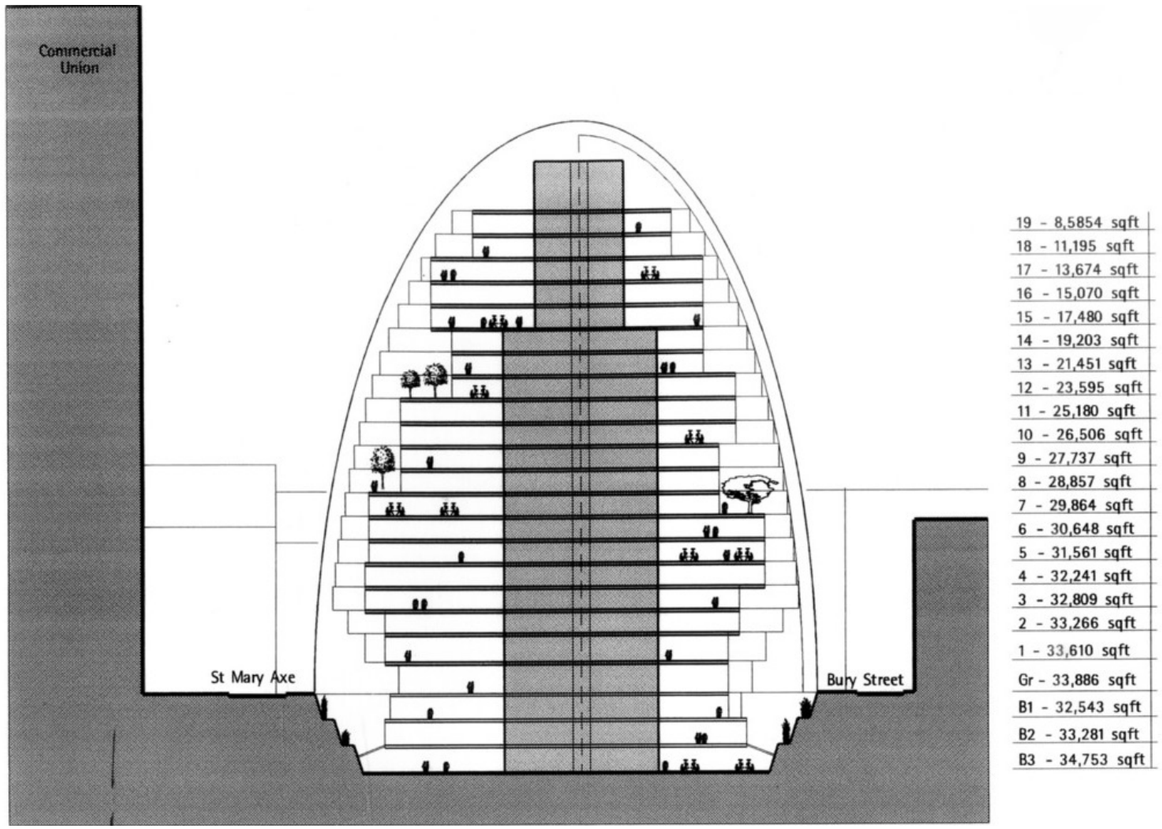
As illustrated above, heat between the airspace of exterior and interior curtain wall will be exhausted outside by vents. Also, the interior curtain wall is tinted to reduce solar gain.

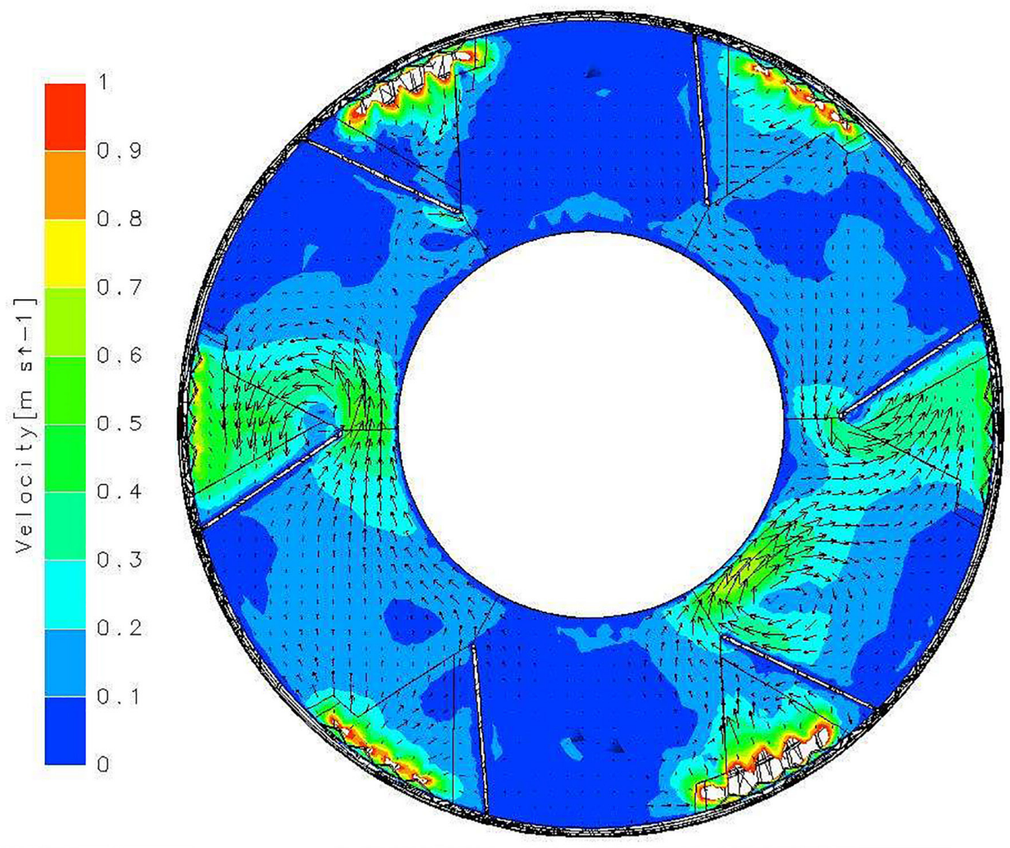




As illustrated above the facade allow outside fresh air go through the airspace between the exterior and interior curtain wall which believed that the air can bring or take out the heat from indoor area.

The heats vent outside through the slits on the top part of every two-story structural bay.





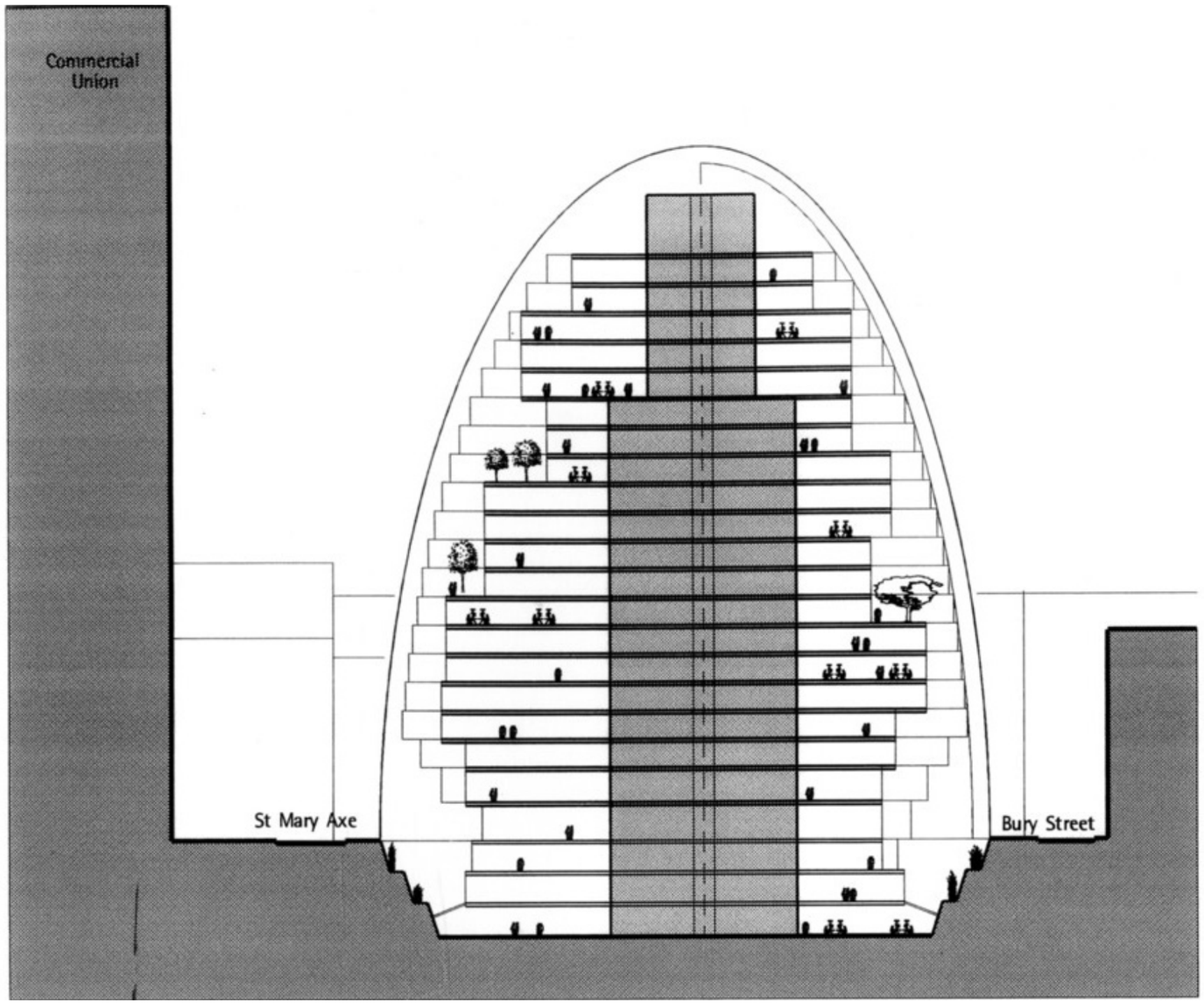
AIR MASS

The atria happen at the edge of every floor. These atria are not separate from each other, they continue from bottom to top. As it's described the atria, cavities and floors become a continuous air mass. when the triangle window is opened for exterior fresh air, the double skin mix-mode ventilation allows fresh air go inside the building.

DIFFERENTIATE AIR PRESSURE

Moreover, because of the differentiate air pressure, it cause the passive venting in the spiral atria area.
Also, the openings allow straightforward, direct ventilation go through a single floor.

WEAKNESS & SUGGESTIONS



Weakness
1. The atria limit the footprint of the floor area, which reduce the land use ratio of the building.
2. If the building don't open windows to let exterior in, the system become less useful, and cause lots of energy consumption to operate the building.

Suggestions
1.Reduce the atria area and increase floor area. Because there is already a air space between exterior curtain wall and interior curtain wall, there's no need to have large atria space to prove air mass.
2. Or give particular function to those atria area, such as indoor gardens. Those green vegetations also can function as micro climate regulator to reduce energy consumption. Also, it can help to control indoor thermal comfort when there's no openings to let exterior air in.