“...sustainability arises out of a subtle, often imperceptible interaction between built form and ambient forces that impinge upon its surface.”

Kenneth Frampton
(Buchanan 2005, p.6)
Beyeler Foundation Museum
Riehen, Switzerland
Renz Piano Workshop
1992 - 1997

A modern art museum that personifies the interaction between nature and architecture, site and users.

The main focus of the precedent study is to learn from the innovative roofing system. Although the roof is an expanse of glass, thermal conditions are relatively tightly regulated. This is achieved through innovative and precise engineering. (Buchanan 2005, p.43).

Due to the art being viewed in natural light the users experience is different at various times in the day, avoiding isolation from nature and reconnecting one to the outside world. This layered roofing structure allows the internal spaces to be thermally well regulated while the thermal fluctuation are restricted to the ceiling cavity.

Possible Application
• Balance between thermal control and use of natural light
• Use of ambient energy inherent in site.
• Use of passive ventilation and lighting
According to Buchanan, a project that embodies all ten aspects referred to in *Ten Shades of Green*, the Jubilee Campus at the University of Nottingham is a notable example of successfully implemented sustainable design strategies.

A building that takes into account all the regional and specific climatic data and uses natural processes and principles in order to create an architecture delivering “pleasant conditions for studying and socializing.” (Buchanan 2005.)

**Possible Application**
- Passive ventilation strategy takes into account all seasons
- Overlapping of various systems and strategies to ensure year round comfort
- Use of local and recycled materials
- Use of brownfield site
- Re-establishes users connection to the natural environment
- Plan depth reduced to allow for natural light and ventilation throughout
British Pavilion
Seville, Spain
Nicholas Grimshaw
1992 - 1997

“a paradigm of environmental experimentation, proving that ecological concerns and High-Tech architecture are not mutually exclusive”
(Slessor 1997, p.88)

A layering of sustainable and passive design principles come together in one building to create a showpiece displaying the possibilities when architecture, nature and technology meet.

Much of the strength of this project comes from the overlapping concepts such as the S shaped solar shading devices that are covered with photovoltaic cells that are used to generate power to pump water of the glazed eastern facade while the roof is protected from excessive solar heat gain.

Possible Application
• Layering of systems creating a more reliable passive design strategy.
• The use of form to make reference to context.
• The use of technology in contemporary sustainable architecture
Commerzbank Headquarters
Frankfurt, Germany
1991 - 1997

"a three sided tower with an open
core around which offices are
stacked to create the spiral of sky
gardens which admit light and air
into the central shaft"
(Buchanan 2005, p.50)

The Commerzbank Headquarters
is a modern world building with all
the modern creature comforts. It
set a new benchmark for energy
efficiency and occupant comfort
and enjoyment. The ventilated
double glazing “breathing
wall” (Jacks 2007) is a carefully
planned system developed to
provide year round comfort.
Developed in conjunction with
curtain wall contractor Josef
Gartner it is a representational of
the result of correspondence and
working as a team towards specific
predetermined common goals.

Possible Application
• Use of natural ventilation,
preventing build up of indoor
pollutants.
• Ventilated double skin glazing
facade, allows user interaction and
thermal control while maintaining
natural lighting.
• Use of vegetation to enhance
occupant comfort.