James Stirling (1926-1992) and Works

Birgül ÇAKIROĞLU¹, Reyhan (Gedikli) AKAT²

1Dr., Department of Construction and Technical Works, Karadeniz Technical University, 61080, Trabzon, Turkey
2Dr., Ministry of environment and urban planning, Presidency for Strategy Development, Ankara, Turkey

Abstract: One of the most successful architects of Brutalism in architecture, one of the most influential architects in the 20th century architecture of the United Kingdom with its own postmodernist understanding. In this study; James Stirling and his works are given based on the literature. The humanist, the reformist, and the social Utopian have shown an attitude. Stirling believed and strived to build a humanistic architecture, using mainly the elements and references that the people would understand and accept. When we look at the whole of architectural life, we can say that Stirling is not worried about creating a strong theory, and that he has transferred the orientations of world architecture to architecture practice with great intuition and courage.

Keyword: James Stirling, James Stirling’s architectural works, architectural works, Postmodernism, Brutalism

1 - INTRODUCTION

Stirling, born in 1926 Glaskow, began to live here a year later with his family migrating to Livarpool. His full name is James Fraser Stirling. Between 1943 and 1945, he studied architecture at the Livarpol School of Art, joined the war between 1943-1945, and attended the Post-war Livarpool University Faculty of Architecture. Stirling, determined by the color schemes of his father, who was a naval engineer of architecture, is a very modest, faraway architect. Being able to stand out from a nice colleague and propose new solutions and to keep it in a unique personality line has made James Stirling a well-known, well-watched architect of the world. It has been awarded the Pritzker Prize, which is regarded as the Nobel of architecture in the age that can be considered young for an architect (Figure 1) [Jacobs, 1975; Jencks, 1987; Jenks, 1989; Köksal, 1992; Şahinler, 1989; Tanyeli, 1992; Tümertekin, 1992].

He was one of the most recognized and respected architects in the world who died in 1992, and at the same time one of the most misunderstood and misinterpreted architects, even by his fans. He was particularly uncomfortable when he tried to categorize and classify the works of critics and tried to link his work to Post Modernism. Thirty years from Brutalism to neo-Constructivism and during the tragic demise, the architectural mosque has seen major shifts towards some sort of historicity, which has now lost its popularity [Borden, D., Elzanowski, J., Lawrenz, C., Miller, D., Smith, A. and Taylor, J., 2010].

James Stirling, one of the most influential architects of the postwar era, used an eclectic quotation style to promote the clogged International Style and to create a revived Modernism in architecture. Their designs were mostly built in traditional styles that were widespread in the region or with local materials. Stirling’s work was consistently cheerful and ironic; This was an accomplishment that was achieved by deliberately blurring Modernist and Classical elements. Particularly interested in the issue of the humanitarization of the Modernist environment, Stirling made freehand drawings from historical examples to develop his own variable language. The sensitivity to the tradition and the cultural depth it possesses has attracted the attention of leading architectural critics and theorists.

If there is one message that James Stirling has left us, it is not too much trapped between the principles of any architectural style. An architecture can easily flow from one style to another. All the architectural buildings have those unexpected details, those half-minds references.

We are witnessing the first time that the famous British architect, who emphasized his career with a postmodernist understanding of his own, and announced his voice for the first time in Brutalist camp. Stirling’s brutalist products also have a different character. We can call it a refined, refined Brutalism with old [Özer, 1993].

James Stirling says his work was influenced by Le Corbusier in the first cycle, but the latter is
increasingly interested in the structure systems in Cape Canaveral in America [Kortan, 1996].

Influenced by the later designs of Le Corbusier and the theories of the Smithsons, Stirling and Gowan produced several influential buildings which started a trend toward brick and exposed concrete. Stirling's early designs, especially for Cambridge and Oxford, often emphasized concept over aesthetic and utilitarian needs. His later works appeared more formal due to their influence from Post-Modern classicism. Criticized for his ability to continually alter his fundamental architectural principles, Stirling uses an experimental design approach that shows little commitment to one particular style (http://www.greatbuildings.com/architects/James_Stirling.html), [Dennis, 1991].

Aldo Rossi explored the underlying patterns of urban formation, which he saw as the only true source for architecture; Relate architecture to tradition, though not directly referenced. Freedom to refer to the origins of James Stirling's monumental sense of emotion [Melvin, 2009].

Leicester University Engineering Building (1959-1963), University of Cambridge History Faculty (1964-1967), Olivetti Building (1969-1972), etc. Stirling was in a position opposite to the 'box' architecture, which was found in original, single-time mania-tist behaviors loaded with personal expression in his works. It is seen in a different line from the 70's: neo-classicism effect. From now on, he was interested in Soane, Gandy, Goodridge, and Von Klenze and Schinkel from German neo-classical English architects, using an eclectic, historical background in his work. Stirling believed and made an effort to build a humanistic architecture, using mainly the elements and references that the people would understand and accept [Kortan, 1996].

![Stirling timeline](http://www.except.nl/overig/yale/sem3/Stirling_paper.pdf)

**Figure 1.** Stirling timeline (http://www.except.nl/overig/yale/sem3/Stirling_paper.pdf)

### 2. MATERIALS AND METHODS

#### 2.1 Field of work


From the works of James Stirling;
• Leicester University Engineering Building (Leicester, 1959-1963),
• The Faculty of History (Cambridge, 1964-1967),
• Runcorn new town housing (Runcorn, 1967-1976),
• Olivetti Building (Haslemer, 1969-1972),
• Neue Staatsgalerie (Stuttgart, 1977-1984),
• Berlin social science center (Berlin, 1979-1987)
• The Sackler Museum (Cambridge, 1979-1984)
• Clore Gallery (London, 1980-1986),
• Performing Arts Center (Cornell University, Ithaca, 1983-1988) was taken as a study area.

2.2. Methods

In this study, James Stirling, one of the foremost architects in the 20th century architecture sector, and his works were studied and examined based on the literature review.

Selection of samples; a detailed data collection work based on a review of various journals, books, city yearbooks, theses, etc.

The determination of the properties of the samples was carried out in two stages.

- A form which is used to record the photos, slides, surveys of the buildings and the information collected,
- Includes a literature review of the information.

3. RESULTS (Works Reviewed)

3.1 Ham Common settlement (London, 1955-1958)

His first important work was the multi-storey residence he built in 1955 in Ham Common. In all his early works, De Stijl merged the simple surface and space arrangement of basic geometrical forms with the rational, functional attitude of Le Corbusier (http://www.filozof.net/Turkce/tarihi-sahsiyetler-kisilikler/16915-james-frazer-stirling-kimdir-hayati-eserleri-hakkinda-bilgi.html).

The three apartment blocks in Langham House Close were designed in 1955 by James Stirling (1926-1992) and James Gowan (1923-) for the Manousso Group as a speculative development. They were built in 1957-58 on a site that was formerly the back garden of a Georgian manor house. The main block (primarily built of load-bearing London stock brick and timber shuttered concrete) is three storeys in height with floor levels expressed externally by concrete bands. Each block has a largely glazed entrance hall with dogleg stairs. Apartments in the main block feature balconies drained by concrete gargoyles whose pattern derives from Le Corbusier’s Notre Dame du Haut, Ronchamp, and Maisons Jaoul. The architecture of the Langham House Close flats is as impressive inside as it is externally. The structural brick and concrete fireplaces are particularly noteworthy, but the attention to detail and quality of construction is to be admired throughout. (ww.themodernhouse.com/past-sales/langham-house-close-9/history/) (Figure 2,3).
3.2 Leicester University Engineering Building (Leicester, 1959-1963)

The modernist box, which incorporates everything, exhibits an attitude of preferring to break for the sake of a team of pieces. As a result, a large building has become a collection of smaller buildings, each of which has its own specific function.

The Leicester University Engineering Building, which combines the red bricks and tile gardens of the last days of Stirling and Gowan’s partnerships to divide, refers to the ventilation pipes of steam boats, industrial cama, double-burned bricks and other unrecognized industrial features of the structure. The work distracts the seriousness of extreme architectural stiffness and opposes the meaning of modernism [Borden, D., Elzanowski, J., Lawrenz, C., Miller, D., Smith, A. Ve Taylor, J., 2010].

One of the most successful practitioners of the brutalist movement, the British architect Leicester University, in the Engineering Complex, it is seen that the concepts of brutalist flow are processed with a great aesthetic understanding. Constructive elements are specified by their own qualities and various volumes can be read and recognized one by one by proclaiming their freedom in a way that they can understand the characters thoroughly [Özer, 1993]. (Figure 4,5,6)

The Engineering Building comprises large ground-level workshops (heavy machinery), covering most of the available site, and a vertical ensemble consisting of office and laboratory towers, lecture theaters and lift and staircase shafts (James Stirling, Michael Wilford and Associates, James Stirling, Michael Wilford, and Associates: Buildings and Projects, 1975-1992,. Thames & Hudson, 1994, p82.)
James Stirling (1926-1992) and Works

Figure 4. Leicester University Engineering Building https://www.mimoa.eu/images/11073_1.jpg

Figure 5. Section
https://www.tumblr.com/tagged/james-stirling

Figure 6. perspective
3.3 The Faculty of History (Cambridge, 1964-1967)
There is a brutalism effect on the structure. Material and construction are clearly visible. Deaf parts are made of brick, the other parts are made of glass surfaces covered with steel structure. The gallery corridors on every floor are facing the library, and the top of the library is completely transparent.

It was necessary to provide multi-directional approaches in the History Faculty. To allow for different cross-campus circulation routes four entrances have been provided, two of which are at ground level. At the front of the building there is also an approach by ramp to the staff entrance. The accommodation includes a reading room for 300 readers (12,600 square feet of shelving) which accounts for approximately half the floor area; the other accommodation is staff, seminar and common rooms (http://www.greatbuildings.com/buildings/History_Faculty_Library.html). (James Stirling, Michael Wilford and Associates, James Stirling, Michael Wilford, and Associates: Buildings and Projects, 1975-1992., Thames & Hudson, 1994, p97.).

Inside the two right-angled wings is the sloping glass roof of the reading room. This widespread use of glass surfaces and inclined planes has been an influential factor in the architecture of the last decade (Figure 7,8,9,10,11) [Stierlin, 1977].

Figure 7. The Faculty of History
Figure 8. section
Figure 9 perspective
http://www.flickr.com/photos/iqbalalam/tags/jamesstirling/
http://www.flickr.com/photos/iqbalalam/tags/jamesstirling/
http://www.greatbuildings.com/buildings/History_Faculty_Library.html

James Stirling (1926-1992) and Works

figure7.png
figure8.png
figure9.png

http://www.ijSciences.com Volume 6 – August 2017 (08)
3.4 Runcorn new town housing (Runcorn, 1967-1976)

The Runcorn district is on a central road between Liverpool and Manchester. The government’s goal is to make up for the lack of housing in the city. It is connected to the shopping and entertainment center in the center by bridges. There is a bar, laundry, sales units. The purpose of this construction is mass production. It is observed that the seating areas are opened to the garden or balconies. The bedrooms have round windows (Figure 12, 13, 14).

Its proportions, its sequence of squares and its abstracted-colonnade main facades were based on the Georgian precedents of the cities of Bath and Edinburgh. It offered a high-density, low-rise (five-storey) solution to the national housing problem at a time when Victorian ‘slums’ in nearby Liverpool were being demolished in swaths, and when many public housing authorities were still moving their tenants into new tower blocks which were themselves to prove troublesome. The first phases of Southgate combined in-situ and precast concrete construction with the colourful grp (glass-reinforced plastic) panels beloved of the nascent high-tech tendency in British architecture. Stirling used such plastic panels elsewhere, for instance on his Olivetti UK training centre. The final phase abandoned concrete entirely in favour of grp-clad timber frame. Southgate was, then, a project on the cusp of different approaches – stylistically anticipating the postmodernism of the Italian school while incorporating high-tech elements, and constructionally combining heavyweight and lightweight techniques. Stirling project: interesting, monumental even, but lacking a sense of greatness (http://hughpearman.com/the-naked-and-the-demolished-the-scandalous-tale-of-james-stirlings-lost-utopia/).

Figure 12. Runcorn new town housing http://cdnassets.hw.net/eb/0d/0bebe5db4c608930023df468e195/1976-20c-20riba9949-hero-tcm20-658840.jpg
3.5 Olivetti Building (Haslemere, 1969-1972)
The brutalism effect is observed in this building using ready-made elements. Cape Caneveral, who sits in the interior design in 1965, says that he is influenced by the space base and the famous James Bont film “you only live twice.” He was influenced by the top, shaped the circulation volumes and the control center, and the main auditorium affected by the film. Despite the scientific connotations, this language did not abandon the Platoist mass expression in Olivetti. Symmetry is proof of two rectangles. Allows post-modern line approach, the third stage (Figure 15,16,17,18,19 ) [Köksal, 1992; Şahinler, 1989; Tanyeli, 1992; Tümertekin, 1992].

To convert a 42-acre estate to a training center, the Olivetti corporation renovated a turn of the century ‘Tudor’ manor house to a residence for students and added a teaching wing. Two wings of classrooms, one for technicians and one for salesmen, follow the ground contours at the edge of the woods to facilitate planned extension and preserve adjacent trees. The siting splays the wings at slightly less than thirty degrees to each other. A ‘glazed link’ from the house extends between and joins the wings. To one side of the hall at the confluence of the wings and link is a ‘multi-space’—an ‘all-purpose-everything auditorium (http://www.greatbuildings.com/buildings/Olivetti_Training_School.html) [Stirling J. Wilford, M. 1994].

Figure 15. Olivetti Building https://www.flickr.com/photos/iqbalaalam/5942421130

Figure 16. Olivetti Building https://c1.staticflickr.com/7/6159/6223003949_027736466b_b.jpg
The mysterious image of Stirling is most clearly seen in his masterpiece, Staatsgalerie in Stuttgart, Germany. The building takes you through a simple circulation plan, where you will experience a series of public plazas, each with a distinct character. The project responds to the formal typologies and planning mass of the region without being buried in them. The mischievous character is not in the form of plan itself, but at entry points, bars, elevators etc. Shows. In order to achieve a dynamic impact, he has boldly removed the ceiling of the building. The inside of the building is covered with warm colored marble walls and the floor is covered with green rubber [Borden, D., Elzanowski, J., Lawrenz, C., Miller, D., Smith, A. Ve Taylor, J., 2010]. He won the State Gallery Competition in Stuttgart and realized this project. Here is a big architect and a big cynical personality. The forms of modern architecture and classical periods are used together without any boundaries. The stone walls of various
colored tapes are quoted from the Siena cathedral, from the arrangement of the exhibition spaces in the rotunda Schinkel museum in the middle, by the glass surface elevated by the High Tech architecture, and by the selected colors, from the pop culture. Interesting is the open pedestrian road, which runs through the middle rotundo and forms a ramp that connects the lower section with the upper section [Gieselmann, 1996].

The pieces of the building, which are the essential elements of the building, express their own freeforms and exhibit diversity and heterogeneity in the composition, consisting of several different forms: entrance hall, exhibition hall, rotunda, conference hall, articulated in a building to freely express their personalities. Baroque behaviors such as wavy walls, ramps used since ancient Egypt, circle forms of the Renaissance, transparent curtain walls of metal and glass, as well as the expression of stone, which is an archaic material, bring dynamism, vitality and tension to the mass. All of this combined with the use of cold and warm colors together and balanced, the unit comes out an interesting and unique product [Kortan, 1996].

The Stuttgart state gallery is one of the foremost examples of postmodernism with its use of pluralistic language spanning historicism and its relation to the urban environment. The project consists of the main mass, which is located between the two different high speed traffic roads of the city and which has the complex shaped and circular plan of the stomach which is required to be connected to the existing museum and which houses the museum places where the plaza is placed and the terraces on different levels. The building is kept open to the pedestrian traffic continuously by means of a short-cut goat connected to the road connecting the terraces starting from the upper road and lining the ceiling of the circular planned square and forming the lower boundaries of the complex (Figure 20,21,22) [Koçsal, 1992; Şahinler, 1989; Tanyeli, 1992; Tümertekin, 1992].

Figure 20. Neue Staatsgalerie http://www.architravel.com/architravel_wp/wp-content/uploads/2015/10/Neue-Staatsgalerie_1.jpg

Figure 21,22. First Floor and Ground Floor, Plan of the Neue Staatsgalerie
3.7 Berlin social science center (Berlin, 1979-1987)

This complex has also implemented the basic design principles in Staatsgalerie, Stirling. The fragmentation of the whole is that each piece expresses itself freely [Kortan, 1996].

The science center in Berlin, which was designed and built near the end of Stuttgart, Mies Van Der Rohe, Shaduran and Hollein have brought the environment to a museum where 20th century's different architectural insights and masterpieces are accumulated. The complex, consisting of small office units where conference rooms, administrative units, secretarial and group work can be carried out, is gathered in independent buildings according to the chapter headings and all these structures are placed on the land in different scattered (Figure 23,24) [Köksal, 1992; Şahinler, 1989; Tanyeli, 1992; Tümertekin, 1992].

Until 1945, the original building housed the Reichsversicherungsamt, the highest supervisory and legal authority of social insurance in the German Empire. The British architects James Stirling, Michael Wilford & Associates significantly renovated the old building and integrated it into a complex of postmodern annexes. The floor plans refer to well-known forms from architectural history: amphitheater, campanile, stoa and basilica. The new building was completed after four years of construction [https://www.wzb.eu/en/about-the-wzb/wzb-architecture].

Figure 23. Science Centre http://www.cca.qc.ca/img-collection/q4T8BUTxt6QVrCNGapWgPrcPaBw=/1400x1043/413604.jpg

Figure 24. Plan drawing (https://www.wzb.eu/en/about-the-wzb/wzb-architecture)
3.8 The Sackler Museum (Cambridge, 1979-1984)

The entrance gate on a flat surface is highlighted with a number of motifs. With stone columns, wall-mounted half columns, it reminds us of past periods (Figure 25, 26, 27).

The circulation flow in the Sackler is interrupted by a series of contra axes and stop movements as you move from the entry hall and up the stair to the top-floor galleries. The in-between transitional elements normally found in Baroque ensembles, such as vestibules and ante-rooms, are here excluded, making for an abrupt juxtaposition of basic elements. The staircase is therefore more a picturesque and less a sequential element in the spatial whole. Visitors moving through the Sackler will experience a succession of minor shocks or jolts. Firstly, they have to go down instead of up to enter the building. Then, entering through the glass lobby between the columns, the cross axis of the entrance hall immediately creates a stop movement: across the hall the staircase reverts to the axis on which they entered and, when the gallery at the top is reached its axis is again at right angles and so on. In a short staccato walk the reorientation of stop/go axis changes is a substitute for the transitional vestibules in a Baroque sequence. There will be the traffic of students en route to classrooms and the flow of the public visiting the galleries; it could be quite active, a sort of mini-bazaar. the Sackler does have rooms, but not always with an axial relationship to each other; some have two openings per wall, so you may experience some ambiguity as to the type of room you are. The final gallery with the big window is parallel to the first gallery but the in-between spaces may seem somewhat like a maze [https://www.architectural-review.com/rethink/1986-july-sackler-sequence-an-interview-with-james-stirling/8612456.article].

Figure 25. The Sackler Museum
https://upload.wikimedia.org/wikipedia/commons/9/9b/Sackler_Museum%2C_Harvard_University.jpg

Figure 26. perspective https://s-media-cache-ak0.pinimg.com/originals/fc/29/31/fc2931754d451f48d486649778071327.jpg
Figure 27. appearance http://www.studiointernational.com/images/articles/s/stirling-2011/front-elevation-b.jpg
3.9 Clore Gallery (Londra, 1980-1986)
The new Clore gallery, in addition to the Tate gallery to display the paintings of the famous English painter Turner, is a project that is very exciting and controversial in the architectural world. As they pass through the entrance hall and walk towards the galleries, there is a grave gloom. Apart from the building, Tate has the service gardens in front of the gardens and the backside is in a very different character. There are four different types of elevations in this small building, three or four, and they all create a unique solution in their entirety (Figure 28).

The Clore Gallery has been regarded as an important example of Postmodern architecture, especially in the use of contextual irony: each section of the external facade quotes liberally from the building next to it in regard to materials and detailing [https://www.e-architect.co.uk/london/clore-gallery-tate].

Figure 28. Clore Gallery [https://s-media-cache-ak0.pinimg.com/originals/cd/b2/d6/cdb2d620e50a57a2e79eb8dcc2eac758.jpg]

3.10 Performing Arts Center (Cornell University, Ithaca, 1983-1988)
It is a post modern structure. In the entrance there is a combination of triangular pedestal, stone pavement and modern material. A columned entrance is visible round windows of the Roman period. Extremely eclectic (Figure 29, 30).

Figure 29. Performing Arts Center [http://www.bestvalueschools.com/wp-content/uploads/2014/05/17-SCHWARTZ-CENTER-FOR-THE-PERFORMING-ARTS.jpg]
4. DISCUSSION AND CONCLUSION

The architectural works of James Stirling, one of the foremost architects of the 20th century, aimed to be an example of new designs with architectural insights.

The works of James Stirling (Ham Common settlement, Leicester University Engineering Building, The Faculty of History, Runcorn new town housing, Olivetti Building, Neue Staatsgalerie, Berlin social science center, The Sackler Museum, Clore Gallery, Performing Arts Center) that have been studied are discussed and explained based on the literature.

We can say that Stirling, a humanist, reformist, and social Utopian attitude, has transferred the orientations of the world architecture to a practice of architecture with great intuition and courage, before he is concerned about creating a strong theory.

Tablo 1. Examined the works of James Stirling table

<table>
<thead>
<tr>
<th>JAMES STIRLING – WORKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

http://www.ijSciences.com    Volume 6 – August 2017 (08)
Performing Arts Center (Cornell University, Ithaca, 1983–1988) (11)

Performing Arts Center (Cornell University, Ithaca, 1983–1988) (12)

5. REFERENCES

Table photo references
2- https://c1.staticflickr.com/4/3407/5350555142_fdd91a5069_b.jpg
3- https://c1.staticflickr.com/5/4080/4934612209_2cb3b44670_b.jpg
4- https://c2.staticflickr.com/6/5291/5472284838_39aee426c_b.jpg
5- https://library.ndsu.edu/repository/bitstream/handle/10365/19343/ALA05036.jpg?sequence=1
6- https://s-media-cache-ak0.pinimg.com/736x/8d/d5/fb/dcdcfddcc9141d931b4ef73c948274ec--james-stirling-training-school.jpg
7- https://hermanns.files.wordpress.com/2014/02/newe_staatsgalerie_fassade.jpg
8- http://www.cca.qc.ca/ima-collection/IZ9mUH6pLC3mkC49e1bdRJC/GCw==/1400x1049/143603.jpg
10- https://s-media-cache-ak0.pinimg.com/736x/7c/0a/477c0a4b2890eef739e6534156622e1d--james-stirling-tate-britain.jpg
11- https://s-media-cache-ak0.pinimg.com/736x/47/b6/32/47b63200086382f97bce654a70b88d60--james-stirling-art-centers.jpg
12- https://s-media-cache-ak0.pinimg.com/736x/dd/49/2d/dd49247230c2ddf0990abf996495e2787--james-stirling-performing-arts.jpg

Figure references
1. Figure 1 - Stirling timeline (http://www.except.nl/overig/yale/sen3/Stirling_paper.pdf)
2. Figure 2 - Ham Common settlement http://www.themodernhouse.com/wp-content/uploads/tmh/700/history-2.jpg
3. Figure 3 https://sancheztaffurarquitecto.wordpress.com/2013/02/05/documentos-aprendiendo-de-stirling-1926-1992-leccion-sobre-dibujos-de-arquitectura-1951-82-v-sanchez-taff rua/
4. Figure 4. Leicester University Engineering Building https://www.mimosa.eu/images/11073.jpg
5. Figure 5 https://arquigraph.tumblr.com/post/13154420184/james-stirling-leicester-laboratory-building
6. Figure 6 perspective https://www.tumblr.com/tagged/james-stirling
7. Figure 7. The Faculty of History https://c1.staticflickr.com/9/8476/8106748826_bf87e3112d_b.jpg
8. Figure 8. http://www.flickr.com/photos/iqbalaalam/tags/jamesstirling/
9. Figure 9 https://s-media-cache-ak0.pinimg.com/originals/79/6f/2679e626bd5105e9e876acd47eac0205d1.jpg
10. Figure 10. 11. Plan drawing http://www.greatbuildings.com/buildings/History_Faculty_Library.html
11. Figure 12. Runcorn new town housing http://cdnassets.lhw.net/eb/0d/0bebe5b4bd6e8930032d4fd8e195/1976-20-2rnhla9949-hero-tcm20-658840.jpg
13. Figure 14. http://www.architectmagazine.com/design/urbanism-planning/what-went-wrong-at-runcorn_o

http://www.ijSciences.com Volume 6 – August 2017 (08)
14. Figure https://www.flickr.com/photos/iqbalaalam/5942421130
15. Figure https://c1.staticflickr.com/7/6159/6223003949_027736466d_b.jpg
16. Figure https://s-media-cache-ak0.pinimg.com/originals/b2/5f/03/b25f03eb6dd4a0fd44d7c729c1a94ae.jpg
17. Figure https://s-media-cache-ak0.pinimg.com/originals/b2/5f/03/b25f03eb6dd4a0fd44d7c729c1a94ae.jpg
18. Figure 19. Plan Drawing https://s-media-cache-ak0.pinimg.com/600x315/f5/ff/05/f5ff050c2b6be25be72cd233cde6b13e.jpg
20. Figure 21. First Floor and Ground Floor, Plan of the Neue Staatsgalerie https://image.slidesharecdn.com/modernismpostmodernismarchitecture-141126203204-conversion-gate01/95/modernism-postmodernism-in-architecture-27-638.jpg?cb=1471331033
21. Figure 23. Science Centre http://www.cca.qc.ca/img-collection/q4T8BUTXt6QVrCNqWgPcPaBw=1400x1043/413604.jpg
23. Figure 25. https://upload.wikimedia.org/wikipedia/commons/9/9b/Sackler_Museum%2C_Harvard_University.jpg
24. Figure 26. https://s-media-cache-ak0.pinimg.com/originals/fc/29/31/fc2931754d451f48d486649778071327.jpg
25. Figure 27. http://www.studiointernational.com/images/articles/s/sstirling-2011/front-elevation-b.jpg
26. Figure 28. https://s-media-cache-ak0.pinimg.com/originals/cd/8b/d6/cd8bd62d2e50a57a2e79eb8dce2ee758.jpg
28. Figure 30. https://tr.pinterest.com/sourcereview.com/