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Cover Design by Anthony Stockbridge based on the laboratory planning grid discussed in Sir Leslie Martin's article.

CONTENTS

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ADS & AD7 Book notes
586 News Notes Translations
98 Sir Leslie Martin
586 Science buildings: notes on the study of a building type
603 'The architecture of action'
837 Edited by Günter Mitschke
808 Günter Mitschke
812 Arata Isozaki
814 Max Bill
820 Salzle, David
820 Brott and Bonneva
827 Frey & Schroder
620 Hill housing
630 Robert Bennett & Sir Leslie Martin
630 Sir Leslie Martin
630 John McHale
636 Design notes
638 Trade notes

This 'Phoenix' panel demonstrates the delicate effects that are obtainable when various glassworking techniques are used in combination. Reed Millican craftsmen used four-colour silvering in conjunction with brilliant cutting and a variety of acid-etched tones and stipple on a panel of plate glass 5' x 3' 6"—the final result—will judge for yourself! If you would like to see further examples of our decorative glasswork, or discuss designs, your enquiry will receive prompt and skilled attention.
Subsequent to Günter Nitschke's article on the Japanese Metabolist's which was published in our October issue, we are printing this supplement edited by Günter Nitschke, which examines in some detail the more recent work by prominent members of the metabolist movement. This supplement is introduced by a precis of an article by Kurokawa which appeared in the September 1964 issue of Kenchiku-Bunka.

'The Architecture of Action'

by Noriaki Kurokawa

1 Of this traditional print Kurokawa writes, ‘In the experience of hell, symbolic for destruction and chaos, one can arrive at a philosophy of new action, from which may result the beauty of Metabolism’.

2 Japanese painting is always dynamic; the centralized perspective of western painting is absent. The observer chooses a particular section of interest to him, and ‘moves’ from this point, thus functioning as a co-creative element in the design.

3 An example of a ‘sidewalk’. In designing the labour centre in Kyoto, Kurokawa became obsessed with the notion of a ‘sidewalk’, as a positive architectural element.

4 Perspective of Kurokawa’s Christian labour centre in Kyoto

In a recent issue of Kenchiku Bunka, Noriaki Kurokawa attempted to redefine the ‘aesthetics of metabolic space-making’. The methods which he propounds as basic to metabolism, sound somewhat similar to the basic principles of Buddhistic philosophy, outlined in my introductory article to the work of the Japanese Metabolists in AD October 1964. Firstly the doctrine of phenomenality or impersonality which proceeds analytically, to split existence into its ultimate constituent parts, into mere empty and unsubstantial phenomena and secondly the doctrine of dependent origination which proceeds synthetically to show that all these phenomena are, in some way or other, conditionally related to each other.

Consequently Kurokawa sees ‘metabolism’ as employing two basically complementary methods. Firstly, the analytic method, which looks into growth, expansion, plot-type, and thus into the basic principles determining the quantity of space. Secondly, the unifying method which postulates conceptions like the architecture of the road, of the sidewalk and of movement generally; concepts such as these determine the quality of space.

The present—an experience of hell

Kurokawa defines this symbolically as destruction and change not only affecting our environment as such, but also the ideas of CIAM, of Futurism and generally of the ‘established’ heroes in Japan. Out of this chaos now arises a new philosophy of action, from which may eventually derive the ‘beauty of metabolism’.

Life is movement—road is architecture

What Kurokawa means by this concept becomes clear in his design for the Christian labour centre in Kyoto, which is a concretization of
pedestrian movement within built-up blocks is similarly in a recently completed hotel, where he no longer speaks of the layout of building masses, but of a 'flow chart'; not of a corridor but of a 'road or side-walk'. Kurokawa says this 'road or side-walk' as having the same texture as the real exterior road or sidewalk. In this context one thinks not of rooms built as individual 'houses', not of lounges or common meeting rooms, but of squares.

What is meant is clarified by its application to a project of larger scale, such as his design for Tel Aviv-Jaffa 1963. Here his manner of connecting the two existing conurbations of Tel Aviv and Jaffa leads to a new city-infrastructure utilizing two existing routes, which enclose an area of obsolete slums, destined to become the new commercial centre. His flow-chart shows the superimposition of:

1. Black lines indicating pedestrian movement tending towards the sea-side and along the commercial linear centre. This movement being on natural ground and also in the shadow of terraced housing. Along these streams of pedestrian movement are the shopping facilities here arranged like oriental bazaars.

2. Roads indicating car movement fed from two interurban connectors, from which spring the ribs to which circular garages are attached, catering for approximately 60 per cent of incoming cars stationed there all day, whereas for the rest of 40 per cent of shoppers, parking facilities are provided along the bazaars, etc.

3. Tinted arrows indicating breeze movement: An essential movement to be utilized which is recognized in tropical countries, here it runs along the shaded areas of the housing in front of the sea.

4. A broad tinted line indicating winter movement along the existing coast with occasional inlets.

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1. The principle of the 'flow chart'. Entry by Kurokawa for the Tel Aviv-Jaffa International Competition 1963.

2. 'Helix'. Kurokawa's floating city consisting of helicoid structures built on artificial land.

3. 'Futurism'. The one movement that tried to capture the entity and essence of movement.

4. 'The plot type' method of growth. Traditional Japanese buildings which are complete at each stage of their unit growth; the Nijo Castle and the Katsura Palace.
Two stages of growth in the Kyoto Conference Centre project

The 'Mellorama', environmental sculpture by Munari

Plans showing stages of growth and use, both horizontally and in vertical layers. Shaded areas indicate connected levels. The levels are designated as follows:

First level: representatives, members of Congress. Second level: TV, journalists, radio, etc. Third level: general public audience. Fourth and fifth levels: offices

Having broken finally with CIAM, which for Kurokawa, was a cubist inspired movement and the architect now founds his thinking on futurism for its preoccupation with movement and change, on Munari's 'Merliorama' Sculpture, in which the observer (i.e. the client in the building process) takes a creative part in the actual design and also on Team 10 for its research into communication systems and the relationship between the infrastructure and its elements. From this basis Kurokawa sets up the new dynamic beauty of metabolism. His methods are as follows:

(a) The method of stimulation which involves the setting of a new structure into a group of existing structures. This should not only allow the possibility of an unknown but stimulate it into a certain direction.

(b) The method of plot-type, which he sees as the basic characteristics of traditional beauty in structures like the Nijo Castle or the Katsura Palace, where at each separate phase of growth a vision of 'complete' beauty was established. There is nothing like a final static shape in these designs, but of a harmony achieved through balance.

Kurokawa is able to give examples to illustrate these principles; in particular his notion of the point stimulation system. The concentration of certain activities within a cluster with their tendency to radiate from these points of concentration becomes the main influence for a dynamic infrastructure within a city.

Kyoto Conference Centre

1963

Noriaki Kurokawa

An example of Kurokawa's point stimulation system is his design for the competition of a new conference centre in Kyoto 1963: Here in contrast to the first prize given to Otani, a former assistant of Tange, whose design can be looked at as a static compositional arrangement of sculptural elements, Kurokawa devises a point-stimulation system on a smaller scale, which allows for the phased construction required in the first stage and for future extension to double the volume of the first stage. The stimulating points here are the vertical, structural and equipment shafts, which form the basic grid structure of the growth, between which a seemingly limitless variety of inner space arrangements is possible, whilst also permitting external growth. The four basic functions are divided up vertically, each of which can claim complete freedom of arrangement on its level horizontally.
Factory for the Nitto-Shokuin Company 1964
Noriaki Kurokawa

A rapidly increasing production capacity which so far has doubled itself every three years became the determining factor in the conception of this unit-type factory, with a basic unit of 17 metres derived from structural and functional considerations, and the invention of a stimulating column, a true symbol of the dynamic beauty of metabolism. This column not only provides a structural point for the support of the prefabricated roof, but serves also to simulate the rhythm of the production process itself and as a symbol of the anticipated and stimulated future growth. Kurokawa can definitely also claim an economic success with this building for the time between prefabricating the elements and the completion of the entire factory was only three months.

Art University, Osaka, 1964
Noriaki Kurokawa

A similar general approach is made in Kurokawa's competition design for a new Art University in Osaka. It is structured by three main functions. They are: sport activity, leisure activity (horizontal, because a common activity), and living activity (vertical, because of the required privacy).

The principles involved in the design are as follows:

1. Along an existing valley is stretched the new university infrastructure, containing all common equipment and communication elements like the administration, eating and meeting spaces, museums and libraries.

2. On top of these elements are situated the spaces for lecture rooms, which then allow for the types of growth:

- Externally by building a completely new block or even starting to build over the adjacent valley.

- Internally by the structure being conceived a ‘major bridge structure’ with ‘minor element structures’ being situated on top of it.

3. The complex is designed for a maximum vertical extension of three floors, which obviates any need for vertical communication shafts. The movement of the people in terms of stairs on the outside of the building structures the facade, i.e. ‘movement is facade’.

The housing is provided in terms of growing areas for the students and lower blocks of a modular growth type for the professors.

The gymnasium is provided with all secondary facilities underground and a stadium above.

Diagram of the Shokuin factory. Columns are conceived by Kurokawa to be symbolic of expansion.

Drawing of the Shokuin factory showing the actual system.

Front view of Osaka University. ‘Movement is void — facade is movement’

Section through the Osaka campus.

A view of the complete Osaka project.

Kyoto conference centre and Ichigaya project
Kiyonori Kikutake

Kikutake's preoccupation with prefabrication, i.e. with the building process itself and with the growth and decadence of cells in forming the environment manifest in all his 'sea-projects', also appears in his 'land-projects', like his suggestion for a system of terrace housing in Ichigaya, Tokyo. Here, in opposition to the traditional Tokyo chaos of two-storied terrace houses in wood, which provide no privacy, no flexibility and hardly more than just a spot of private green, he proposes a system of r.c. equipment shafts (cf. Isozaki) which support artificial land for terrace housing. This system, if related to existing natural features, seems to satisfy a demand for prefabricated elements capable of cellular metabolic changes.

It is not surprising that such ideas on prefabrication, structuring and exchangeability, when interpreted in modern construction, create forms somewhat similar to the age-long tradition of Japanese timber building. An example of this is Kikutake's commended entry for an international conference centre in Kyoto. Because of this resemblance, many of these ideas find a favourable reception amongst conservatively minded laymen, as, for instance, in Kikutake's building for the priests at the 'Great Shrine of Izumo Taisha', a building complex, where the use of wood seems to comprise an essential part of the religion.

Site plan for the Kyoto conference centre
Lower floor plan, offices for the Kyoto centre
Upper floor plan conference halls, foyer, etc., Kyoto centre
Site plan and building system for Ichigaya project, Tokyo
Elevations and sections for Kyoto conference centre
Tatebayashi city hall, Seconic factory and the Great Shrine of Izumo Taisha

Kiyonori Kikutake

As in the 'productive belt' of 'Unabara' ocean city, Kikutake feels that productive structures should be able to adapt themselves to future expansion or contraction requirements. In other words, what is required is a kind of biological space unit system affording limitless expansion or contraction of cellular structures in any direction. He has recently applied these ideas in a new factory design—the Seconic factory—based on two different space units, a 250m² eight-storied productive space and shafts containing the necessary services and systems of vertical communication. The same system may be applied to the horizontal expansion of the productions halls themselves, having a lower vertical height.

A similar structural/space conception seems to have been incorporated in his building for the new city offices in Tatebayashi. This hall has double height upper and lower ground floor reception halls for public use, with office floors mounted on three large cantilevering decks above. One of these office floors embraces the council chamber within its core.
chamber plus admin floor of Seconic factory. Administration and small production is on the left, factory production halls right of the Seconic factory group of the great shrine of Izumo Taisha.
Library at Oita
Arata Isozaki

 Isozaki's library has been evolved around a theory of 'process planning' deliberately avoiding the creation of a complete piece of architecture with provision for future extension, and instead postulates a system of growth. Since it is impossible to foresee the total final shape and since we can only see parts of the process as a whole, emphasis is put on the invention of a system, according to which a process of design can take place in line.

 Isozaki's library at Oita on the Kyushu, which is going to be built at the end of this year embodies this principle. He arrived at his particular 'process' by the following chain of thought:

 First step: Function: the relation between the case desk and the stack-with increasing growth, group classification must occur within which flexibility must be granted. These group elements must have the possibility to grow according to their own inherent laws.

 Second step: A critical point in the growth-process is reached, when the introduction of a skeleton becomes necessary. The form of the skeleton must be of an open character, because in the future, it will direct the growth-process.

 As we are never able to foresee the ultimate totality of the building, the section under construction at Oita implies, in its detail syntax, the appearance of something which is 'under way', of the unfinished. The box-beam sections and the duct-walls show a complete integration of structure and service installation.
1, 2 & 3
Sketches demonstrating the relation between parts constituting a process

1
An analysis of components; the relationship between control desk, readers and book stack

2 & 3
Sketches of possible relations between control point, readers and book stacks, each being considered as self-contained elements which are progressively added to the whole

4 & 5
Ground floor and first floor plans of the library

6
Roof and block plan of the Oita library

7, 8 & 9
Various views of the model of the library