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Composition:

L'ensemble comprend un noyau cubique d'où rayonnent des éléments courbes vers les deux routes. Le volume des circulations verticales émerge du bâtiment. Le rampe pour piétons qui caractérise le bâtiment prend naissance aux deux routes en une double courbure et traverse le centre au deuxième niveau comme un tunnel.

Origines:

Financé par un ancien étudiant, le centre a été construit par le Corbusier dont c'est la première réalisation aux USA.

But des études visuelles:

Les difficultés d'appliquer un tel programme résident en la structure même de notre période, où il s'agit de combler la rupture des relations entre la pensée et le monde émotionnel, entre le développement des sciences et l'expression artistique.

Thème de base:

Art et profession (c.f.: Kenneth Galbraith: "The Affluent Society": accès nécessaire de l'homme d'affaires à l'art).

Organisation du centre:

Direction artistique: Mirko, sculpteur romain
Coordination: Eduard Sekler, historien de l'art
Participation active de membres de toutes les facultés.

Programme:

Il ne s'agit pas de faire de l'art, mais de développer la sensibilité des élèves et de former leur jugement artistique. Ce manque d'organigramme précis, se répercutait un peu sur la rigueur architecturale du bâtiment.

Distribution générale:

Sous-sol: laboratoires d'essai de photo et de cinéma, salle de projection, dirigés par l'anthropologue Gardner.
Premier et deuxième niveaux: atelier d'études visuelles.
Troisième niveau: la destination de ces volumes n'est pas encore adaptée aux exigeances du centre: les salles d'études devraient être complétées par une bibliothèque et des salles de réunion qui permettraient l'échange concret entre les différentes facultés.
Quatrième niveau: atelier du sculpteur Mirko.
L'espace sous pilotis pourrait être rendu plus vivable par un auditoire qui n'était pas prévu dans le programme initial, trop vague par manque d'exemples.
Ceci s'explique par l'histoire du 19ème siècle, où l'art a cessé d'être la clef de la réalité.
Aujourd'hui, il est indispensable de renouer des liens entre les sciences et les arts pour échapper à la spécialisation régnante et pour reconquérir cette vision universelle qui caractérise la culture authentique.
Il faut à nouveau tenir compte de l'homme, il faut réintroduire le monde émotionnel dans le domaine des sciences.
Ce besoin se manifeste aussi bien chez l'historien que chez les scientifiques (Heitler, physicien atomique à Zurich, exige dans son livre: «L'homme et les découvertes des sciences naturelles» des recherches selon des critères qualitatifs). Humaniser les recherches scientifiques, c'est également le but du centre Carpenter qui veut créer des relations entre les méthodes de penser et les méthodes de sentir. Un séminaire, composé de professeurs de différentes facultés (les sociologues: Kenneth Galbraith, Arthur Maas, David Riesman, I. A. Richards, le fondateur du "Basic English": Dean José Louis Sert, l'architecte et urbaniste: G. Kepes, un philosophe, un pathologue, etc.) soulevait les thèmes suivants: «Comment établir les relations entre le Centre Carpenter et les autres facultés?»
«Comment éduquer le jugement esthétique des étudiants?»

Service des constructions de Darmstadt
Architectes: Günther Koch, Max Schramm, Günther Lingner, Karl Gorzel, Adam Neundörfer, Emil Eckstein, Helmut Hübner. Jardin: Herbert Heise

Centre allemand de calcul à Darmstadt

(page 335–338)

Le centre de calcul allemand indépendant, à disposition des universités, des écoles techniques et des instituts de recherche libres sert:
1: à résoudre des problèmes de recherche scientifique à l'aide d'un grand nombre de machines à calculer
2: à pousser la recherche scientifique (mathématiques numériques etc.)
3: à former des spécialistes pour machines à calculer électroniques.
Ce programme exige un hall central au rez-de-chaussée de 500 m², sans appuis intermédiaires, entièrement climatisé pour les machines à calculer qui doivent pouvoir être échangées rapidement. Ce noyau, en relation directe avec les locaux d'entreprise et ceux des clients, est entouré d'un grand foyer de réception, de locaux de travail et d'un couloir qui mène aux salles d'étude et de recherche.
Les 2 niveaux supérieurs abritent les sections numériques et non-numériques comprenant une salle de séances, un secrétariat ainsi que des salles d'étude pour les clients.
La partie sud avec la bibliothèque, des salles d'étude, les bureaux des directeurs et des locaux d'entreprise forme une cour intérieur au rez-de-chaussée avec le grand volume.

Construction:

Structure entièrement en béton armé. Vitrages en acier noir avec stores à lamelles extérieurs.

Summary

Rinnan and Tveten, Oslo

New Buildings at Oslo University

(page 303–310)

Prodigious development in the various scientific fields demands corresponding centres of research and tuition. Unfortunately, however, universities and technical colleges are normally in the centre of town and there extension consequently poses problems of land acquisition. The more perspicacious of university authorities have secured at an early date sections of land on the periphery of the city (Copenhagen, Stockholm, Oslo).
Zurich has retained its university and technical college facilities in the city centre and is no longer in a position to acquire land in the immediate vicinity of the present complex. An extension is also projected on the city boundary.
The new university in Oslo is situated some five kilometers from the city centre and planned scientific institutes (built in 1960), Arts Faculty buildings (1962) and, more recently, an administrative centre, a university restaurant and a sports centre.
The plan of the entire complex proves to be highly interesting. Two- to twelve-storey structures, some still at the planning stage, are freely distributed between two parallel roads.
The administrative complex comprises two buildings, a ten-storey building and a two-storey annex. In the basement are the stack-rooms and archives and work-rooms. The ground floor forms the pivotal centre of the entire building. The entrance proper is on this level, as are registration and immatriculation facilities, a post office, bank, travel office and a spacious bookshop. The offices are housed in the upper eight storeys with the senate rooms and conference rooms on the top floor. Office areas in the annex are grouped around an inner court.
The generous volumes are also in evidence in the restaurant and gymnasium building. The foyer in the ground floor runs the whole length of the building. The first floor is given over to a 75 m.× 15 m. cafeteria which also serves as a lounge. A further restaurant, grill room and snack bar adjoin the cafeteria. Four club rooms are on hand near the foyer on the ground floor.
Further: four large gymnasiums which may be linked up by folding walls and four smaller sports rooms with changing facilities and cloakrooms.
The gymnasium and the restaurant are conceived in such a way that they may be used for examination purposes, as a theatre, as a concert hall or assembly hall, or as a ballroom.
Four offices joined forces in the University Buildings, among which were Leif Olaf Moen, prize-winner in the competition for the humanities' building in 1958, and Rinnan and Tveten, general planner for the university.
The final complex plan was accepted–with the exception of an area to the south of the university–in the year 1964. The development of this area will depend on the location of a heavy-duty road which will lead under the university in a tunnel. Within the overall plan are students' lodgings, students' union, research institutes, sport's school and a traffic link-up with the centre of Oslo.

Construction:

Red brick, concrete, steel plate treated with asphalt and laminated wood.
These materials will give the university its distinctive appearance and will also serve to eliminate any clash with the science institute built in the thirties'.

Federal Building Office, Marburg
Kurt Schneider
Collaborators:
Building system: Helmut Spieker, Building director: Wolfgang Mittelstadt, Static and construction consultant: Rudolf Müller, Giessen, Building plan: Winfried Scholl, Skeleton design, Natural sciences: Gottfried Bondzio, Helmut Spieker

University Building in the Lahnberge in Marburg

(page 311–318)

At the end of 1961 about 250 acres of woodland in Hessia were placed at the disposal of the Philipps University in Marburg. It was decided that the natural science institutes, the medical faculty and the clinics of the medical department should also be constructed on this terrain. Problems of space in the then existing university buildings and the incapacity of the city centre for further building development proved instrumental in the decision to transplant the major part of the university–about 85% when the building programme is completed–to the terrain outside the city's boundaries.
Among the factors to be dealt with in the course of the programme were the following:
The number of buildings expected by the university authorities had to be taken into account;
The functional relationships between the buildings had to be carefully established;
Problems of maintenance, heating etc., had to be evaluated;
Traffic movement within the complex had to be studied and planned.
The building programme itself was developed in all haste. It was to meet the demands of a modern educational institution and to permit full implementation of technical and industrial potentialities.
The solution of the problems involved was reduced to a constructional problem: what type of building was to be aimed at in the programme in order to meet the demands of an academic institution? The particular task on hand bore implications of a more general order: the creation and establishment of an adequate building procedure for high-schools and colleges, one which would be economical, easily constructed, adaptable and pleasing to the eye. The use of a certain type of building was rejected in view of the changing demands made in the various fields of activity: the whole pattern of a science research laboratory can become obsolete overnight. To find a solution it was found both advisory and necessary to return to the most basic stage in architecture: the individual element. Here it was indeed possible to reduce each element to a type which could be employed generally and yet in such a way as to meet the various demands.
The basic problem is then as follows: to alleviate problems of lack of space by the speedy erection and transplantation of whole complexes. In addition, flexibility and variability of function must be accounted for, in other words, subsequent changes of purpose and function must be rendered possible by the buildings system chosen. A similar process is observed in industrial building where the trend is to produce not ready-made buildings tailored to a specific function but a shell which can be easily adapted to the most varied of functions and to new production techniques. Such a system had to be found for a university complex, a neutral buildings system which fulfills the demands of the present and will not be rendered useless by technical and procedural progress in the future. Such a project augurs well for this new area of planning and the present attempt serves to illustrate both the pitfalls and the advantages of the process.
In such a case certain factors are of prime importance:
Planning methods and planning aids such as modules and building elements which are distinguished by their variability and flexibility must be investigated. Vertical and horizontal construction techniques, façade structure, stairway construction and circulation must be interpreted in the light of the basic plan.
That the building elements should assume a particular form dictated by a pre-conceived notion of the finished building is a particular danger to the logical and functional side of such planning. It is indispensable that the objective demands of the particular structure involved alone be considered valid. On the other hand, the fear that such a programme might be aesthetically unpleasing is, in fact, groundless, since the employment of individual type elements allows free scope in combination. Furthermore, every phase of the building operation is directly under the guidance of the architect. The use of standardised elements is in reality a positive step towards free configurations and allows the imagination ample scope.
Further, it should be noted that the use of these type-elements guarantees adjustability to the nature of the terrain and to the particular requirements of the individual building. The introduction of a new teaching method, the advent of a new professor, structural changes in the pedagogic methods employed, radical changes in the nature of research and the need for greater specialisation may be accommodated; the exchange of a number of rooms from one building or even the complete building is possible. This exchangeability seems vastly more difficult in the case of building types: the fact that only the building elements are typed makes for considerable freedom and renders each building sufficient for a variety of functions.
Buildings are by necessity constructed in phases in the case of such an extensive building programme. It is also imperative that alterations and extentions to the existing buildings must be considered after their provisional "completion". For this reason the entire complex must be built on vertical and horizontal planes so that the complex may grow organically and uniformly.
While each individual building within the complex may take on its own particular form and personality the use of the standardised elements nonetheless makes for a feeling of community, proper to a university.
The extent of the programme – 2.5 Mill. m² enclosed space – is such that only a fully normed building procedure is appropriate. One special consideration is that the entire complex should be human in conception – the norm should be based entirely on the user.
The main characteristics of the system are as follows:
Module 1 – applied to the non-bearing, interchangeable elements of cupboards, exterior and interior walls. In this way the freedom of the groundplan in the interior is adequately achieved. The module does not clash with the second module, the constructional module: there is no overlapping. Walls may be erected every 60 cm. in both directions. These wall elements come in three basic widths: 60, 120 and 180 cm. They are wedged between the floor and the sloping, sound-proofed ceiling.
Column-positioning – The façade may be divided into three zones by the positioning of the columns:
just in front of the columns for climatised programmes with similar space requirements;
just behind the columns for buildings where the space requirement show only slight diversification;

well behind the columns for flexible and variable buildings.
In the third case passages are formed which serve a number of purposes: exits, weather-protection and assembly room in the advent of subsequent extensions and, finally, as laboratories for open-air experiments. All three types may be used in one and the same building.
Position of the core – All positions of the core – which bears the whole weight of horizontal pressures – can be used; in the case of regularly shaped buildings the central position proves to be the most economical.
Column viabilty – A free architectural and functional composition is made possible; the form of the building remains technically and architecturally clear; individual sections, extensions and all additional building measures create the impression of continuous building. With 30/30 cm. columns buildings up to eight floors may be constructed (Load 500 kp/m²); and in the case of 45/45 cm. columns 18 floors are possible.
Panel-types – Small 480/720, medium 720/720, large 720/960; with these the construction can be almost infinitely varied; the height of the rooms corresponds to the particular function they fulfill and can be varied in individual buildings and even in individual rooms. Normal load – 500 kp/m². This can be increased to 1,000 kp/m² in the case of the medium panels and to 1,500 kp/m² for the large panels.
Vertical installation – The entire ceiling surface is perforated between the bearing webs; the 45/45 cm. recesses correspond to module 1. These recesses can be set together at any point of a panel up to 240/240 for columns, shafts, etc. They may be planned in advance or incorporated during the actual construction period.
Horizontal installation – All pipes and ducts may be housed in an installation zone 31.5 cm. in height. To avoid undue joints water pipes are housed in another zone beside the crossbeams. (Drainage) In this way the various media may be piped to any area of the building.
The overall dimension system acts as a regulating factor in functional and architectural planning and execution.
In this way the necessity for a small number of building types with negligible ground plan variations is avoided. Moreover, an integral part of the idea of a university as a living organism is conveyed.
The system permits unlimited use of all the possible facets of industrial technique. It achieves a functional, economical, rapidly assembled and – as far as one may judge at present – wholly satisfactory solution which augurs well for the future. Its application is by no means restricted to education institutions and the like – it may be used wherever and whenever a flexible and adaptable building programme is foreseen, since it is ideal for the construction of functional buildings by virtue of standardized elements.
The first buildings to be erected have illustrated that a reversal of dependencies has been occasioned by the montage process of industrial building: Function determines construction. This is evident in the order of the modules: Module 1 = functional module and module 2 = construction module. It is conceived that a certain amount of time can be saved by simultaneous processing of constructional and functional elements. This naturally presupposes strict tolerance levels. In the present case they were established and guaranteed by the firms involved on the basis of the DIN projection 18201.
Building costs proper for the first two buildings were (DIN) 165 German marks per cubic centimeter. In subsequent buildings this total will be somewhat reduced in consequence of mass production methods. The secondary aim has thus also been reached: building according to system has proved no more expensive than conventional building procedures. Above all, the provisions for later developments and extensions have been made and subsequent expenditure incurred by alteration and maintenance will be minimal.
The next buildings to be erected by the system are the chemistry and biological institutes which are scheduled for the beginning of 1965.

Nils and Eva Koppel, Copenhagen

Denmark's new Institute of Technology in Lyngby near Copenhagen

(page 319–323)

The extensions vital to the Technical College of Copenhagen entailed the acquisition of extremely expensive terrain. Furthermore, the planned extension was found to integrate badly with the existing architecture in the centre of Copenhagen. For these reasons it was decided to remove the college in its entirety to Lyngby where ample space for the buildings proper, parking lots and possible future buildings was available.
The building plan aimed at economical and highly flexible individual buildings and the entire complex was consequently reduced to two basic building types: standard and special. The former type predominates, is three storeys high, 15 metres broad, 50 or 100 metres long, and has a centrally located lobby. The standard type houses laboratories for teaching and research purposes in the 7.5 metre deep north-facing rooms, and office and service rooms in the 4.5 metre deep, south-facing rooms. The special type on the other hand is used for special functions: lecture halls, canteens and machine-shops.
Lighting: Single type of lamp adaptable to all conditions. Electric, fluorescent tubes, capable of variation in intensity, are employed, so that, for example, a special frequency may be used in the workshops and a neutral lighting arrangement may be achieved in the laboratories where colour shades have to be distinguished.
The round lamps shown were developed at the College and fulfil these various conditions. Two types are distinguished: one is built into sloping ceilings, the other mounted on rough cast. The latter's aesthetic qualities are somewhat diminished by the bell attachment which does not allow the lamp to lie flush with the wall. In later buildings this type will no longer be utilised. The ring-shaped fixtures enable a unified arrangement. The transparent upper ring is effective in softening the effect of the lamp and serves to diminish the difference between the dark ceiling and the brightness of the lamp itself.

The "Ørsted-Institute", University of Copenhagen

(page 324–330)

The University of Copenhagen is situated for the most part within a park. To avoid undue damage to the grass and shrubbery areas the new structures have been erected along the boundary of the park proper.
The H. C. Ørsted Institute–housing the mathematics, physics and chemistry faculties–comprises 4 principal wings which are linked on two levels by a main hall. These five-storey wings are splayed towards the East, while the low left wing opens on to a park. The five-floor buildings are arranged asymmetrically and house the research laboratories, offices (South) and study laboratories (North).
Between the five-floor structures are two sunken annexes which are given over to lecture halls. In the first of these are three lecture rooms, each with a seating capacity of 200, and in the second a somewhat larger hall seating 400.
The hall between the wings is destined to provide adequate means of access to the various faculty areas and also to enable the faculties to meet and intermingle. A restaurant, administrative offices and rooms for student activities are grouped within the hall area.
At the first level a gallery looks down over the main hall and extends towards the West to study rooms, the chemistry library, the mathematics library (double-storied) and two lecture rooms seating 120.

Construction:

Rough cast concrete in the structural sections, white painted brick in the non-bearing walls, white concrete slabs, ceilings in unfinished pine, flagstones in natural stone in the main hall for durability.

Siegfried Giedion, Zurich

The Carpenter Center for Visual Arts at Harvard University

An Experiment in visual education

(page 331–334)

The most striking innovation at the Carpenter Center is found in its programme: it is n o t intended as an art school. The purpose of the Center is more revolutionary and more ambitious. It does not serve to educate architects or prospective artists but is rather meant for other faculties – legal, medical, economic–in an effort to educate the students visually before they embark on their course proper. This is especially vital in this electronic age where the visual is so often a mere pendant to the written and spoken word. "Visual" in the sense of the Carpenter Center does not refer to an optical concept but suggests rather a psychic form of expression. Art and its modes of expression are given precedence.

The site:

The building is wedged between the Fogg Art Museum and the Faculty Club on the one hand and Prescott Street and Quincy Street on the other. Opposite is the "yard" and the President's house. A more favourable site proved unobtainable.

Construction:

The Art Center consists of a cubic core which radiates in generous curves towards the two streets. The stair-tower dominates the entire building. A distinctive feature is the pedestrian ramp which begins in an S-curve from the two streets and permeates the entire building tunnel-fashion at the second-floor level.

The purpose of visual studies:

To institute a center for visual studies within the framework of a large university is to create a prototype; considerable difficulties in planning and application have to be surmounted.
The difficulties have their roots in the very structure of our period where a breach has existed for over one and a half centuries between modes of thought and feeling, between scientific development and artistic expression. It is our task today to repair this breach.
The basic problem is valid for all faculties: "What is the relation between my discipline and art?" This, I suggested, ought to be made clear to the students by the respective faculty members before they enter the Center.
The relation between art and profession has been an acute problem for some time in the USA and the answers provided by the various disciplines vary according to the structure of the particular field involved.
The center has the Italian sculptor Mirko as artistic director and the art historian Eduard Sekler as coordinator of studies. It must however be emphasised that the active participation of the various faculties is indispensable if the executives, scientists, doctors, etc. of the future are to benefit from visual education.
A routine plan, possible in a physics or chemistry institute, is not possible and for this reason no detailed building programme was drawn up. Le Corbusier was commissioned to build as flexible an interior space as possible.
The pros and cons became clear to me when I lectured in Harvard this Spring.

Plan:

Basement: Photographic and cinematographic installation under the supervision of Gardner, the anthropologist. A demonstration room which may be utilised as a lecture room.
First and second storeys: These, with their curved protuberances, destined for workshops of the visual studies scheme. Third floor: This to my mind has not yet been fully exploited. If the relations between faculties are to be properly promoted additional seminar rooms, a small library and rooms where students and professors alike may meet und converse are indicated. Fourth floor: Devoted exclusively to the spacious a t e l i e r of Mirko.
Le Corbusier somehow felt the incompleteness of the programme. The hollow spaces around the workshop p i l o t i s are unfavourable; Corbusier would certainly have been able to incorporate a spacious – and sadly needed – lecture hall into the massive building.
Why is there no precedent? The tragic story of the 19th Century, when art ceased to be a key to reality, lies behind us. Only if the leading faculty members can be convinced that the relation between art, psychic vision, and science are vital to our period, can the attempt to educate, or at least prepare, our future spiritual and intellectual leaders during the formative college years for their later functions be successful.
It is an arduous task to restore a universal outlook in the place of today's specialization. Without a universal outlook, however, no culture is conceivable. The way has been indicated: the human element, the element of feeling, must be reintroduced into science. Fortunately, this need is not felt in the humanities alone. Professor Heitler of Zurich University attacks his own discipline in his book "Der Mensch und die naturwissenschaftliche Erkenntnis": he demands urgently that quantitative research in physics must be accompanied by qualitative – in other words, the factor m a n must be taken into account. Precisely this humanization is the aim of the Carpenter Center: it seeks to bridge the gap between modes of thought and modes of feeling.
To prepare the way, a professorial seminar has been formed. The economists Kenneth Galbraith, Arthur Maas, David Riesmann, I. A. Richards, the propagator of "Basic English", Dean José Luis Sert, the architect and town planner, G. Kepes, who has been working on the relations of optic phenomena since the Bauhaus period, a philosopher, a pathologist, an anatomist, a musical theoretician and many others took part, in addition to the directors of the Carpenter Center itself. For the April 30th 1964 meeting I proposed for discussion the two problems: "How can relations be established between the individual student and the Carpenter Center?" and "How can the student's aesthetic powers of judgement be increased?".
Everyone saw the problems involved. Practical questions also cropped up – the anatomist was anxious to know how students might best learn to distinguish long and cross sections in the tiny slides of the electromicroscopel

Federal building office, Darmstadt
Architects: Günther Koch, Max Schramm, Günther Lingner, Karl Gorzel, Adam Neundörfer, Emil Eckstein, Helmut Hübner. Landscaping: Herbert Heise

German Computation Centre, Darmstadt

(page 335–338)

The Centre is independent of any individual college and is at the disposal of universities, technical colleges and research institutes. Its purpose is threefold:
1. The solution of problems in scientific research by the use of an extensive computing plant.
2. The furtherance of scientific research in the field of figure and data computation.
3. The training of experts in computer work.
The programme required a central hall on the ground floor level 500 m², completely free of intermediate supports, as to enable speedy replacement and transport of the machines. The central hall required further complete air-conditioning for the sensitive computers. The central hall forms the hub of the complex and is flanked by a spacious reception foyer and a variety of smaller machine rooms, accessible via a corridor system round the central section. Above the middle zone are two further floors, destined for the numerical and the non-numerical departments respectively. Each is provided with a conference room and secretarial offices. Study rooms are also provided on both floors.
The southern section (with library, study rooms, administration offices and machine shop) forms a spacious atrium.
The entire structure is carried out in reinforced concrete. Glass sections have black steel frames and external sun blinds.