1.7 STOCKTAKING

Banham maintains in this article, originally published in Architectural Review, *February 1960, that two forces affect contemporary architecture. The first is the conservative pressure of tradition and the second is technology which encourages a more progressive, open-ended approach to the architectural problem. This latter 'back to basics' argument provides the foundation of a radical architecture which will question basic assumptions like permanence in architecture.*[1]

Reyner Banham, in taking stock of the impact of tradition *and* technology *on architecture today, finds it necessary to re-define these terms. For his purposes both words are used in a specialized sense.* Tradition *means, not monumental Queen Anne, but the stock of general knowledge (including general scientific knowledge) which specialists assume as the ground of present practice and future progress.* Technology *represents its converse, the method of exploring, by means of the instrument of science, a* potential *which may at any moment make nonsense of all existing general knowledge, and so of the ideas founded on it, even 'basic' ideas like* house, city, building. *Philosophically it could be argued that all ideas, traditional or otherwise, are contemporaneous, since they have to be invented anew for each individual, but the practical issue is not thereby invalidated. For the first time in history, the world of* what is *is suddenly torn by the discovery that* what could be, *is no longer dependent on* what was.

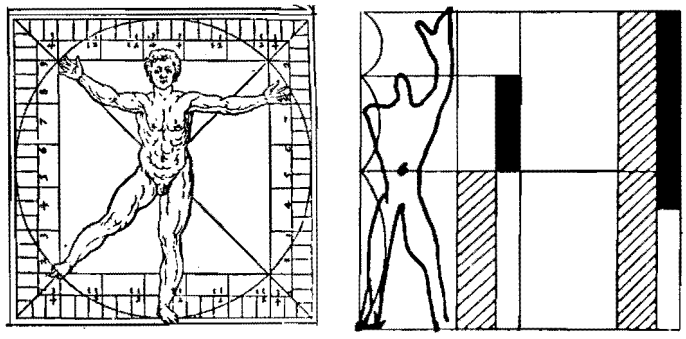
Tradition

Architecture, as the professional activity of a body of men, can only be defined in terms of its professional history – architects are recognized as architects by their performance of specific roles that have been assigned to the profession in previous generations. Any significant attempt to extend or alter those roles will be dismissed, by most of the profession and even more of the public, as something other than the business of architects as architects. As James Cubitt wrote recently 'Designing roundabouts or doorknobs is not architecture. The idea that it is arises from a misconception of the purposes of the Bauhaus, primarily a school of industrial design. Architecture is, and always will be concerned, roughly speaking, with "carefully balancing horizontal things on top of vertical things".'

In spite of the much debated 'revolution' in architecture in our time, the roles of architects have not been significantly extended, and certain extensions of role – into product-design, for instance – seem to have been tacitly abandoned since the nineteen thirties. There are probably a number of reasons for this, but most of them, including the legally enforced codes of conduct that architects have created for themselves, are traceable to a feeling that modification of the accepted roles beyond a certain point threatens the integrity, or even the identity, of the profession.

Quite apart from certain obvious worries about such marginally extra-professional activities as contracting, this self-stabilizing tendency operates also in a more generalized and diffuse manner to preserve the status quo. We have seen a notable example of this in the past decade, one that has done much to precipitate the present confused state of world architecture. Using student opinion – articulate but disengaged from the daily routine of business – as a barometer of opinion, one could distinguish, shortly after 1950, a strong feeling that architectural theory was leaning so far towards sociology and technology as determinants of architectural form that – in practice – architectural form was not being determined at all, or – alternatively – such form as was being determined was not architectural. There were demands to *get back to architecture* – a classic response, closely resembling that which Charles Eames described in his 1959 Discourse at the RIBA as a reliance on 'the lore of the operation'. Whether or not this situation brings with it the dangers to which he also referred – 'The danger of this procedure is that operational lore, being an integration of experience rather than apparent intelligence (i.e. available information), sacrifices sensitivity in order to gain stability' – whether or not this is true, it has happened, and constitutes one of the two major pressures to which architecture has been subjected in the last decade.

The first phase of this return to operational lore was Anglo-Italian, an appeal to the classical tradition; not to the nearer end of that tradition as summed up in, say, the work of Auguste Perret, but to the beginnings of Modern classicism in the Italian Renaissance. Its symbol was the Vitruvian Man, its slogan 'Divina Proporzione', its hero Palladio, its prophet – quite coincidentally – Rudolf Wittkower. The appeal was not to the forms and details of Renaissance architecture, but to the underlying proportional mathematics, as set out in Professor Wittkower's *Architectural Principles of the Age of Humanism*, and echoed after a fashion – equally coincidentally – in Le Corbusier's *Modulor*.



1 Man (Vitruvian and Modulor) as geometry.

The upshot was not neo-Georgian, but an aggressive axiality of plan, and a reliance on modular devices as planning tools. This particular moment has passed, and not left much behind – some projects for 'Palladian power-stations', some hotly-discussed fifth-year student thesis projects, now forgotten, and a slowly waning admiration for things Italian – of which the slowest-waning, perhaps, is the reputation of Luigi Moretti, whose *Casa del Girasole*, discovered by Anglo-Saxons in 1952, was for some years a test of taste.

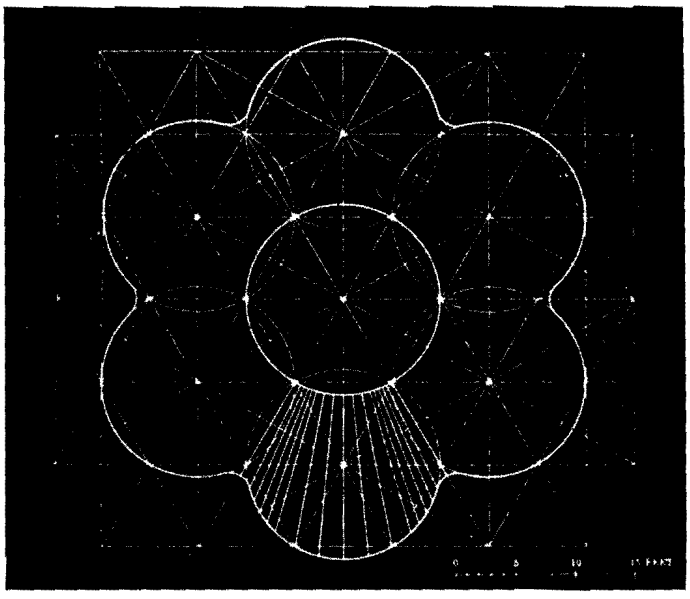
But, in a more generalized sense this moment in the history of Modern architecture has left much behind. It marks the beginning of the persistent belief in modular number patterns as disciplines inherently beneficial to architecture – a belief now institutionalized in the Modular Society, where, however, attempts are being made to give it a footing in something more solid than vague sentiments inspired by reliance on operational lore. Somewhere in this moment too lie the origins of the present addiction to formality of the middle and elder generation among US architects – the use of classical pavilion forms by Ed Stone and Walter Gropius in their recent embassies in New Delhi and Athens, or by Mies van der Rohe in his Baccardi

building, or the use of multi-axial symmetries and vaulted coverings by Philip Johnson, in such examples as his Shrine at New Harmony. In the case of Johnson – early a devout Wittkowerian – the apparent historicism is backed by the resounding proclamation of faith: 'Hurrah for History. Thank God for Hadrian, for Bernini, for Le Corbusier and Vince Scully.'

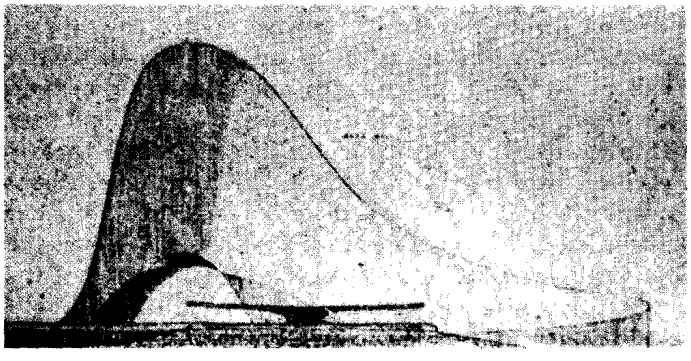
Scully, through his celebrated lectures at Yale, has – like Wittkower, Colin Rowe, Bruno Zevi, and others – done much to give history teaching a new dynamic, and thus to add a richness to the traditions of operational lore that has not been there since the death of Soane and Schinkel. What is new in this situation is the way that the revived interest in history has not come about in countries whose great architecture is all in the past, and the future has nothing to offer, but in countries – like the US – who appear to have a wave of great architecture ahead of them in the immediate future, and one of the effects of this new sense of history has been to produce a reassessment of the work of the masters who will set the style for that future. Thus, just before the 'rediscovery' of history, there was a current of opinion that tended to evaluate Mies van der Rohe's architecture in 'technological' terms as a theoretically endless accretion of 'additive' units. After the rediscovery of history, this view, propagated by Richard Llewelyn-Davies and Gerhard Kallmann, was replaced by an emphasis on Mies as a classicist, on the axial symmetry, regularity and modular organization of his planning, and his debts to German neo-classicism.

Aside from these returns to the classical lore of the architectural operation, another, older stream of latent historicism has burst forth on the surface again, after a period when it was buried by classicist enthusiasms. This is the strain of historicist defeatism – entirely lacking in the intellectual exaltation of the classical revival – that was first manifest in a muted, self-effacing way as the new Empiricism of the Scandinavian North in the late forties, and now reappears in a more aggressive and wilful form as 'Neoliberty' in Italy. Both movements exhibit the same tendency to rely on purely *local* operational lore, one might almost say the lore of the local building industry, rather than the lore of architecture at large. Both also rely on the lore of materials, declining to use new ones because they are visually 'unreliable' under weathering and use. Both have been interpreted as relying also on the lore of public taste, not wishing to put up buildings that the average citizen cannot understand (i.e., not putting up buildings that he hasn't seen before). It is worth noting that most of these observations are also true of the architecture of the English New Towns, where the same frame of mind appears to have governed the town planning as well.

Neoliberty also introduces another problem of acute interest in the present state of architecture, but this must be left over, for the moment, in order to consider the general import of these historicist trends. The blanket term most commonly in use to cover all the tendencies in Modern architecture that deviate from the Functionalist norms of geometrical purity and plan-wise asymmetry, is Formalist. The term is fair enough, provided limitations are placed around its usage. There is little sign at the moment of out-and-out Formalism, of shape-making for the sake of shape-making. Even the paper-projects of an architect like Marcello d'Olivo keep within certain bounds, and those bounds are within the limits of the lore of the operation – nothing like Action painting has happened to architecture yet. For this reason, the deviation from the canons of Functionalist form does not constitute 'Une Architecture Autre', as Odo Kulterman appears to believe (to judge from his article in



2 Philip Johnson, *Geometry of Shrine*, at New Harmony, Indiana, 1960.



3 Great Wall of d'Olivo's Rayad University.

Baukunst und Werkform, 8, 1958). If the concept of an Other Architecture has any place in this survey, it is in the article on Technology that follows this one. New shapes notwithstanding, it is still the same old architecture, in the sense that the architects involved have relied on their inherited sense of primacy in the building team, and have insisted that they alone shall determine the forms to be employed. Formalism it may be, but it remains Formalism within the limits of a professional tradition, albeit that traditon is now wide enough to span from the neo-libertarians to d'Olivo, from Mies van der Roche to Bruce Goff.

But to return to the specific significance of Neoliberty. It is a revival, but not of an historical style in the sense that Doric or Gothic are historical styles. Art-historical niceties about the precise degree of modernity that Liberty (Art Nouveau) can claim, do not affect that it is not a style enjoying long-ingrained cultural approbation, like the great styles of the remoter past, but a style of our own time, propagated through international magazines and exhibitions by men conscious of living in a machine age.

Its revival implies a recognition that the allegedly anti-traditional Modern Movement has a tradition of its own. Reliance on the traditional lore of the operation no longer necessarily means relying on a tradition older then oneself – the men who made the tradition are, mostly, still alive. However, a further new factor, over and above the recognition of a new tradition, is the existence of two different ways of looking at that tradition. On the one hand, it may be accepted as a tradition of the sort we have known before,

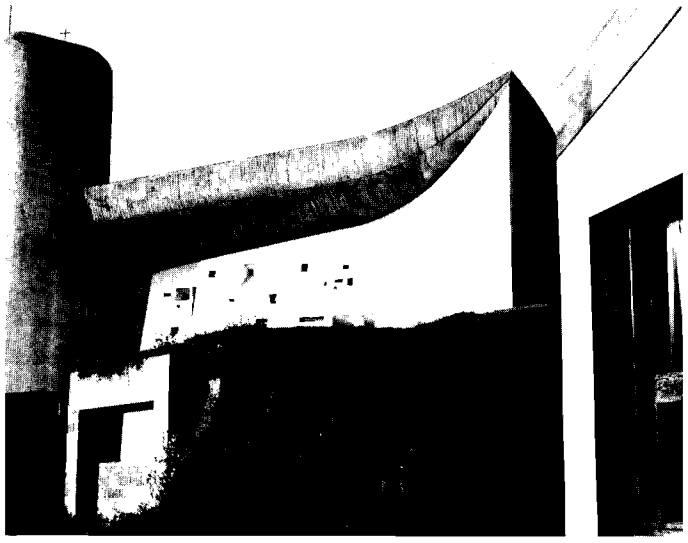
passed from master to pupil, teacher to student, almost subliminally as a succession of ever-mutating attitudes and preconceptions, constantly in process of change as the needs and aspirations of successive generations came to bear upon it. This, if it existed, would be the mainstream of Modern architecture today. But the stream has practically vanished, and consists of isolated individuals, like pools in a drying torrent-bed – and the pools are drying out, too. Two years ago, one could have pointed to Wells Coates and André Sive as mainstream Modernists, in the sense of men inhabiting a live Modern tradition, but not any more. For the most part, this kind of smoothly-developing Modernism exists nowadays in the work of large offices such as Skidmore, Owings and Merrill, or Yorke, Rosenberg and Mardall, or in solitary originals like Bakema, Goldfinger or Denys Lasdun. It also exists, with pronounced local characteristics, in Brazil and other Latin American countries.

But what, then, of the men who ought to be the great mainstreamers, the four architects whom Henry-Russell Hitchcock identified as the masters of the twenties and thirties? J. J. P. Oud long ago made his private retreat into local professional lore. Mies van der Rohe has isolated himself in a bronze tower more pure than ivory, driven there by a logic that would have worked equally well in a vacuum where Modern architecture did not exist. Gropius has become the Dean of the Formalists, Doric in Athens, Islamic in Baghdad. And Le Corbusier?

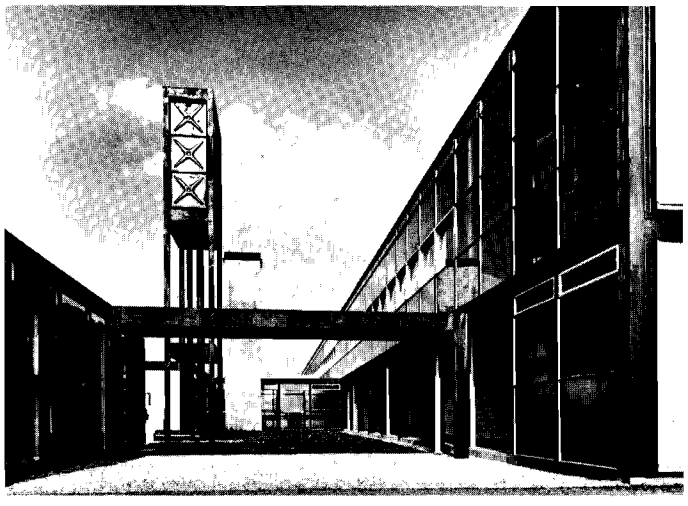
While it is generally conceded that the apparent formalisms of a Frank Lloyd Wright were a law unto themselves, justified by the dimensions of an almost Michelangelesque personality, there is clearly a widespread feeling that the apparent formalisms of Le Corbusier answer to some law obscurely, but vitally, inherent in the business of architecture. No sooner were the implications of Ronchamp apparent than a dozen pens were at work explaining that its forms were not a wilful contradiction of everything that Le Corbusier had done before, but the fulfilment of certain aspects of himself, or Modern architecture in general, that had lain dormant. It is clear that Ronchamp is not Formalism in the commonly accepted sense, because it does not gain the one secure advantage of formalizing within the tradition – that of communicability. No one doubts that Ed Stone's Delhi Embassy, or Saarinen's in London, look like representational government buildings, but the argument over what Ronchamp looks like is still proceeding, the only basis of agreement being that it does *not* look like a church.

The attempts to explain why Ronchamp is as it is, and how it is connected with the true nature of Modern architecture, bring out the other way of regarding the Modern tradition itself – not as a man-to-man communication of attitudes and concepts, but as an immutable and scientifically ascertainable succession of historical facts. Such an approach is in direct conflict with the 'traditional' view of the Modern tradition, and has been described as 'using facts to pervert the history of Modern architecture' by supporters of that view. It has also led to persistent allegations of modern eclecticism being levelled against younger architects who hold to the 'scientific' view of recent history. Very often this is true, particularly at student level where the formal vacuum of half-trained minds can as easily be filled with pickings from the twentieth century as from other centuries. But much of this alleged eclecticism has been the stimulus, mask, or vehicle of radical attempts to establish 'what really happened in Modern architecture'.

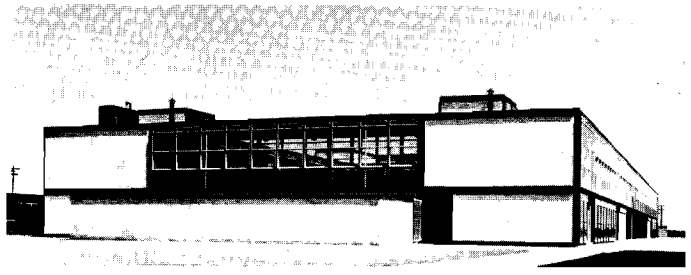
The most important aspect of this view of the tradition is its all-inclusiveness. The other type of tradition proceeds by what might be called 'selective amnesia,' each generation



4 LE CORBUSIER, *Chapel of Notre Dame du Haut*, Ronchamp, 1955. Exterior of the chapel from the south-east.



5 ALISON and PETER SMITHSON, *Secondary Modern School*, Hunstanton, Norfolk, 1954. The link between the single storey block and the main block, with the water-tower behind.



6 ALISON and PETER SMITHSON, *Secondary Modern School*, Hunstanton, Norfolk, 1954, main block.

forgetting anything that had ceased to be of interest in order to find room for new matters of interest that had come up in its own time. The new view, on the other hand, demands total recall – everything that wasn't positively old-fashioned at the time it was done is to be regarded as of equal value. The Futurists must be discussed in the same breath as the Deutscher Werkbund, de Klerk must be put alongside Rietveld, Maybeck alongside Wright. The guardians of the Modern tradition, such as Sigfried Giedion, have been called in question for forgetting too much, and – it is claimed – distorting the truth by over-selectivity. In revenge, every discarded formal and functional device that was dropped or

ignored by the developing mainstream must now be re-examined and, wherever applicable, re-used.

Much of what results – projects and a few finished buildings – is, indeed Modern Movement revivalism, the resurrection of usages (though rarely of total building forms) of the architecture of the twenties, or even the forties – David Gray's house at Lowestoft can serve as an example of the former, the Smithsons' school at Hunstanton of the latter. But Hunstanton – the building by which the much-battered term 'New Brutalism' is commonly defined – immediately raises another problem altogether. Wherever the scientific and all-inclusive attitude to recent history is found, it is nearly always accompanied by a similar attitude to the use of materials. The mystique of materials 'as found' involves (a) a resolute honesty in their use (paralleling the refusal to allow a selective attitude to historical fact) and (b) an insistence that all the qualities of a material are equally relevant.

Thus, in the Hunstanton School, steel is given a far higher valuation than the rather abstract one implicit in Mies's work. Its visual quality as a rolled product with makers' trade marks embossed on it is given value, the nature of its ultimate performance under stress is acknowledged in the use of plastic theory by the engineer responsible for the structural calculations. Or, to take another work that has been abused for modern eclecticism, the development at Ham Common by Stirling and Gowan differs from its acknowledged sources (such as Le Corbusier's Jaoul houses) by using brickwork calculated to the limits of the load-bearing capacity – a decision that is more responsible than any twenties revivalism for the use of the dropped windows, with their inverted L-shape.

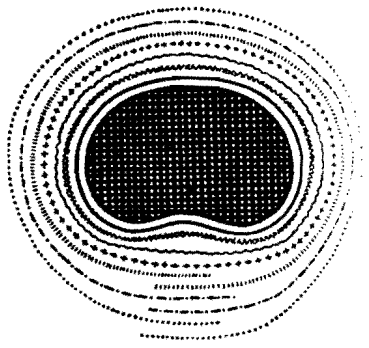
This, finally, brings us to the most significant aspect of the rigorous scrutiny of the history of the Modern Movement: the rediscovery of science as a dynamic force, rather than the humble servant of architecture. The original idea of the early years of the century, of science as an unavoidable directive to progress and development, has been reversed by those who cheer for history, and has been watered down to a limited partnership by the mainstream. Those who have re-explored the twenties and read the Futurists for themselves feel, once more, the compulsions of science, the need to take a firm grip on it, and to stay with it whatever the consequences.

The consequence, in some cases, appears to be to whisk them straight out of Formalism and Modern historicism altogether, to make them abandon the lore of the operation, and make use of 'apparent intelligence' instead. But this may be only an appearance – certainly John Johansen's Airform house has the appearance of a radical reversal of attitude for a one-time neo-Palladian of the strictest sort, but equally certainly, many of the most apparently liberated spirits of our time, the intellectual freebooters of the borderland between tradition and technology will not, in the last resort, renounce the lore of the operation. Thus Charles Eames, who has introduced the concept of operational lore into architectural thought, and made with it a plea for the acceptance of scientific attitudes of mind, could still say, toward the end of his Discourse

> Yet, in this circumstance I have described, and in these tools that I have described, I see and feel something which is a real continuity in the architectural tradition. . . . The real planning, the real architecture, the building of the future, is going to be built with something similar to these tools, and part of these circumstances. My plea is that it fall under the head of that great name, architecture, which embraces it.

Technology

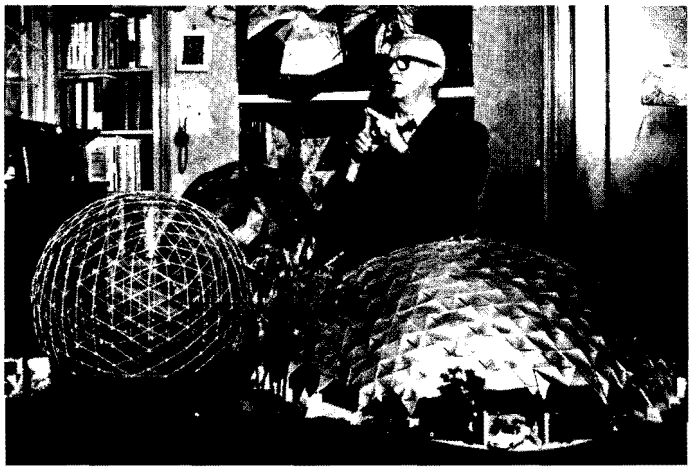
Architecture, as a service to human societies, can only be defined as the provision of fit environments for human activities. The word 'fit' may be defined in the most generous terms imaginable, but it still does not necessarily imply the erection of buildings. Environments may be made fit for human beings by any number of means. A disease-ridden swamp may be rendered fit by inoculating all those who visit it against infection, a bathing beach may be rendered fit by removing land-mines left over from the last War, a natural amphitheatre may be rendered fit for drama by installing lights and a public address system, a snowy landscape may be rendered fit by means of a ski-suit, gloves, boots and a balaclava. Architecture, indeed, began with the first furs worn by our earliest ancestors, or with the discovery of fire – it shows a narrowly professional frame of mind to refer its beginnings solely to the cave or primitive hut.



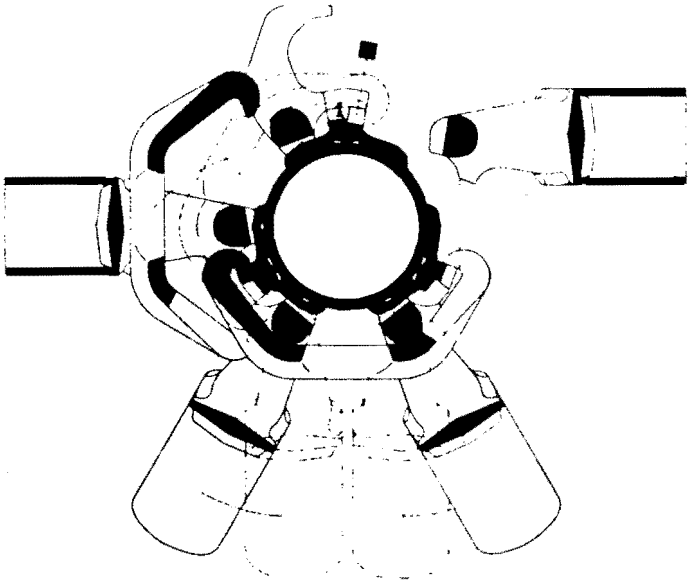
7 Personal architecture – vest to overcoat.

The service that architects propose to perform for society can often be accomplished without calling in an architect in the sense discussed in the article that runs parallel to this, and the increasing range of technological alternatives to bricks and mortar may yet set a term to the custom-sanctioned monopoly of architects as environment-purveyors to the human race. These alternatives, whose justification is measurable performance rather than some cultural sanction, extend, however, beyond the provision of technological services, and include analytical techniques as well, so that it becomes possible to define 'home' without reference to hearth or roof, but simply as the integration of a complex of intrapersonal relationships and main-services. To do so would, in fact, be to depart so far from the operational lore of the society which we inhabit as to provoke alarm and discomfort even among the scientists and technicians who, within their specialities, regularly employ these techniques. Nevertheless, a moment's reflections on such phrases as 'TV Theatre' or 'Radio Concert-hall' will show how far technological advance has made nonsense of concepts that were hitherto building-bound, and yet has gained popular social and cultural acceptance.

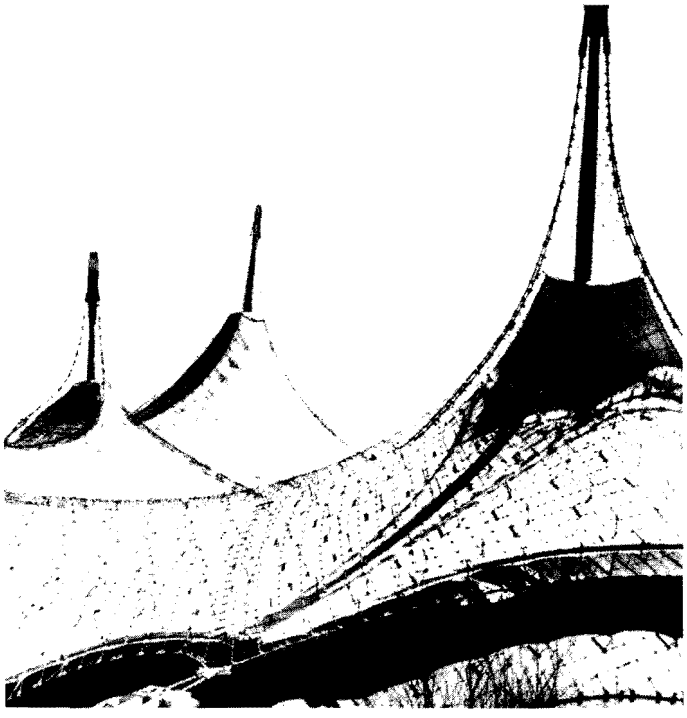
Under the impact of these intellectual and technical upheavals the solid reliance of architects, as a profession, on the traditions of that profession must eventually give way. Yet the Functionalist slogan 'a house is a machine for living in' gives nothing away because it begins by presupposing a house. Far more seditious to the established attitude of architects is the proposition that, far from caravans being substandard housing, housing is, for many functions, sub-standard caravans. Outside the context of architectural discussion this would be a pretty radical criticism of current architectural concepts, but within the profession it stands simply as a marginal criticism of some aspects of housing that need improvement in detail.



8 R. Buckminster Fuller, inventor of the Geodesic Dome, in his office at Carbondale, Illinois, surrounded by models of geodesic structures.



9 Machinery of Wachsmann frame-joint.



10 FREI OTTO and ROLF GUTBROD, *West German Pavilion Expo '67*, Montreal, 1967.

This may be taken as typical of the profession's professional attitude to the impact of technological and scientific alternatives for the art of building. The profession tolerates a few peripheral radicals, whose ideas call the whole professional apparatus in question. Such a man is Buckminster Fuller, recently made a member of AIA, and thus accepted as relevant to architecture in the professional sense. But it is clear that Fuller is admired for his structures and accepted as a formgiver, while his elaborate body of theory and fundamental research into the shelter-needs of mankind is mostly dismissed unread. An extreme technologist more to the profession's taste is Konrad Wachsmann, whose work does not question the need for buildings but concentrates a fanatical watchmaker ingenuity on the solution of certain problems within the given context of built structure – and here it may be noted that while his celebrated joint for the space-frame roof of the B36 hangar was associated with a fairly radical structure, his equivalent work on the General Panel House was associated with a dwelling concept of the utmost banality. Again, the research and teaching being undertaken by the Hochschule für Gestaltung at Ulm, while it asks some searching questions and produces some truly radical answers, does so within a mental concept that substantially accepts the limits that the architectural profession has set itself. In many ways, Le Corbusier's Murondin project for installing sophisticated mechanical services in mud-huts showed a greater radicalism of approach than either of these last two examples.

In any stocktaking of the present condition of architecture, then, it must be accepted that the human environments under consideration are constructed environments, static, more or less permanent and designed to operate without the consumption of too much mechanical energy. These last two provisos are both rather relative since no discussion of the present state of architecture could decently ignore the tented structures of Frei Otto and other semi-permanent exhibition environments, nor could it ignore the fact that some of the most permanent and static structures being built today – such as atom-proof command posts or office blocks in extreme climates – can only be kept fit for human activities at the cost of pouring vast quantities of mechanical energy into them in the form of air-conditioning and artificial light. Within these provisos, the mechanization of the total environment in which architects are called upon to work still acts as a powerful stimulus to their professional activities. Automobiles, the ever-present symbolic objects that typify the present epoch of technological culture, are the irritant that causes constant revision of a number of cherished concepts. These revisions are not always radical, but, nevertheless, it is no longer possible for architects to think of cities as collections of buildings with spaces between them, but as collections of buildings with streams of metallic objects flowing round them – a revision that requires them to think differently about the way the buildings touch the ground, differently about the relationship of building to street, differently about the relationship of building to those who look at it, since the viewers may now be passing it at sixty-plus mph on a gently rising curve or in an underpass whose sides may effectively blank off the whole of the lower storey when the viewer is on the axis of the main façade.

Conversely automobiles as the manifestation of a complex and agitated culture-within-a-culture producing discrete objects which are themselves environments for human activities, provide a standard of comparison for the activities of the architectural profession. They may ruefully compare the scale of the constructional work produced by the

automobile culture with that entrusted to architects; they may enviously admire the apparently close communion that exists between users and producers, the direct way in which designers and stylists seem to be able to apprehend the needs of motorists and satisfy them, and they may also draw from the work of stylists some sobering conclusions about the possibility of tailoring aesthetics to fit the aspirations or social status of the clients. The concept of 'the style for the job', which was most recently enunciated in *Architectural Review* by James Gowan in December 1959, has frequently been explained or criticized in terms of the gradations of automobile style for different parts of the market, always with the assumption (sometimes justified) that these gradations are the result of scientifically accurate market research.

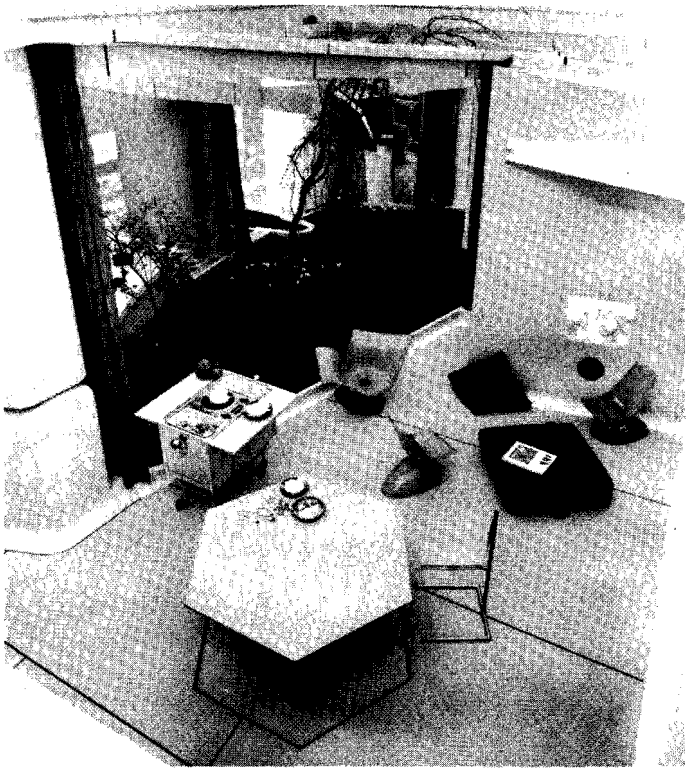
However, there is no ambition to imitate automobile form – the only exception to this rule appears to be the 'styling' of the Smithson's House of the Future on the assumption that mass-produced houses would need as high a rate of obsolescence as any other class of mass-produced goods. Such a sentiment is rare, however, because the operational lore of architecture seems not to include the idea of expendability. On the other hand, the forms of the more permanent products of technology are liable to imitation – to cite a notorious example, the development of cooling towers for power-stations has been paralleled by a series of pseudo-cooling towers from Eric Mendelsohn's Hat Factory of 1921, to Le Corbusier's Parliament House for Chandigarh.

This sincere flattery of technology is one facet of the almost fetishistic regard afforded to certain classes of engineers, an admiration that has undergone an important change in the last decade. The respects paid by the early masters of Modern architecture to the engineers they admired was not paralleled by any attempt to mimic the forms of their work – where will you find Freyssinet echoed in early Corbusian design, or Maillart in Max Bill despite the latter being the great bridge-builder's devoted biographer? Yet nowadays the desire to incorporate engineering forms into architectural designs is so overwhelming that engineers like Nervi, Candela, Torroja and others enjoy a status both as collaborators with architects, and as the creators of imitable forms, that engineers have never had before.

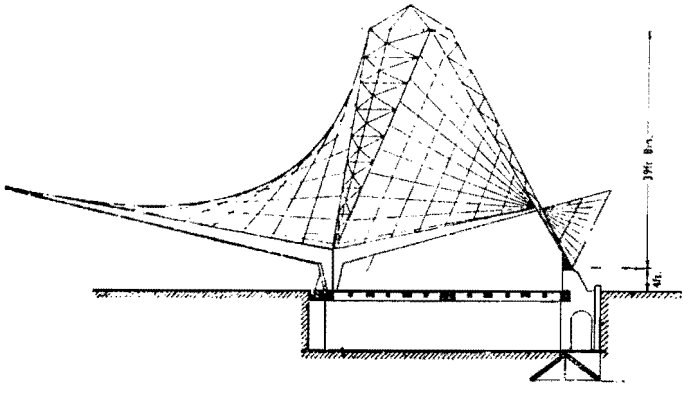
Just how far this is merely the employment of engineers as alibis for fancy formalisms is difficult to assess, though Robin Boyd made some pertinent suggestions on this subject in 'The Engineering of Excitement' (*Architectural Review*, November 1958). Over and above this is the possibility that the freeing of floor-space from intermediate supports which new vaulting techniques and space-frame trusses make possible, is being used in one way and explained in another. Great clear spans make possible a free and untrammelled functional disposition of interior spaces – this is one of the promises of Fuller's domes, for instance. But they also clear the floor for free and untrammelled exercises in architectural sensibility – which seems to be what happened, in fact, inside the geodesic dome furnished by Roberto Mango at the 1954 Triennale di Milano.

Such situations are not as rare as might be supposed – Mies van der Rohe's project for a theatre in a giant aircraft-hangar is another debatable case in point – and they represent the continuance of a trend that has been with us since the beginning of the century; the marriage of the logical objectivity of abstract aesthetics to the experimental objectivity of advanced science. It goes back to Perret, it also has roots in *de Stijl* and Constructivism. In the guise of the 'logical Formalism' of Mies van der Rohe it has served the important function of easing the acceptance of curtain

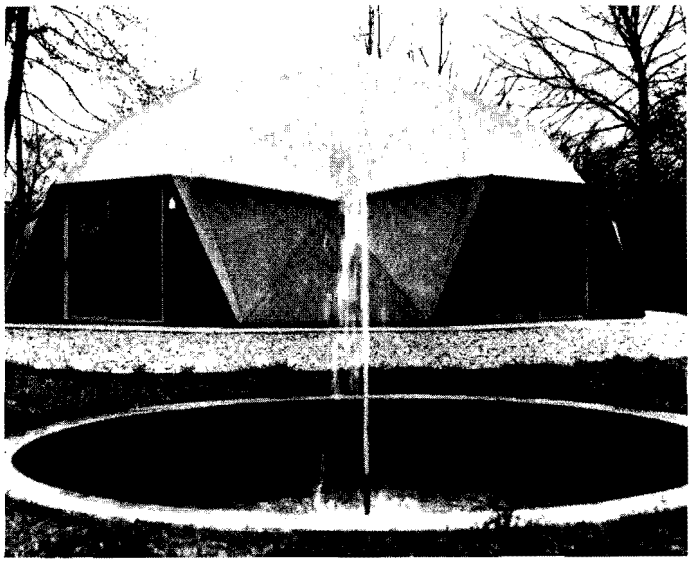
11 Custom designed owners of Oldsmobile.



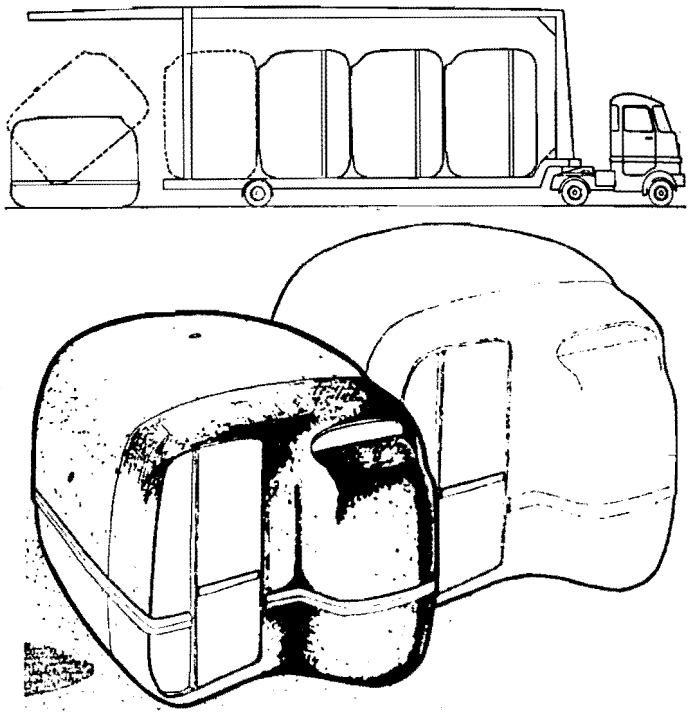
12 ALISON and PETER SMITHSON, *House of the Future*, Ideal Home Exhibition, Olympia, London, 1956, view of living area.



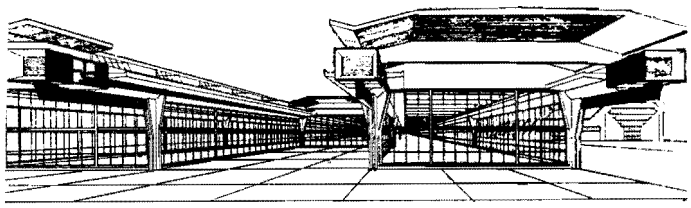
13 Roof of Candela's Coyoacan Chapel.



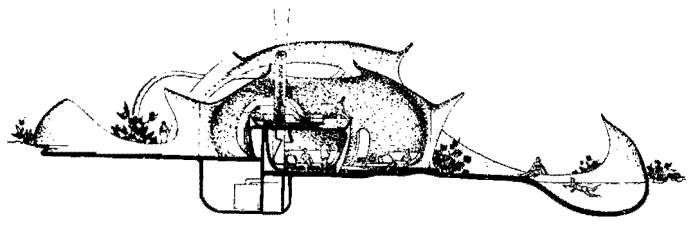
14 R. BUCKMINSTER FULLER, *His Own House*, Carbondale, Illinois, 1960.



15 Complete Coulon/Schein plastic dwelling units.



16 Zanuso integration of structure and services.



17 Airform liberation from professional lore.

walling and other additive pre-fabricating systems as 'architecture' in a sense that can be assimilated to the lore of the operation.

However, it should be noted that when prefabrication gets out of the direct control of architects, into the hands of engineers, it almost invariably ceases to be rectangular in its format. Fuller's work is again a case in point, so is that of Jean Prouvé, which has persistently relied on tapered portals, sloping walls and curved members. However, there is a division of mind here between architects and engineers that goes much deeper. The operational lore of the architectural profession has assimilated prefabrication as a technique applied to fairly small repetitive components to be assembled on site. Such an arrangement leaves the determination of functional volumes still securely in the hands of architects, and the physical creation of those volumes securely in the hand of traditional-type site labour.

But prefabrication, for most of the creative minds in the plastics business, means something quite different. It means – as Michael Brawne has suggested ('Polyester Fibreglass', *Architectural Review*, December 1959) – the fabrication of components large enough to be effective determinants of functional volumes. Thus, the Monsanto House has only four large components to form the whole of one of its cantilevered rooms (bar the lateral windows) while some of the products envisaged by the French group around Coulon and Schein call for the off-site fabrication of complete functional volumes such as bathrooms and kitchens, a procedure which both has structural advantages and makes it possible to complete most of the fabricating work under controlled, laboratory conditions. The result seems likely to be a house put together from large non-repeating units – except for the joiners which, like railway corridors, must be universal fits. In larger structures room-units might be carried in an independent frame, but in either case the result should be that service-rooms, which need to be connected to the public mains, might be treated as expendable clip-on components, thus obviating some of the difficulties of the Appliance House project, which runs the risk of degenerating into a series of display-niches for an ever-changing array of domestic machinery.

However, such ideas have hardly touched the general body of architecture at all as yet. Much of the most painstaking and valuable research that can be shown, has been undertaken in conditions that presuppose the existence of rectangular buildings. Much of this work has been structural, concerned chiefly with prefabrication techniques, a field in which, for instance, the Ministry of Education and independent commercial experimenters can be found advancing, from the other end, into territory already being prospected by the Modular mathematicians. Elsewhere, as with the Nuffield Trust, a great deal of solid, plodding work, that most architects would rather not undertake, has been accomplished in the fields of space requirements and the physiological effects of daylighting and colour. The fruits of such work, because of the 'logical Formalist' connection discussed above, often wear a characteristic air of grid-like simplicity which, it should be noted, derives more from the mental disposition of the men involved than from the findings of the research programmes.

Where research has been surprisingly thin has been in office-design, in spite of the large sums involved (although there has been some clever ad hoc rationalizing in this field) and in domestic work, in spite of the vast amount of housing still necessarily being built. Even clever ad hoc rationalization could show results in housing, but, as was said at the beginning of this article, the operational lore of our whole

culture renders domestic architecture practically proof against scientific attitudes. On the other hand, it should be noted that via market and motivation research, and the long accumulation of sociological data, extensive scientific inroads into the 'sanctity of the home' have already been made, and when domestic designers can master their fairly long-standing distrust of sociologists, and their new-found distrust of 'Hidden Persuaders' they may well find that a great deal of very suggestive research is already at their disposal.

In the meantime, science and technology touch architecture chiefly at the level of structural justification and organizational confusion. One specialist consultant makes the building stand up, six others render it largely useless by means of the services that are intended to make it usable. By and large, architects have established a peaceable and fruitful technique of working with their structural engineers. In England, engineers like Samuely, Arup and Jenkins, in France men like the late Bernard Laffaille and René Sarger, in the USA men like Fred Severud, Mario Salvadori and Paul Weidlinger or offices like Smith, Hynchman and Grylls, could claim to have played a dominant and valuable role in the architectural developments of the last ten years, but no other body of consultants could claim anything of the sort – though some architects might, nowadays, find a good word for the more enterprising type of quantity surveyor.

The fact remains that heating, lighting, ventilating, air-conditioning, acoustics, office machinery and other more specialist services seem for the moment incapable of assimilation to the harmony established over the years between structural engineers and architects. The few breaks in this unpromising situation appear to derive from lighting engineers and acousticists with architectural training, and from a few liberated spirits, notably Louis Kahn with his 'topological' science blocks for the University of Pennsylvania, or Marco Zanuso with his integrated structure-and-air-conditioning schemes.

This may be a bulldozer solution for a problem that Mies van der Rohe, for instance, believes should be solved in secret. But it is a solution that brings us to the point of fusion of the technological and traditional aspects in architecture today. Kahn is sympathetic to, and has been classed with, the Brutalists. On both sides, enterprising and intensive scrutiny of tradition and science appears to suggest a way out of a dilemma, if not a solution to a problem. But it is a balancing feat that may prove to need acrobatic skill and expertise in brinkmanship as architects edge temerously along the margin of the scientific disciplines and never quite put a foot over into the other camp. From the scientific side there is neither such caution nor such finesse. It appears always possible that at any unpredictable moment the unorganized hordes of unco-ordinated specialists could flood over into the architects' preserves and, ignorant of the lore of the operation, create an Other Architecture by chance, as it were, out of apparent intelligence and the task of creating fit environments for human activities.

The Gap – Town Planning

When all this has been said, and stock has been taken of the present situation, there remains one yawning and alarming chasm between technology and tradition, between operational lore and apparent intelligence – town planning. In a field too expensive for experiment, too full of practical minutiae for paper guesses or diagrammatic utopias to carry much conviction, the pull between the 'Two Cultures', as Sir Charles Snow has called them, results in a situation that would be tragic were it not more like the nihilistic farce of Ionesco and the Other theatre.

The idea of cities is an ineradicable part of the operational lore of civilization – a word which implies cities anyhow. The concepts we have of cities are as old as philosophy, and are so rooted in the language of cultured discourse that to say 'Cities should be compact' is to commit a tautology – we cannot conceive of a diffuse city, and have invented other words such as 'conurbation', 'subtopia', to underline our inability to conceive it.

Against this, the manifestations of apparent intelligence, in communications, traffic planning, services, industries, entertainment, sport, all dealing with the here and the now, preoccupied with current information, news and statistics, have no regard for the inherited traditions of urbanism by which towns are defined.

Yet most citizens – including those called upon to plan – are determined to have the best of both worlds. They expect to be able to drive straight down an Autoroute de l'Ouest, straight through the Arc de Triomphe, and into a Champs Elysées that still has the urbanity of a sequence from *Gigi*. They demand suburban expansiveness, and urban compactness, ancient monuments and tomorrow's mechanical aids simultaneously and in the same place.

They get neither, because on one side is a tradition which cannot be expanded to deal with new developments without disintegrating, and on the other hand a disorderly pressure of new developments whose effect – because they are competitive and lack an integrating discipline – is disruptive anyhow.

There may be any number of logical solutions to this problem – but the only one we have so far is the relatively desperate solution of handing over responsibility to the will of a dictator – Le Corbusier at Chandigarh, Lucio Costa at Brasilia – and we are entitled to ask whether this is an adequate solution for our most pressing problem in design.