

Summary

Productive Patterns
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p. 28

The 'architecture' of business-organization is liquefying. The classical modern strategies of rationalization based on the vertical integration of work into clearcut functional hierarchies is failing today in respect to the complexity and dynamism of the overall socio-economic process. The ongoing socio-economic restructuring is being theorized under the key notion of 'Post-Fordism'.

The new ideas in organization- and management-theory (de-hierarchization, matrix- and network-organization, flexible specialization, loose and multiple coupling etc.) seem invisibly related to the recent ideas about modes of spatial organization as elaborated by 'deconstructivism' and developed further in the latest trends towards a 'new architecture' crystallizing around the notion of 'folding'. Although the parallels between the two discourses – 'post-fordism' and 'new architecture' – are striking, they so far remained unexplored. This is thus the aim of this text, to 'ground' the new architecture in post-fordism and 'redeem' it through its conscious and critical involvement with the progressive aspects of current socio-economic restructuring, with specific focus on recent developments in business organization and organization theory.¹⁾

Convergence

The convergence of recent architectural and managerial vocabularies offers the opportunity to prove that the new ideas and graphic spaces are more than fashion fads and have a degree of profundity. The degree, specificity and operability of this convergence will be the criterion for the vitality and relevance of the new architecture, i.e. its ability to contribute to the ongoing socio-economic restructuring. The task posed is to identify those progressive realities in which the proposed new spatialities could fulfill their 'architectural effects' and performative promises, beyond the iconographic symbolism at which a lot of the work is resting and earning its premature laurels. The brief has already been written in the call for the new 'synergetic technopoles', business clusters and no-longer-corporate office-scapes of the industries spearheading postfordism.

What will become evident is the striking 'pre-established harmony' of terms between the two discourses, i.e. between the latest conceptions of socio-economic restructuring and business organization on the one hand and the latest ideas about spatial organization on the other. The possibility to compare (and exchange) the conceptual tools of architecture and organization theory resides in the mediating language of formal (configurational) analysis. In organization theory – as much as in architecture – the drawing (or rather the diagram) plays an important role in enabling (as well as limiting) conceptual-

ization. The 'organigramme' is a standard tool of management consultancy. Both – architecture and management theory – encounter the limits of the line and experiment with graphic tools beyond traditional hard edge delineations.

Postmodernity (and Post-Fordism)

The forceful emergence of Postmodern architecture in the late seventies – sweeping the market like an avalanche in the eighties – represented much more than a new aesthetic sensibility. It heralded a new and distinct phase of capitalist development. Postmodern aesthetics – the (unheard of) rejection of the aesthetic values of homogeneity, coherence and completeness – and the celebration of diversity, collage and fragmentation signal the departure from the regime of bureaucratically organized mass-production. Deconstructivism and Folding are in this respect extensions of this fundamental break with modernism rather than signifying a further break. Postmodern architecture found its market in the rediscovery and 'detournement'²⁾ of the historical city as business hot house, catering for the privatized and highly differentiated demand for offices, retail, gastronomy and housing. The new enterprise and yuppie culture could not flourish in suburbia or on secluded green field sites. The wave of 'young' architectural offices pushing POMO and quickly claiming serious ground from the established modernist corporations were typifying this new enterprise culture within the field of the architectural profession and were themselves spearheading the re-inhabitation of the historic centre in loft-conversions etc.

That the *raison d'être* of Postmodernism is to be identified in the "epochmaking transformation"³⁾ of the structure of (world-)production became clear as the socio-economic changes that accumulated since the mid-seventies started to delineate the contours of a new system, a system that by the late eighties had found its canonical theoretical elaboration in (Marxist) social theory under the name of 'Post-fordism'. Simultaneously bourgeois organization theory reflected this process in its implications for corporate structures and business gurus produced a flood of 'revolutionary' management literature that was proclaiming a paradigm change in business organization for the 'post-industrial information society'.

Recent macro-level analysis of (international) restructuring proceeds from two (related) explanatory schemes: Postfordism and Globalization. These references are crucial to establish the conditions and prospects of architectural production – concerning its output as much as its organizational structure. Postfordism emerges from the mutually enhancing but also contradictory interaction of technological and political developments and the related dynamics of the world market which together brought the post-war 'economic miracle' of stable, extended growth and the whole paradigm of the 'Social Welfare State' (State-Capitalism) into crisis.

The first recession occurred in 1966/67, followed by the political struggles of 1968, the oil-crisis in 1973, the breakdown of the international exchange-rate system, and a deepening of the recession in 1974. The former growth-rates could not be regenerated during the whole decade. The stabilizing remedy of anti-cyclical debt-financed state-investment lead to inflation without growth ('stag-flation'). By the end of the seventies it became clear that the recession had to be seen as a structural (systemic) crisis that called for new political strategies (UNIDO 1979, OECD 1983).⁴⁾ Thatcherism and Reaganomics launched the neo-liberal offensive that to this day continues to break down the post-war social order.

Post-fordism as an analytical category that goes beyond market turbulences and political strategies to the basis of the economic process, the dialectic between the forces and relations of production, is of distinctively Marxist provenance.

The underlying notion of 'Fordism', originally put forward by Gramsci, characterizes the epoch of Corporate and State capitalism since World War I (and coming into its own fully after World War II) in reference to its production system: the new paradigm of the assembly line as pioneered by Henry Ford. This notion of Fordism was systematically developed by the French Regulation School of (Marxist) economic analysis, initiated with Aglietta's 'A Theory of Capitalist Regulation'.⁵⁾ Aglietta attempts to reconceptualize and systematize Marxist conceptions of the stages of capitalist development (free market-, monopoly-, state-capitalism) by organizing their procession around the following dimensions:

1. the production process – the techno-industrial paradigm
2. the circulation/growth cycle of capital – the regime of accumulation
3. the social and political institutional framework – the mode of regulation.

Each particular stage of capitalist development is defined by the systemic cohesion of those three dimensions of total social reproduction. Following Althusser, Aglietta asserts that those dimensions are engaged in a dialectic that grants each a status of semi-autonomy, although in the long run the development of the forces of production remains 'determining in the last instance'. A structural crisis arises if one or more of those dimensions breaks out of this synchronized ensemble. An extended period of crisis and intensified class-struggle creates revolutionary potentials for a solution beyond capitalism, or a new regime might crystallize and allow the stabilization of a new stage of development within capitalism.

The specific structure of fordism and its manifestation in architectural production
Fordism is based on the assembly line, i.e. large scale, long term fixed capital investment into a single purpose operation.

Fordism, as a socio-economic rather than a merely technological paradigm, presup-

posed the social revolutions that – in the aftermath of World War I – tore down 19th century class-societies and established the working masses and their representatives as an organized political force demanding participation in the results of industrial productivity and thus constituting themselves, for the first time, as the primary market for industrial consumer products.

According to Aglietta the distinctive advance of Fordism was the qualitative shift in the ability of industry to make the workers' consumption goods the object of comprehensive industrialization.⁶⁾ Fordism signifies the progressing industrialization and commodification of all the necessities of the reproduction of labour (textile, food-processing, transport, household: washing machine, fridge, etc.). This amounts to a shift from absolute to relative surplus-production as the cost of labour could be reduced by means of rationalizing its reproduction rather than by deprivation. Aglietta calls this the transformation of extensive into intensive accumulation as accumulation finds its dynamic within itself, generating its own market as basis for further accumulation. A virtuous circle emerged where capitalist investment in industrial mass production was breeding its own safe market as industry- and nationwide collective bargaining with the trade unions guaranteed a general and stable wage level and consumption standard. This level was regularly rising, thus generating a predictably growing market as a basis for capitalist expansion, while the equally predictable ability to increase productivity through further economies of scale and the extension of the assembly-line technology to ever more areas of material reproduction, made sure that the rising level of wages did not diminish profits. Any residual turbulences and recessions were bridged by the Keynesian social welfare state which secured income and demand during recessionary unemployment and evened out the flow of investment via an anti-cyclical state-investment policy.

This regime of stable growth became possible as the working class – through the mediation of social democracy – gained a degree of power-sharing after World War I. This meant that the masses became, for the first time in history, the client of architecture. This also implied a revolution in the leadership of the architectural profession. The academically educated, stately stylists of the imperial institutions were replaced by self-educated architects (Behrens, Gropius, Corb, Mies) re-inventing the discipline by identifying in the mundane (mass-housing, mass-furniture, factories) the worthy and urgent tasks for a modern architecture. The social democratic municipalities constituted the planning bureaux through which modern urbanism was produced. Berlin, Frankfurt, Hamburg, Rotterdam, Vienna, etc. were represented by figures like Taut, May, Schumacher, Oud, Wagner, etc. The task posed was the development of a new typology, of establishing standards: the house for the 'Existenzminimum' which became the uni-

versal receptacle for a whole series of mass consumer durables like the living room set, dining set, (Frankfurt-)kitchen, bathroom fittings, washing machine, and later the fridge, television, and automobile.

The larger the mass of products to be produced the more it pays to analyze and break down the production process into separate parts and to develop optimized single purpose equipment. This logic is mirrored in modern architecture when the structure is separated from the skin, each being optimized according to their respective task to be explored by respective experts, or in the organization of the building via the separation of functions into specialized and separately optimized volumes. (The Dessau Bauhaus is paradigmatic in this respect: Residential, administrative and workshop functions are separately articulated, allowing for depth, height and façade to be optimized for each respective program independently. In turn the interior functional distribution is easily read of the exterior.)

In the factory this process of extreme technical division of labour offers economies of scale which derive from the ability of fine-tuning and optimizing the proportions between the various integrated types of labour through large numbers of workers (while the multiplication of individual producers would not make much economic sense). This possibility to exploit economies of scale thus leads via horizontal integration (mergers) to colossal corporations approaching monopoly status. The stability and predictability of this system of accumulation also fosters the comprehensive vertical integration of production, as it were, the integration of all the processes that feed into the making of a final commodity (the car, the house) into a single 'assembly line' – from the extraction of raw-materials, to manufacture, transport and distribution or in the case of the building industry the integration of all trades and consultancy services in the design & built corporation. (This process which is a general tendency of capitalist development since the emergence of manufacture, extended and fulfilled in Fordism, is for the first time being systematically reversed in the current restructuring.)

The internal organizational regime of the large (horizontally and vertically integrated) fordist corporation is fiercely hierarchical and bureaucratic. The extensive system of labour-division allocates to everybody a clear and repetitive task within the overall machinery. The integration of all the different activities into one meaningful operation under the administrative command of a single capital is organized via an extensive bureaucratic hierarchy that itself operates – on each successive hierarchical level – according to the principle of separation and specialization. Departmentalization and sub-departmentalization – the perfect examples of Deleuzian 'territorialization' – are the structural principles of the bureaucratic mode of organization. The hierarchical tree guarantees the single line of command.

Every administrator (as well as operator) has a clear superior and a definite number of inferiors. Everybody finds a clearly fixed position and rigid job-description within this machine. Each individual administrative task is as far as possible routinized (mechanized). The intelligence of the bureaucratic system lies in its overall design. The precondition of its efficiency is the stability of its environment, i.e. the repetitiveness of its task. The post-war boom was such an environment, also for the construction industry. Standard building types were developed for all institutions. Prefabrication gained considerable ground. The hegemony of the modernist international style remained unchallenged. The large corporate architectural offices – like S.O.M. or C.F. Murphy – typify the essence of the epoch in architectural production as well as organization. Skidmore, Owings and Merrill (S.O.M.), founded in Chicago in 1939, became the biggest and most prolific US architectural office in the fifties. Its organizational diagram from 1957 exhibits a rigid departmentalization distinguishing 27 formalized departments organized under the four main categories of administration, design, production, and construction⁷⁾ – an archetypal fordist bureaucracy.

From Fordism to Postfordism

In the late sixties the Fordist system of assembly-line mass production, corporate concentration, collectively bargained consumption standards and macro-economic state-regulation was challenged along all its dimensions. The foundation of the bureaucratic mode of operation, the stability and predictability of its environment, was fractured.

• Drifting Markets: The Modernist housing standard ('Existenzminimum') became the very thing everybody wanted to escape from. The standard family upon which it was premised was in a state of dissolution. Postmodernism started to cater for this differentiating market. With the overall growing complexity of the division of labour and the proliferation of white-collar labour salaries started to stratify. In a related move, and with generally growing affluence beyond the saturation of the most basic needs, markets started to diversify, allowing for status and identity consumption to initiate an acceleration of aesthetically motivated product-cycles. These developments placed a reward on innovation and flexibility rather than the lowest price achieved through optimized mechanization and economies of scale. The house as the main site of consumption, soon became itself drawn into the logic of differential identity and income. But late-20th-century market differentiation complicates beyond a simple stratification along the single scale of income. This is reflected in the proliferation of classificatory matrices employed by market researchers trying to comprehend and strategize the field of consumption. Translated into the terms of cultural politics, these developments engen-

dered a complex web of identities reflected in the discourse of Identity Politics. (This discourse abounds with spatial metaphors like territory, positionality, dislocation, displacement, nomadism etc.) Most recent formulations of identity politics dissolve the very category of identity through its re-conceptualization via notions of irreducible ambivalence and hybridity. Identities are constructed as intersections of multiple dimensions of differentiation, involving overdetermination, multiplicity, hybridization and a dynamic that implies a logic of difference, rather than mere difference, i.e. an economy, where every new investment into a given network of mutually dependent terms shifts the whole topology of differences through which these terms are always only provisionally defined.

Post-structuralism emerges as the epistemology or meta-language of those new political discourses and makes a new and sophisticated logic – intertextuality, difference – available to other disciplines, not least to architecture. The first wave of appropriation of (post)-structuralist semiotics by Postmodern Architecture remained oblivious to the radical challenge structuralism posed to the naïve understanding of how meaning is constituted. POMO dealt in banal symbolisms, ascribed meanings and loud surface operations, revealing a crude conception of the economy between sign and signified. That an effective semiotic speculation about the emerging universe of fluid and multiple identities required new spatialities rather than mere surface manipulations, i.e. that the organizing spatial structure is dialectically involved with signifying operations irreducible to the immediate presence of a sign or symbol, was beyond the grasp of POMO. Deconstructivist Architecture – with the active intervention of Derrida – started to elaborate a discourse involving space and the invention of new spatialities in sophisticated semiotic – but not only semiotic – operations (subversions, displacements, re-contextualizing, juxtapositions, superimpositions, etc.).

• **Flexible Production:** New computer-based production technologies developed the ability to offer product diversity (small runs) without the enormous relative cost of handicraft production that had previously limited deviations from the mass-product to the realm of luxury. This is the crucial material factor in the whole process: the micro-electronic revolution offering a productivity leap in the production of the desired economies of scope (rather than scale). These technological possibilities (CAD-CAM) soon became available also in the building and interior fit-out industry, allowing a greater formal and stylistic diversity of expression. Flexible specialization became a technological possibility, making inroads into the monopolized mass-product market and thus eroding the predictability of the economic environment and implying an overall liquefaction of production networks. The disloca-

tion of traditional work and management arrangements became an economic necessity.

The ongoing globalization of the division of labour tends towards the transfer of the typical fordist factory production to the developing countries (Asia, South-America and now Eastern Europe) while in the centres of the 1st World we witness a shift of balance towards research & development, management & finance, consultancy, the culture industry, etc. – productive activities less prone to standardization and bureaucratization. Postfordist production concentrates in the 1st World metropolitan centres whereas elsewhere something that looks more like a mixture of Manchester Capitalism and Fordism is still on the ascendance.

• **Vanishing state-regulation:** As products and markets differentiate, economies of scale are recuperated through international expansion. The resultant globalization has the effect to erode the macro-economic competence of the nation state, i.e. its ability to anti-cyclically smooth out the dangers and disturbances of the business-cycle to stabilize the economic environment within its national boundaries. Globalization means international economic integration and interdependency. The 1973 oil-price shock suddenly shifted the import and export dependency of most national economies. The more national markets became international markets, the less was it economically feasible and sustainable to sponsor national demand that would invite foreign suppliers while burdening solely the national producers, thus encroaching upon their competitive ability abroad or even on the very home market they are sponsoring. As those policies became increasingly unsustainable and state finance went into crisis, a withdrawal from Keynesian macro-economic regulation in general and a systematic dismantlement of the social welfare state is engendered – a process that continuous to this day.

• **Exploding Labour relations:** A positive feedback loop in the liquefaction of relations between supply/capital and demand/labour has gathered pace: The volatility of markets tears on the institutions of collective bargaining (of the conditions of employment). This in turn makes markets even more unpredictable. Employment contracts become shorter. Mobility increases. Regular employment is replaced by ‘casual labour’ and ‘self-employment’.

Paradigm change in organization and management theory

A superficial glance at the expanding sections of business and management literature in any highstreet bookshop will suffice to capture the ongoing frenzy of restructuring: Titles (and subtitles) as the following abound: ‘Welcome to the Revolution’, ‘The New Paradigm for Business’, ‘Disorganization for Nanosecond Nineties’, ‘The Postmodern Organization’, ‘Deconstructing Organizations’,

‘Catching the Wave’, ‘The One Minute Manager’, ‘Thriving on Chaos’, etc.⁸⁾

My overview over the development of management discourse does not go beyond the mid-seventies. Although the explosion of ‘revolutionary’ management literature comes later, no further significant theoretical advance has been made. The most important slogans are listed below. All the following features – contradictions are endemic and no attempt is made here to systematize – have become real agendas in today’s business re-organization:

a) internal:

- flattening of hierarchies
- decentralization of operations
- devolution of authority
- collegial rather than command style of communication
- dispersal of creative intelligence throughout the corporation
- fragmentation into autonomous profit-centres
- group work, team-work and shared responsibility
- participatory structures tapping the knowledge and creative intelligence of all employees
- liberation of communication through information systems that allow communication to flow in all directions (even if communication in person is still confined to the scalar chain)
- departmentalization is replaced or over-terminated by project-organization
- short contracts increase mutual independence even within a formal employment relation

- hybrid conglomerates rather than functionally integrated corporations

b) internal/external:

- the blurring of the internal-external dichotomy
- employees become self-employed
- outsourcing, franchising, subcontracting
- dismemberment of large conglomerates
- the paradigm of the ‘loosely coupled network’

c) external, resp. inter-corporate

- globalization as corporate strategy
- collaborative manufacturing involving informal networks of firms
- temporary strategic alliances
- eco-system approach in industrial regions (‘synergetic technopoles’)

Although the word democratization is not among the slogans circulating around the management ‘revolution’ it seems to be pointed towards by most arguments put forward. Democratization seems the repressed driving logic of recent (and future) productivity gains. Democratization seems to be (the dangerous and potentially undermining but) inevitable panacea for industry (capital) in order to cope with the new challenge of permanent re-orientation and innovation. The more information-based, the more dependent upon research & development production in the western metropolis becomes, the less it can proceed autocratically.

The new organizational paradigms (e.g. the rhizome), which Deleuze & Guattari elaborated in the late seventies, in dialogue with the anti-Leninist forms of revolutionary struggle and organization, most explicitly elaborated in the Italian 'autonomia' movement⁹⁾, seem to become the very paradigms of corporate restructuring: The command pyramid of classical corporatism is mutating towards the rhysomatic plateau upon which the leadership is distributed in a permanently shifting multiplicity where every point bears the latency of becoming a temporary centre. A whole series of striking parallels can be drawn between the seventies counter-culture and 80ties/90ties establishment:

- The autonomous revolutionary 'groupuscule' and the new business strategy of autonomous profit centres, group work and temporary task-forces.
- The rotating leadership on the left and general shortening of contracts (the 'one minute manager') in business.
- The disintegration of (international) party discipline in favour of the 'free circulation of struggles' and the disintegration of the large corporation into a network of subcontractural relations.

What does this involuntary imitation signify? Certainly not a capitalist utopia. And certainly no democratization on the political level. Here we witness rather the reverse: Privatization, increasing class-polarization, militarism etc. What it might signify is that the development of productivity points beyond the rigidities of class-society.

Current socio-economic restructuring proceeds through the contradictory interaction technological, organizational and political processes. It is politically crucial to distinguish those aspects that pertain to productive progress from those that pertain to the politically backed intensification of exploitation. The ability, to distinguish Post-fordism as a new paradigm of production attaining new levels of productivity from the simultaneous neo-liberal offensive that utilizes (and the competing capitals force each other to utilize) the unsettled relations of production for a decisive shift in the underlying political relations, is crucial to any assessment of architecture's prospect.

notes / references:
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Officing: The Office in the Age of Information
Wolfgang Wagerer
p. 48

"I office. You office. We office." The operating slogan for Kinko's Copy Centers, aptly suggests that offices are not what they used to be. The term as employed today, has become more and more descriptive of an activity than of a place. Office work is possible wherever, and whenever. The reason: the decentralization of information through increased usage of computers and telecommunication networks.

The New Work

Four criteria determine the work environment, as the analysis of the American Century demonstrates:³⁾

The nature of work, which is determined through available technology

- The organization of work, which is determined by human needs
- The places of work, which are created by the available technology for building construction and services
- The ability to adapt to change over time, which is directed by the space management.

The impact of the computer and the worldwide telecommunication networks have revolutionized all four areas.

New Technologies for Working

Office automation was known throughout the sixties, but the early 'supercomputers' did not significantly change the nature of work. Only a few computer experts could operate the complicated supercomputers. In contrast to factory and agricultural production, where automation improved the work performance by 100 to 200 %, the productivity of office workers increased in the same period only by 4 %. This changed in the eighties through the development of the personal computer, which made computers accessible to the masses. The next step was the connection of computers to telecommunication networks. Initially these were utilized by industry, military and universities. Since the mid nineties the world wide web has provided easy access for the masses.

The development of the typewriter renders an excellent example of the shift from the mechanical to the information age. The classical typewriter is comprised of a variety of mechanical components. The electrical typewriter contains only a few mechanical components, which are controlled by small motors and electronic circuits. Word-processing capability in the computer moved even further ahead. A computer has multiple functions, typewriter, printer, fax machine, archive, telephone or other types of multimedia projects. The microprocessor creates an integrated variety of functions, which replaces the mechanical organization of specialized tasks. The connection to the information networks through telecommunication systems allows information work on a global scale.

New Organization of Work

The organization of office work is based on two criteria: the level of complexity and the mobility of work. Is it standardized or creative work? How often changes the organization of the company? Which type of work is mobile? How important is the impact of information technologies? These questions allow a differentiation of four office typologies:⁴⁾

• Back Offices

These are large offices for standardized work with a slow rate of change in the employees and work. This type is the model for the International Style. Social interaction is not important in this type of work.

• Headquarters

Headquarters have a medium rate of change. The employees move their workspaces on the average of every two years. Social interaction is important. With the increasing complexity of the nature of work a higher quality of the workspace is demanded as well.

• High-Tech Offices

This is a new type. It emerged in the early seventies in the Edge Cities. These are highly specialized, creative companies in the High Tech areas, characterized by explosive growth. Project teams change continuously. Employees have nomadic work patterns and move from workspace to workspace. Direct communication between all employees is extremely important for the success of these types of companies.

• Virtual Offices

Telecommuting means that the employees are wired. Telecommuting means the privatization of the workspace. Each employee is responsible for his own timeframe and workspace. With telecommuted work, the concept of just-in-time production of industrial goods is transferred to the services sector. No longer dependent upon any specific place, information work gets transferred to cheaper locations within the global market. Telecommuting doesn't require working from home, it allows for working wherever, whenever.

The telecommuting employees of a company still need places for face-to-face contacts. These are the crystallization points in a physical reality and they provide temporary meeting points for direct communication and social interaction. The following organizational types are emerging:

• Telecenter

A rental office in close proximity to clients or the homes of employees. Transportation needs are minimized.

• Hoteling

Companies try to minimize the private areas within their headquarters. They provide flexible temporary workspaces which can be used according to demand, utilizing principles similar to a hotel.

• Cave and Common

Small private areas are grouped around a communal zone.

• Total Work Environments

Total Work Environments are compact, mobile working stations within the main office building. The German word 'Möbel' (furniture) keeps the initial Latin meaning - moveable goods -, in contrast to buildings which are 'Immobilien', things which can't move. Total work environments are organized on an open plan similar to a theater stage.

In summary, it can be said that the social and organizational changes in the nature of work indicate a trend towards increased mobility and the need for new, creative and adaptable places that facilitate direct communication and social interaction. Work will be tailored to individual needs. The design and comfort criteria are becoming increasingly similar to home standards, this means, that 'soft' criteria such as comfort, environment and quality of the workspace are increasing. The places of work will become more decentralized, diverse, simple, highly technologized, responding efficiently and flexibly to social and organizational changes. Productivity over privacy, creative collaboration over hierarchy, mobility over status will characterize the criteria which will determine the workplaces in the Age of Information.

New Places of Work

The available technology for building construction and climate control determine the physical reality of the work places. Structure, envelope, services and interiors provide comfort. The Age of Electricity separated structure from envelope. The Age of Electronics integrated mechanical building systems. The Age of Information brings together building systems, and allows them to be independent, but interconnected as a coherent system.

After the first examples, which were built in America after the energy crisis, the developments in Europe and America separated from each other. Europe assumed the lead in architecture. The first European example which incorporated the technological innovation, which have come to characterize office buildings in the Age of Information is the Lloyd's of London building: It has an active building skin, high performance building materials, individual climate control, energy efficiency, and decentralized information technology. A comparison to Sears tower highlights how the concept of the homogenous sandwichspace changed to a dynamic building concept in only ten years time. Lloyd's is a physical representation of how information technologies are already changing architecture.

- **Floorwide Services**

Distribution Offices are workplaces which rely heavily on information processing. Computer and telephone networks are already standard. The attendant physical requirements require direct access from the floor to adapt to changes. The services distribution moves from the ceiling zone into the floor.

- **Decentralization of Information Control**

The density of telecommunication networks has been increased continuously. Every room has the potential to be part of the information network within the building. The computer began as a huge centralized system, but as microchips, motors, and sensors became smaller and more powerful, an increased penetration of the physical reality is possible. Decentralization of information

allows technologies to adapt to the local conditions within the building.

- **Emancipation of the Envelope**

The task of the envelope is to create a comfortable internal environment. A façade traditionally provides a separation between inside and outside. The buildings in the Age of Information open themselves towards the natural forces of heat, light, wind and sun, which are continuously changing, and the envelope now provides a function more similar to that of a filter or a membrane.

In summary, the integration of a building into the ecological cycles of nature allows for higher energy efficiency and improved comfort than the homogenous environments of the American Century. Ecological systems always adapt to their environment, whereas the traditional industrial systems, that are organized in a linear and hierarchical way, do not. Because the systems of the Industrial Ecology adapt to local conditions, they have an increased need for local input.

In architecture and urban design it requires the understanding of the natural context – climate and geography –, the man-made context – cities, transportation systems and technology – and the human needs.

New Workplace Examples

Each climate zone requires a different strategy for how buildings will respond to natural forces. The following examples given, are all located in Northwest Europe, places with cold winters and temperate summers. Consider a house as a defined volume with the goal of creating a comfortable internal environment. To minimize heat loss in winter, it is advantageous to minimize the surface area in relation to a given volume. This requires a compact building form.

The local conditions within a given climate zone determine the level of accessibility to the natural elements. The more urban, which means the higher the urban density, the smaller the availability of nature. According to the regional location, three types can be differentiated: periphery, city and center.

Periphery

The buildings are constructed with a horizontal emphasis. This means, that the roof is the maximum interface for the environmental control. The comparison between Renzo Piano's Lowara office from 1984 and the Californian SCSD system from the sixties demonstrates the influence of the information technologies on architecture.

The SCSD example is an integrated system made out of structure, envelope and services. They are integrated in a mechanical way. The efficiency of the environmental controls is based on the performance of the 'mechanical mussel' within the building: the services.

Piano's project in contrast is an example for the office building in the Age of Information: it uses the natural forces. The curved roof is on the one hand a response to gravity: the form of the catenary curve is an

efficient way to transfer vertical loads. On the other hand is the shape of the wave an active environmental control: it allows for solar control, uses the venturi effect to support natural ventilation, is a reflector for direct sunlight and indirect artificial light and sprinkler spray water on the roof during summer time for evaporative cooling.

Basis for this 'emancipation of the roof' is the floorwide distribution of services and the network of microchip, sensors and motors, which respond to the dynamic processes in nature. Compare once again the Lowara office with the SCSD system. In the Californian example the roof is a machine which follows its own mechanical rules. Renzo Piano's building is more similar to an object in nature. It is an example of Industrial Ecology.

City

For urban offices the external environmental forces are not always beneficial. Pollution, smell and noise may require the introversion of buildings. In an urban context, compact multistorey cubes are the most common building shape. Roof and façades contribute equal amounts to the environmental control. In this buildings the floorwide distribution of services offers a new potential: the use of the thermal mass of the building, which allows the use of exposed concrete slabs to cool the building. Similar to the 'emancipation of the roof' an 'emancipation of the ceiling' takes place. Examples are the Powergen Building from Bennets Associates or the Inland Revenue Building from Michael Hopkins. The use of the thermal mass of the building is an example of a coherent system, in which one part of the building has more than one function. The structure is not just used to transfer vertical loads but also to control the thermal forces in the building.

It is important for compact buildings in the city to create buffer zones. They allow a balance between solar gain and heat loss. This buffer zone can be designed in a single aspect layout, i.e. the science park of Uwe Kießler and the office building Schwedlerstraße by Schneider and Schumacher in Frankfurt. The buffer zone can also be enclosed, i.e. the Richard Rogers buildings at the Potsdamer Platz in Berlin.

Center

The last type are vertical buildings in locations with high density. In this case the façades are the major environmental filters. The environmental forces are limited in their availability, since high wind pressures don't allow openable windows. Two examples have been recently built:

The headquarters for the RWE AG, one of the major European energy supply companies, designed by Christoph Ingenhoven, is a cylindrical high rise building. The circular form allows for good laminar air flow and an excellent surface-volume ratio. The buffer zone is a double façade integrated into the envelope. The façades operate as a dynamic climate modulator, which allows

for natural ventilation and balances heat gains with losses. The air in the cavity is supplied on each level by ventilation openings.

The skyscraper for the Commerzbank in Frankfurt, designed by Norman Foster, integrates the buffer zones as four storey high wintergardens within the building mass. They spiral up the building. The natural ventilation for the offices is allowed for through the wintergardens. The external layer is a wind protection. The wintergardens improve the microclimate through passive use of solar gain and evaporative cooling.

A New Way to Office

The way we live and work has changed radically as a result of the impact of the decentralization of information. New city and building structures continue to evolve. The examples in America derive from the social and economical dynamics of this change, the examples in Europe from the ecological and technological dynamics. The challenge for the future is to bring them together as part of the emerging Industrial Ecology.

Notes:
see page 53

Continuous Interior Bart Lootsma p. 72

The solution for the Dutch radio and television broadcasting facility VPRO in Hilversum is a compact building, five storeys high and which only makes slight inroads upon the landscape. On the roof, which is explicitly planned as fifth façade or fifth floor, a new landscape to be given back to nature is coming into being, so that seen from above, the building appears almost as if it were camouflaged. The compactness also has advantages for the usage of the building. Firstly, because the majority of VPRO's staff work at home or on the spot, linked with the station by telephone and Internet. For this reason, until now up to 50 % of the space has remained unused, yet the way the building has been designed prevents this from becoming uncomfortably noticeable. Secondly, because the use of computers and monitors, as well as the necessity for consultations and meetings requires space that is not located directly at a window, on the one hand to ensure confidentiality and on the other to avoid sunlight coming in directly, which is annoying at computer work stations. Thirdly, deep office buildings optimize the proportion of development surface (five to ten percent), save more energy, and reduce the space required for services to three to five percent. The space gained in this way is thus made available for other purposes: for consultation rooms, for air space, for leisure and sport facilities.

The present building regulations do not correspond to the requirements of a modern office building any more, and least of all to

a deep building such as that for the VPRO: a certain number of light shafts is prescribed in such a case. However, the regulations do allow for a certain amount of room for manoeuvre – the reduction of direct natural light can be compensated for with a view. The patios on each floor are therefore staggered so that one is always able to see right through them and to the outside. (The smaller the patios, the more compact the building.) In addition, in this way rooms with an exterior climate come into being, enabling certain 'events.' Thus, for example, the meeting room on the second floor is accessible only via an outside space – a homage to a former conference site that was in a building site barracks amid the thirteen villas.

Inside, any association with an office building is avoided. No endless corridors with closets leading off; rather, the building reveals itself as a gradual continuation of the landscape in which a number of different office organizations can be realized: from the more traditional rooms up to rooms which remind one more of a club, from office landscapes to individual cells, and all the mongrel forms in between that one could think of. Everywhere there is a close relation to the landscape outside: for the most part visual, but also through opening the floor-to-ceiling sliding windows, through which one can either step onto the balcony or (on the ground floor) into the park. At first, MVRDV did not want a façade at all for the whole of the building, but instead, air curtains, like those sometimes used in department stores. In the park and also on the roof there are numerous places with connections for cable television, electricity, telephone and voltage-transformers for computers, so that in summer there is no difference between working outside and working inside. The main entrance is situated on the first floor, because another building is to be erected right next to this one, and its drive-in entrance is at this height. Therefore the VPRO building has its garage on the first floor with a ceiling stuck on at the height of the entrance, which produced a strange hill on the second floor in the reception area – the heart of the building. The link between first and second floor will be additionally emphasized by the surface on which the cars move: at the end, it rolls upward so that the floor becomes ceiling. In this way, all the floors are linked to each other – by ramps, super stairways, stairways that can be used as tribunes at the same time, hills, plateaux and loops, thereby giving rise to numerous different ceiling and room heights inside.

Taking as a starting point this general 'continuous space' approach, the building is more and more differentiated in the details, as an urban plan is supported through infrastructure and filled out with individual buildings. The supporting body consists of a complex system of columns, tension members and load-bearing walls and ceilings of insitu concrete. Temperature regulation and

lighting – again, determined by complicated regulations – remain largely at the lowest standard level. The legislatively decreed soporific 'comfort' is fractured in different ways: through spartan treatment of walls, floors and ceilings in exposed concrete, through the confrontation of the internal comfort with the natural outside conditions that are still effective deep within the building, through the risky trailways with numerous leaps in levels and ramps, through the various sorts of glass in the façade which have different effects on the light atmosphere inside and through the fact that the staff have a great degree of freedom in the equipping and furnishing of their workplaces. The space thus generated can be occupied by 'minibuildings' with private office, by provisional cells for concentrated working, by curtains and screens, etc. The intermediate spaces are ideal as niches for non-conformists.

From the beginning it was clear that as much of the old furniture as possible was to be brought along to the new premises, as it determined the identity of the respective editorial staffs and program teams so strongly. In addition to this, though, MVRDV has developed a purchasing concept for new furniture. This comprises not the usual standard furnishings – carpets, curtains and lamps, but instead, aims explicitly to create difference. This acquisition catalogue for furnishings does consist partly of simple standard furniture, but also of individualistic modern furniture by various designers of different periods, of antique chairs and Persian carpets. It is only the fixtures like balustrades and toilets that MVRDV has designed itself, as also the screens for the provisional relaxing cells, the circular cupboards around the columns and a refined lighting facility with sockets that in the meantime is also being produced. One can sense a certain common thread running through the furnishing, but it is not based on style. It is rather a question of a connection as Le Corbusier defined it for the interior decoration of the Pavillon de l'Esprit Nouveau as "synthèse de pensée." And if there were a dominant idea after all, it would dissolve under the influence of the anarchy of the staff and their favourite objects. In this way, MVRDV has conserved the identity of the VPRO and at the same time, completely deconstructed the standard office building with the help of the regulations that it produces itself.

Translated from the German version:
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