Institut Claude-Nicolas Ledoux

# Actes du colloque « Y a-t-il une architecture industrielle contemporaine ? »

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**2/5**

# *Workspace as an Instrument of Production*

*Par Thomas A. Markus, professeur émérite de l'université de Strathclyde à Glasgow*

***This presentation briefly describes work in progress**, supported by the European Commission, Brussels, on European industrial workspace, how it is designed and how it is related to productivity. Before moving into some details about that project I want to make two general comments, relevant both to the project and to this Colloquium.*

*First with regard to production utopias. Here at Chaux, in Ledoux's beautiful architectural masterpiece, and also at New Lanark and Le Grand-Hornu, which have also been described today, it is easy to forget that in this very beauty, in their very perfection, beneath the formal surface features of these production utopias - their plan forms, their architectural style and their decorative details - there are meanings of considerable ambiguity. We cannot approach these projects wearing rose-coloured spectacles and seeing them surrounded by a golden haze.*

*Utopian thinking, both with regard to its social-political programme, and to its architectural and planning forms, has a long history. It stretches from Classical Greek times to 20th century town planning. Throughout its history utopia, both as a form of society and as a designed artefact, has been based on the idea of perfection, totality, timelessness, and hierarchy. Many of the imagined forms, especially when they were actually executed, slipped from total to totalitarian, from order to control and surveillance, from perfection to rigidity. In reality they were often deeply alienating and oppressive in ways which is camouflaged by their architectural forms. To uncover this requires not only real evidence about social structures, work and living conditions, but architectural evidence which goes beyond traditional analysis of form, as if buildings were some kind of large public sculpture, to examine the functional programmes and the spatial structures. Not surprisingly there has been, historically, a close connection between utopian thought and military projects, colonialism, and princely and royal enterprises. When, in the late 18th and in the 19th centuries, these ideas and methods were applied to production, the same alienating social characteristics appeared within a new context - the relationships created by labour and capital. The gap between Plato and Auschwitz (a production utopia with the motto 'arbeit mach frei' - 'work liberates' over its entrance gate) is small, and the slope between them is slippery.*

*Secondly, modern industry. There is a tendency, especially in speaking of its architecture, to stand in amazement at its sculptural forms, at the bold use of coloured claddings, and the ingenious technical devices for solar control, energy economy and technical systems, to be blind to the*
*fact that much of it shares features of the early production utopias: it is often monumental, total and finished, and designed for the glossy journals rather than for working conditions. One reason for this blind spot is that the representations, in computer graphics, drawings, models, slides and photographs, are almost devoid of human content. Even if people do appear, it is never people at work. This way of looking at buildings,*

*either as art objects or as technical objects, has its roots in the major architectural discourses which crystallised in France in the late 18th century in two institutions: the École des Beaux Arts and École Polytechnique. The art and technical discourse obliterated the obvious fact that buildings are first and foremost social objects.*

*Moreover the very products which emerge from these industrial sites should be open to scrutiny. It is not an arena of undisputed benefit. For besides useful and usable products, much of industry, as part of a global capital network, is deeply enmeshed in the production of lethal weapons systems, ecologically destructive materials, agro chemicals which are agents of control over third world peoples, and damaging consumer products.*

*Of what difference is it that these processes go on in 'beautiful' buildings, with cleaver energy control systems, on splendidly landscaped sites?*

*So in our Brussels project we are trying to concentrate not only the relationship between workspace and production, but on working conditions and the way buildings affect and form the social relationships within industry, and between it and the wider community.*

*So I come now to the project itself. It deals with certain industrial objectives and strategic aspects.*

*Substantial research and development on industrial production exists, both within industry and in academic institutions. Most of it has one of two alternative focuses: either the hardware of production systems and methods, or human factors, organisational issues, communications and information systems. So what is commonly called the 'socio-technical system' today consists of the 'hardware' and the 'software' of production. These two systems have to interface in material workspace which houses not only machines but material human bodies. The degree to which such space supports this interface has been the subject of much less research. Such knowledge, theoretical and practical, as does exist is widely scattered, diffused through industry and academic institutions, and lacking systematic articulation. It is the object of this project to start remedying this situation.*

*Industry and research sponsors are conscious of the needs of the 'hard' and 'soft' systems but there is less consciousness of the fact that these must interface in material space. Because this is obvious, and a matter of everyday experience, it is often considered that intuition and 'guts feeling' are adequate for its design and management, and the issue has not traditionally formed part of strategic thinking, nor a focus for production research. Consequently space is often not optimal as a production resource of value over the life of the system.*

*The evidence, borne out by an Exploratory Phase, and now by the first 18 months' work of an Implementation Phase, is that workspaces often do not match production requirements and, even where they do so initially, they cease to do so as production systems change rapidly. The defects concern dimensions, form, technical services, environmental qualities, spatial articulation which takes human and organisational factors into account, and adaptability. We have identified the tools or methods needed to improve this situation, which were currently lacking. After three Case Studies - which are presented here - the evidence is that a great deal of implicit 'tacit' knowledge, based on experience, exists in industry, and there are already many explicit tools and methods of value. However they need to be more widely known and systematically practised, there are many gaps, and, apart from some benchmarking exercises, systematic inter-comparison is not*
*practised.*

*It is evident that decision-making processes on workspaces are not formulated into clear, strategic processes. They are widely dispersed within enterprises, and often come after strategic decisions on investment, production and organisational change have already been made without reference to spatial requirements or consequences. There is also*

*evidence that whilst the planning of production plant and the design of real estate/buildings, being the responsibility of separate professionals, is not always as closely integrated as it could be, nevertheless in those cases where it is, the performance of the system is, or is likely to be in the future, greatly improved.*

*Before a new workspace project starts, it is necessary to evaluate existing space in order to develop a specification of what is required. To do this production workspace audit methods are needed. Some audit methods have already come to light. But it is clear that audits are not widely practised and, even where they are used, there are no generally agreed methods and standards, so that inter-comparisons between projects is difficult.*

*In this project an outline production workspace decision model and a production workspace audit method are being developed, and both will be tested in the workspaces of six industrial partners in four EU countries.*

*In the Network there are four academic and eight industrial partners, plus a Co-ordinator. The method of work is to hold Workshops in which the workspace of one industrial partner is studied as a Case Study. In this context the partners have started to develop the decision-making and audit models. Each of the Case Studies is written up and published so that it can be made available to the Network and to other industrial enterprises in EU countries. Three are complete, another three are to come. The project will also collect available knowledge and identify industry's needs for research on production workspace issues; some of these may become the subject(s) of research applications by groups of the Network partners.*

*The industrial partners are either large, high technology producers – such as Philips, DAF, Rover, Ericsson and Volvo, or providers of Facilities Management services, and the hardware of industrial service systems – such as Rentokil and Thorsman - to such producers.*

*Evidence has already been found that production workspace was far from optimal, and, over time, changes in production or organisation, made it even less so. Because initial capital invested in buildings, and continuous expenditure on their repair, adaptation, maintenance and on building energy services, appear to be relatively small, many enterprises leave decisions to a late stage in a sequential decision process. Despite a general awareness that the interaction between space and production might have much larger, hidden, cost, productivity and profitability consequences, the project is finding that concrete means for building on this awareness in analysis and decisions is not highly developed.*

*In other words workspace decision-making is not yet a learning tool to allow different actors to converge in creative solutions.*

*To make learning possible a production workspace audit method needs to be developed and used both on existing space, and to evaluate models of alternative new solutions.*

*There is a very large field of space/production interactions. To narrow the field the focus is on the seven points below:*

* *Space and production flow*

* *Space as an instrument for work*

* *Production and the technical properties of buildings*

* *Social relations and communications as formed by space*

* *The role of space in networking within and between enterprises*

** Safe and healthy physical environments, achieved with the greatest possible economy in energy expenditure*

** The symbolic value of buildings and their spaces, both to workers within an enterprise and to the wider community.*

*The project will be completed in November 2000. In the meantime it is publishing progress reports and has a website at: <*http://www.eurofm.cfm.strath.ac.uk*>.*

*T. A Markus, juin 1999*