

## ANALYSIS

# Measuring building performance

**SYSTEMATIC METHODS OF BUILDING MEASUREMENT ARE A TINY DROP IN A SEA OF IGNORANCE AND INDIFFERENCE. THE POWER THAT FACILITIES MANAGERS HAVE IN THEORY IS BEING SQUANDERED IN PRACTICE. AFTER A DECADE OF OPPORTUNITY, TIME IS SLIPPING AWAY.** Francis Duffy

Measurement is the foundation of facilities management. Not only is measurement important operationally for facilities managers, but by establishing their own units of analysis facilities managers should be able to define the boundaries of their discipline and thus their own particular and unique contribution to organisational success.

Buildings are too important to be left to builders. In fact, I would like to begin by objecting to the word 'building'. Eventually, we all become what we eat. How we are paid, and who pays us determine all our attitudes. The building industry is no exception to this – developers, architects, consultants and other members of the design team are all enraptured by their product.

The best evidence for this is the way in which those involved in building measure their output: letting agents by pounds per square foot; builders by rate of construction; quantity surveyors by cost per square metre; architects by design awards or column inches. These measures are all functions of the process of building. Indeed, the whole vocabulary of the trade – ceilings, skirtings, finishes, ductwork – is about the act of building not about what buildings are for. The word 'building' itself is active, almost a verb, and tells us nothing about use.

The whole industry is obsessed with finishing the job. The cameras flash, the tape is cut, the mayor leaves, and the caravan moves on to the next project. Records are utterly synchronic: a page of photographs and plans, a specification – nothing about the ongoing reality of building use. Like Mexican Indians in Chiapas, near Guatemala, the building industry burns its hillside each season, plants its maize, and then, after each harvest, moves on to the next hillside. No real farming, no culture, no sense of continuity, no history, no feedback – an industry founded on projects and characterised by amnesia.

### THE BASICS OF FACILITIES MANAGEMENT

All this explains why I, as an architect, find facilities management so liberating – because it introduces the dimensions of time and use into buildings. Buildings are large, complex and sometimes beautiful entities.

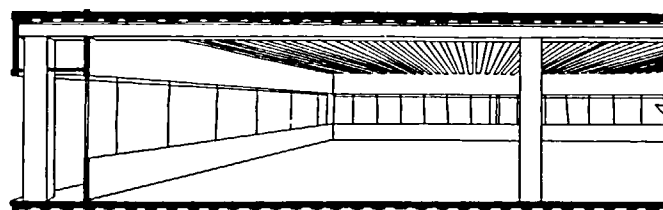
Understanding what they are for – a resource that can be used by organisations and individuals to achieve their goals – is the essence of facilities management.

This diachronic view of buildings paradoxically makes them easier to design. But the same view erodes all the conventional synchronic categories by which the building industry has for centuries described buildings. Rather than describe and measure buildings in material terms - amounts of concrete, glass and steel - it is necessary to describe them in terms of time: shells that last up to 50 years, services that last 15 years before they must be replaced, scenery which, these days, has a duration of five years or even less.

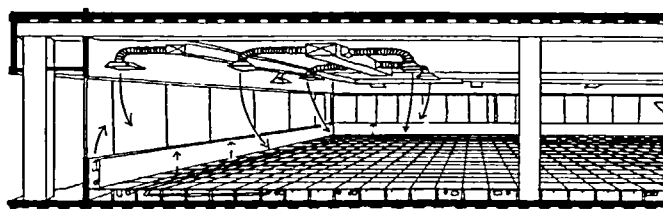
### SHELL, SERVICES, SCENERY

Analysed in terms of time, the economics of building become entirely different. In a new building, costs are roughly divided into thirds – one third for the 50-year shell, one third for the 15-year services and one third for the five-year scenery. Add up what happens when capital

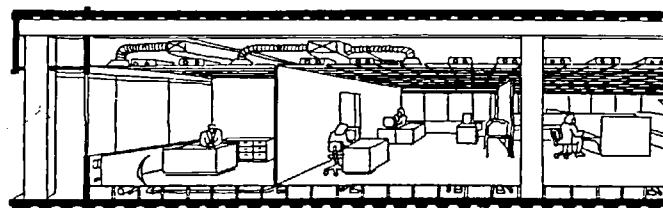
Shell, services, scenery and sets life cycles



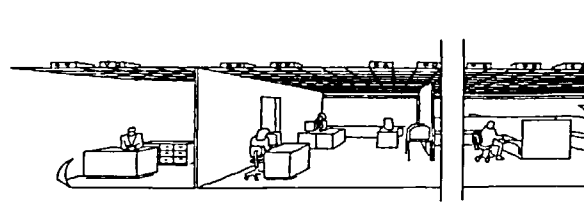
SHELL  
50 years



SERVICES  
15 years

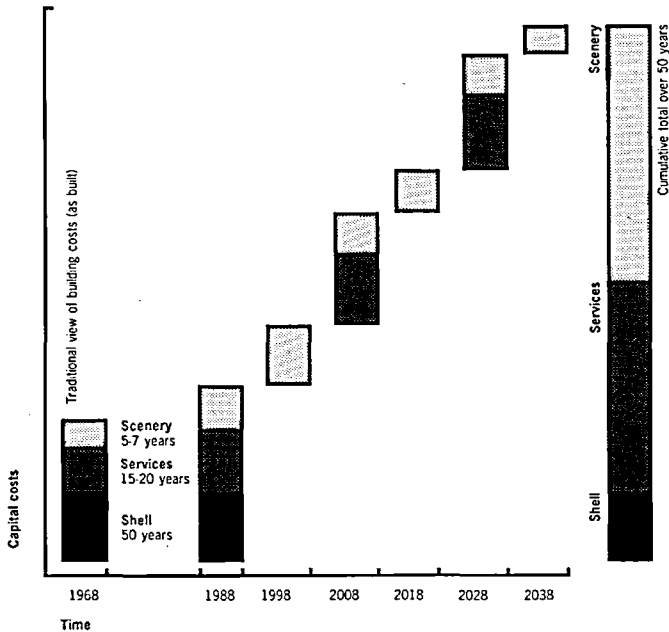


SCENERY  
5 - 7 years



SETS  
change every day

**Cumulative expenditure on shell, services and scenery**  
(source: *The Changing City*)



is invested over a 50-year period: the shell expenditure is overwhelmed by the cumulative financial consequences of three generations of services and 10 generations of scenery. What appears to be so important in conventional building terms – the long term shell, foundations, walls, roof and structure – turns out to be nugatory in comparison to the gradual accretion of huge expenditure on ductwork and furniture.

It is this same iron economic logic that explains why large areas of the City of London are being demolished. 20-year-old buildings are being torn down despite their apparent permanence because, in terms of use, they are judged to be prematurely obsolete, and because it is more important to get the services and scenery right than to preserve the financially less significant shell.

And we haven't even begun to discuss occupancy costs.

## THE IMPORTANCE OF FACILITIES MANAGEMENT

I have said all this to explain not only my own fascination with facilities management but also to justify the amazing and still not fully realised significance of this emerging profession. Yet I must add that, given the enormous power and the huge leverage that facilities management has in theory, what has been achieved in practice is surprisingly little.

The significance of facilities management lies not just in its financial power but in how that power can be exercised through the intelligent use of data on building use. In my opinion, facilities management as it has

developed in this country has squandered that data and in so doing endangered its claim to be a profession.

That view is reinforced by my own experience of establishing ways of measuring building performance. Orbit 1 (undertaken with Eosys and Building Use Studies in 1983) led to the invention of the technique of building appraisal based on user content. Orbit 2, carried out with Frank Becker and Bill Sims in the US, developed these techniques in a more sophisticated way which allowed users to negotiate and determine their priorities – opening up the design process to consumers. Over the years, DEGW has carried out numerous building appraisals and post-occupancy studies for developers and corporate users. In *The Changing City* (Duffy and Henney, Bulstrode Press, 1989) we described, in the context of the City of London, the balance between supply and demand, sector by sector, building type by building type, in one of the most dynamic urban economies of the world. And of course, every month *Facilities* painstakingly adds to the sum of knowledge of building use.

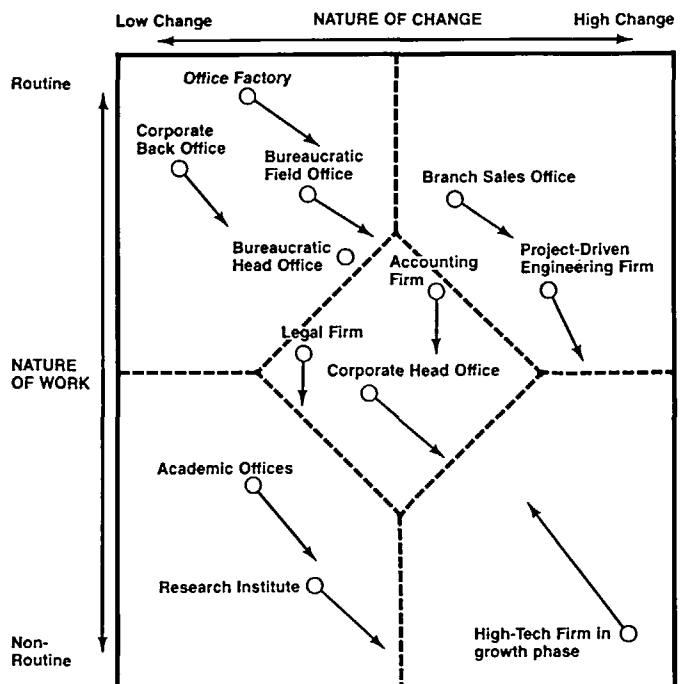
But it is not enough. Our methods are neither widely imitated nor widely applied. What we do in the way of systematic measurement of building performance is a tiny drop in a sea of ignorance and indifference.

## THE PURSUIT OF DATA

The slow development of measurement as a discipline in facilities management may be explained by the fact that:

- There is not enough **rigour** in the invention and the use of measurements. Sloppiness is everywhere.

## Orbit 2 - organisational classification



- We retreat from the user – dealing with difficult, refractory, angry consumers is too much like hard work.
- Very few measurements get the balance between supply and demand right. Measures are usually developed with a bias towards the hardware of building rather than the software of user requirements. In this field, where buildings and people come together, the essential characteristic of all our measures is that we must give equal weight to both.
- Our results are too private. Data are usually collected company by company, without too much attention to the common good. Data on occupancy costs are an excellent example of this problem – they are traditionally riddled with inconsistency and full of methodological traps.
- We measure what is easy to measure and ignore what is difficult. Real issues such as the use of space through time, productivity and green responsibility thus tend to be ignored.

In summary, in the pursuit of data that ought to be the life-blood of facilities management, we are far too timid, or lazy, or both. What work is done tends to be tactical rather than strategic. Given the chance, facilities managers will retreat into the tiny box from whence they came – into neatness, housekeeping and a quiet life.

It is a fault equivalent to the tendency I noted in the building industry – in other words, to define our task in terms of what we like doing rather than what we ought to be doing.

### **BRAVE NEW WORLD**

Imagine a world in which facilities managers realised their power, took data seriously and exercised all the leverage at their command. It would be easy to find monuments of successful facilities management, where physical resources were being used effectively for organisational ends. Instead of a handful of powerful buildings, used powerfully by powerful organisations – SAS in Stockholm, Colonia in Koln, NMB in Amsterdam, Steelcase in Grand Rapids – such buildings would be found in every organisation, on every street corner.

Powerful buildings for powerful organisations:  
Steelcase Corporate Development Center,  
Grand Rapids



SAS  
headquarters,  
Stockholm



Facilities managers would be able to capture more public recognition with their constant and active concern for the public good. They would be deeply involved in all the key issues of the time.

Facilities management would have a reputation for fearlessly crossing professional and intellectual boundaries; not afraid to connect with organisational development psychologists of the calibre of, for example, Fritz Steele or Frank Becker (see *Facilities*, Vol 8/No 3, March 1990) or with the best physicists from the Building Research Establishment, or with the most inventive architects in the land.

Above all, facilities managers would be known by their willingness to take feedback seriously in order to feed forward to the future. They would be seen as custodians of the future, rather than troubleshooters of the past.

### **TIME IS RUNNING OUT**

It would be nice to be surprised by evidence of these qualities already at work. My impatience is caused by a

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sense of time slipping away – 10 years of effort in facilities management and nothing like enough achieved.

What I would look for are measures that are:

- **operational**, valid and reliable, combining rigour with practicality;
- **popular**, telling users what the measures are for and why it is of benefit to use them;
- **inventive**, which escape from the old conceptual frameworks and bring, for example, space into contact with time and people measures into intimate alliance with physical yardsticks;
- **performance-based**, which are there for a purpose and are directly related to individual and organisational success;
- **comparative**, which allow for the rapid development of databases and encourage benchmarking and comparisons of performance both within and between organisations;
- **wide in scope**, equally capable of dealing with the intricacies of a workstation as with the immensity of the city fabric.

## THE POWER TO ACHIEVE CHANGE

Above all, I want measurements not for their own sake but because they have the power to bring about change. That power brings enormous responsibility to facilities managers, particularly in the present social, political and technological climate where we are all being asked to rethink every aspect of life and work.

Few of us realise how narrow the intellectual origins of this field are. The world of work is still dominated by the ghost of Frederic Taylor. Many of the techniques of work study which we use (and which are still proudly shown as examples of good practice) can be found in textbooks of business administration written in the heyday of scientific management 80 years ago.

Fortunately, information technology is ending that dreary and mechanistic era. New dimensions of popular choice in every aspect of life and work are opening up in front of us. At this point of change, balancing supply and demand is far from simply being a technical matter – it has become a political question that will affect the shape of cities as well as the organisation of work.

Facilities managers cannot regard themselves any longer as technicians. They are responsible for policy and, in a very material sense, for shaping our future.

*A version of this paper was originally presented as a keynote address to the Facilities Management International Conference, Glasgow, on 10 April 1990. Other papers from the conference will be reviewed in a future issue of Facilities.*