Architectural History 65 (2022), 123–142. © The Society of Architectural Historians of Great Britain 2022
doi:10.1017/arh.2022.7

Bureaucratic Reforms as Triggers of Experimental Design: KBS and Public Building in Sweden, 1963–74

by ERIK SIGGE

ABSTRACT

This article explores the relationship between architecture and public administration at the Swedish National Board of Public Building (Kungl. Byggnadsstyrelsen, or KBS) in the years 1963–74. This government agency, which existed from 1918 to 1993, was in charge of planning, designing, producing and maintaining public service buildings and facilities. During the 1960s, it was subject to a number of major administrative reforms which, by rationalising the organisation's activities, sought to make both the construction and maintenance of buildings more cost-effective for the taxpayer. These reforms paralleled rationalisation efforts in the field of architectural design, where structural and material efficiency were sought in the adoption of large-scale systems. The administrative reforms thus went beyond the reorganisation of departments and work priorities to permeate all aspects of the agency's activities. The article presents the architectural activities of KBS as innovative and experimental responses to bureaucratic structures and requirements. Examination of the design and building processes of three projects — the national telecom headquarters in Farsta, the Garnisonen office complex in central Stockholm and Linköping University — uncovers some of the administrative structures deployed at KBS, and the creative and novel architectural solutions triggered by their integration into design and planning practices.

Bureaucracy is most often used as a derogatory term signifying excessive paperwork and numerous regulations that are assumed to be inefficient and costly, and to involve time-consuming procedures and protocols. Bureaucracy also designates a specific type of organisation, one that is regarded as large and inflexible, in which individual members of staff follow strict protocols and work ethics.[1] This article questions that simplified picture of bureaucracy. Instead it suggests that the value of bureaucracy is relative first to viewpoint, but also, perhaps more importantly, to work duties and professional expertise. The article aims to show how bureaucracy could be seen as a site of experimentation and investigation into the fundamental conditions of architecture. As such, bureaucracy is an apparatus through which politics connect with architecture; it also elides philosophy and aesthetics with economy and rationality.

The focus of the article is bureaucracy's relationship to architecture in Sweden, at the National Board of Public Building (Kungl. Byggnadsstyrelsen, or KBS), in particular for three design projects of the late 1960s and early 1970s. These are the national telecom

headquarters (*Telestyrelsen*) in Farsta, just south of Stockholm, designed by Bengt Hidemark and Gösta Danielsson, completed in 1969; the Garnisonen office complex in central Stockholm, designed by A4 with Tage Hertzell as main designer, completed in 1972; and Linköping University, on the edge of the city of Linköping, designed by ai-gruppen with Hidemark as lead architect, also completed in 1972.[2]

KBS was the government agency in charge of planning, designing, producing and maintaining public service facilities. It made sure that government and state institutions had suitable premises for their activities. Throughout the 1960s, KBS underwent rapid expansion to meet the needs of a growing state, delivering new offices, universities, police stations, court buildings, airports, embassies and many other types of buildings. In the same period, it intensified its research and development activities in order to find better methodologies for dealing with the speed of building production and the increasing size of building projects, while also providing information and expertise to the national building standards.[3] As a result, the staff of KBS grew from 344 in 1960 to 2,151 in 1980.[4]

Many of the non-administrative personnel were architects, yet, despite this in-house expertise, KBS used external consultant architects for most of its new construction projects. Production was mainly conducted through standardised state procurement procedures: the majority of projects were led not by open competition or invitation, but by what was called 'direct procurement', without tender-based competition.[5] Another common procurement process was to invite several preferred architecture offices, often two or three at a time, to conduct 'parallel commissions' that gave them the chance to develop tender proposals through full and open collaboration with the various departments at KBS, without the secrecy involved in competitions. These two procurement models — direct procurement and parallel commissions — allowed KBS not only to choose the preferred architect(s), but also to decide if specific projects would benefit from alternative design proposals. A number of architectural offices and construction companies thus became recurrent collaborative partners, which gave significant continuity to KBS building projects.

During this time of expansion, KBS also went through several organisational reforms that profoundly affected planning and building processes. The reforms stemmed from a desire to rationalise building production and make the planning, construction and maintenance of buildings more cost-effective and predictable. They primarily addressed the cost and management of building projects, but also considered building processes and systems from the viewpoint of design. While the changes could be viewed as restricting the influence of architects in building projects, in the cases examined here they found ways of developing their expertise and creativity. This resourcefulness was arguably triggered by the architects' comprehension — and perhaps acceptance — of the changes introduced by the agency. The designs of the buildings discussed in this article are thus primarily understood as creative responses to an administrative and organisational framework that put limitations on architectural choice.

The construction of the Garnisonen office building in Stockholm was one of the most important KBS projects in the 1960s and 1970s (Fig. 1). Although significantly larger, with a total floor area of 70,000m² and an almost 350 m long façade along Karlavägen, it was typical of the buildings of its time in its streamlined production and monotonous

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Fig. 1. *Garnisonen office building, Stockholm, main façade along Karlavägen, completed in 1972, from KBS report no. 38, 1971*

expression. In another sense, it was an exceptional project boasting many breakthrough practices, from working methods and bidding procedures to structural solutions and technical innovations that would set new standards for both the agency and the industry at large. Garnisonen also played a significant role in research and investigation projects at KBS, and a dozen reports used the building as a case study.[6] In the popular media, however, the project was heavily criticised from the start, with disapproval often focusing on the building's imposing size and form, which were deemed inappropriate for a modern democratic society. One of the first examples of such criticism dates from before the building's completion. In the spring of 1971 there was a major conflict between

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the state and two civil servant trade unions, Sveriges Akademikers Centralorganisation (SACO) and Statstjänstemännens Riksförbund (SR). Garnisonen became the image that represented the conflict and the widespread unfavourable views of both the government and the civil servants. As one of the leading archiects at A4, Ragnar Uppman, later recalled:

> A photographer only had to walk across the street from the TV building and take a sweeping shot of the 347m-long façade of Garnisonen to portray how an army of privileged bureaucrats entrenched themselves to demand higher salaries. From the beginning, I had regarded the large building as an expression of democratic welfare. Naively, I had considered government officers the servants of the people. A large building filled with civil servants meant that Sweden was prosperous enough to serve many. Instead, in the public consciousness, the long façade turned out to illustrate the bureaucracy that had risen over our heads.[7]

Although the media's use of Garnisonen as a symbol of excessive bureaucracy was not primarily an attack on its architecture, the image of the building was seen to confirm how unwieldy Swedish state bureaucracy had become. To equate architecture or a building with bureaucracy was in this particular case not an exaggerated claim, as the government had commissioned the building and its bureaucratic building agency, KBS, had designed and constructed it. The media focus on Garnisonen, therefore, indirectly alluded to the shortcomings of recent architectural developments and mistrust of architects as well as disapproval of the building itself. The form and size of Garnisonen seemed to strengthen the view that bureaucracy no longer served the people, but only pandered to the controlling power of politicians and bureaucrats.

Given the scale and (abstract) formal composition of Garnisonen, it is easy to understand how it came to represent bureaucracy rather than innovation. Nevertheless, the building was the result of significant innovations that transformed the architectural production of KBS. The innovations were in the spheres of architecture and administration, and quite often in the intersection of the two: the agency's bureaucratic processes appear to have stimulated both imaginative design and creative management. These changes should be understood as reflecting the quest for buildings that were more efficient to construct and easier to maintain. In general terms, this meant that KBS moved towards tighter economic control of building production. The changes were, however, not merely concerned with the managerial and economic aspects of the agency's activities, but permeated the whole organisation and its employees. The new ideas had both direct and indirect bearing on architecture and architectural practices.

ARCHITECTURAL PROGRAMMING AND PERFORMANCE SPECIFICATIONS

One major shift that took place both in Sweden and internationally, especially in larger, more bureaucratic offices, was the increasing importance of 'performance' as a basis for stating building requirements, specifications and evaluation criteria.[8] This development marked the beginning of a new emphasis on processes within the planning and drafting of building programmes. The new practice could be described as 'architectural programming', explained by the architect and scholar Edith Cherry as 'the research and decision-making process that defines the problem to be solved by design'.[9] The

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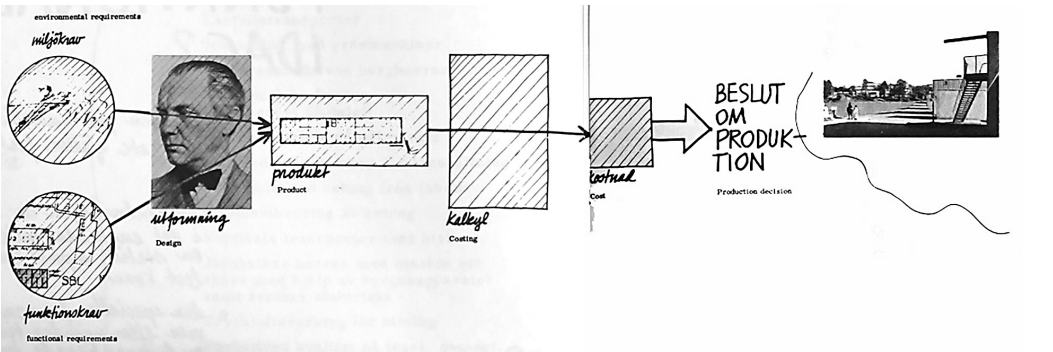

Fig. 2. *Diagram of the building process as envisioned by Swedish functionalism post-1930, from KBS,* Arkitektur-Struktur, *1969*

reinterpretation of performance went hand in hand with a new understanding of 'function' that also prompted the use of other terms such as 'character requirements' and 'performance requirements', and the particular practice of writing 'performance specifications'.[10] Compared to earlier specifications that described the form and material of an object, the performance specification explains 'what a designed object should do'.[11] According to Cherry, this means that 'a good architectural programme does not anticipate what a project should look like or what it should be made of'.[12] Instead, it requires designers to move away from form-giving and concentrate on process.

Architectural programming became a central feature of the practice of KBS in the late 1960s (although it did not use the term, which became increasingly common in the 1970s and 1980s).[13] This development primarily emerged out of the agency's wish to find more open-ended working methods that did not determine form and material at an early stage of each project. KBS believed that the problem with the existing building process was that the design happened at a very early stage. As a result, the architect's design choices overly determined cost and technical requirements (Fig. 2). The order of the process also meant that if something needed to be changed towards the end, everything had to be done again from the beginning, having an impact on both efficiency and cost. With the existing practice of writing specifications for building characteristics, technical solutions and the selection of materials were decided at an early stage in the building process. KBS argued that this had 'a hampering effect on efforts to create the most functional building possible with a limited resource allocation'.[14] Instead, KBS proposed that technical requirements and cost estimates should form the initial focus and inform subsequent decisions (Fig. 3). The actual design phase should not start until all major decisions regarding the building had been made, and even then it should be what KBS called 'controlled design'. Central to this changed process was a shift from understanding building programmes and specifications to be about material and form, and instead seeing them in relation to performance — in other words, a shift from specifying what a building is to what it does. This modification of the building process could be understood in relation to larger international trends in architecture, and as proof of the KBS being an early proponent of architectural programming.

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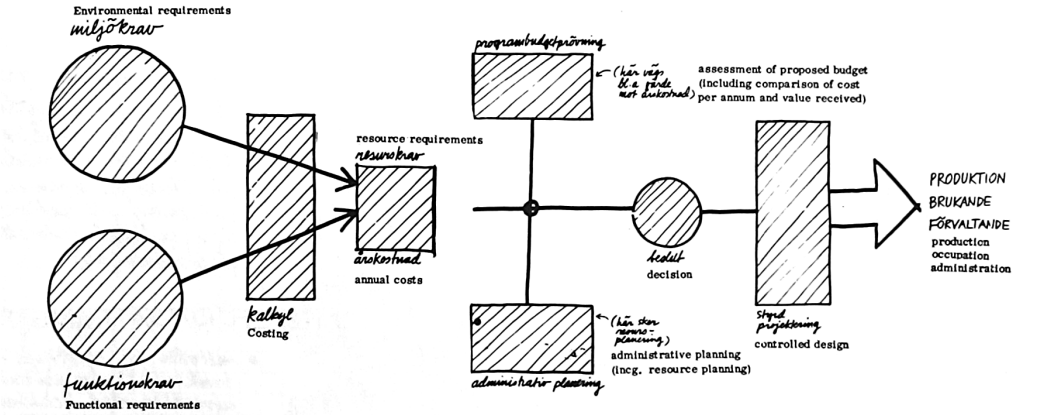

Fig. 3. *Diagram of proposed new building process, from KBS*, Arkitektur-Struktur, *1969*

The building programme for the national telecom headquarters in Farsta, located some eight kilometres south of Stockholm city centre, was set out almost entirely in quantifiable terms (Figs 4 and 5). It stated that the office building should have a total of 900 cellular offices, 34 per cent of which should be 10 m², 44 per cent 15 m² and 14 per cent 20 m².[15] These room sizes were determined by earlier research into office buildings, published as a KBS report in 1966. This recommended suitable sizes for cell offices depending on whether they were one- or two-person workspaces, rooms for clerks, officers or executives, or if the room needed to accommodate temporary visitors or meetings.[16] The room dimensions were those considered optimal in relation to use, area efficiency, work environment and building costs; they were determined by research and testing in full-scale laboratories, with mock-ups built at 1:1 scale tested via time and motion studies, observations of use and interviews with users, and so on, as well as in real building projects. The size recommendations could be understood in the same way as an ideal room temperature is recommended in the specifications of new buildings, often with an indication of the maximum deviation from the ideal. The dimensions of the whole building in turn related to a plan module derived from the prefabrication of components. Prefabricated concrete panels were used for both floors and façades. By severely limiting any variation in dimensions, the project was able to reuse the same forms for casting and could even afford to cast in steel — allowing even more exact execution of measurements and the interlocking of various parts — while still keeping production costs down through serial production.

An anonymous review of the national telecom headquarters in the Swedish magazine *Arkitektur* in 1970 included some reflections on the relationship between technical methods and how a building looked and worked.[17] In what seems to be a plea for structuralist and materialist realisation, the reviewer ultimately argued that the 'production conditions' must 'play a part' and also be given 'considerable agency' in the final result. The Farsta telecom project was deemed successful because the 'technical and economical requirements' of the buildings were 'mastered in a straightforward

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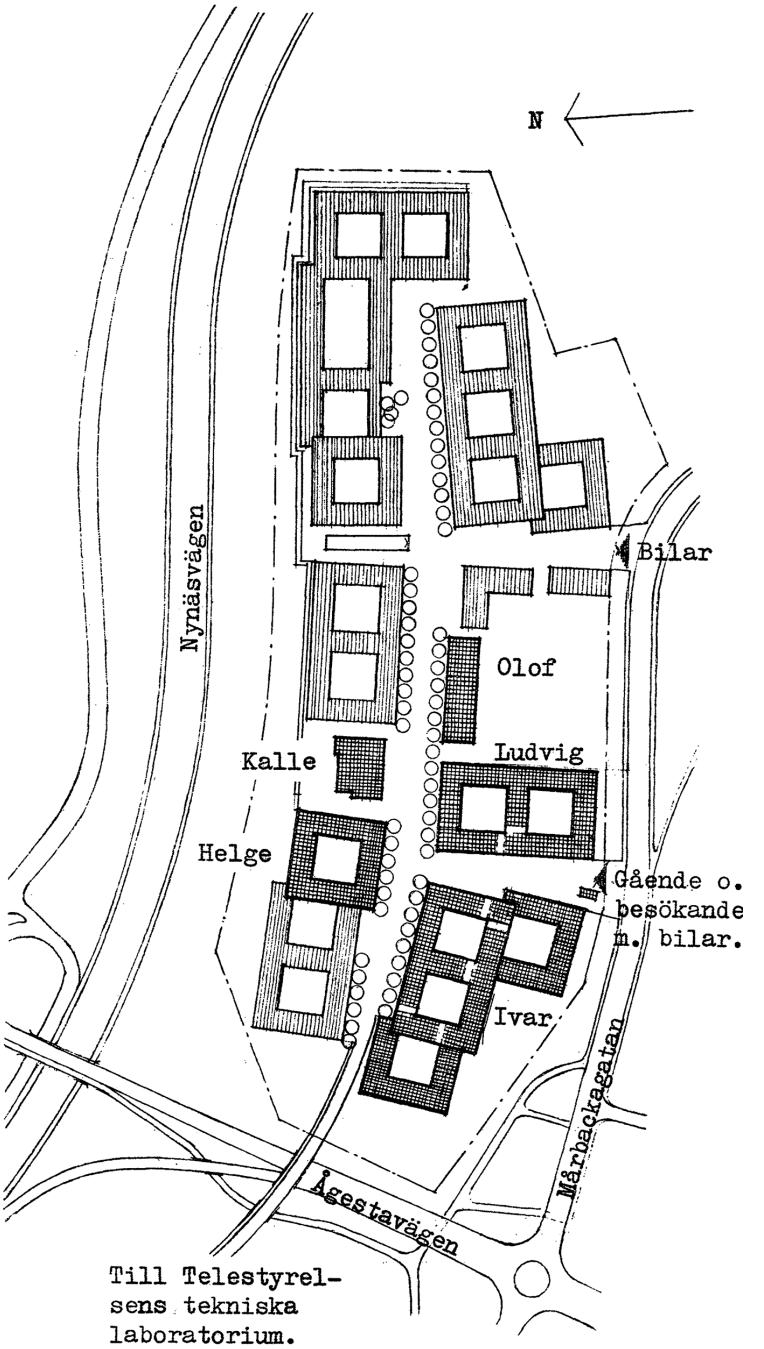

Fig. 4. *National telecom headquarters (Telestyrelsen), Farsta, plan of building site, date unknown, from KBS report no. 12,* Kontorshusutredning 1966, *p. 218*

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Fig. 5. *National telecom headquarters (Telestyrelsen), Farsta, photograph taken shortly after completion in 1969 (Tekniska museet)*

way', 'resulting in repetition' and 'positive' balance.[18] The reviewer thus acknowledged the notion of the bureaucratic architect as one who is necessarily conditioned by the 'bureaucracy' of the builder and the building programme, but who also recognises the ability, and perhaps even the obligation, of the architect to make a building whose form, material and use are congruent with such requirements and conditions.

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THE SEPARATION OF PARTS, OR CLASSIFICATION ACCORDING TO LIFESPAN

One of the numerous changes that took place at KBS during the late 1960s was the adoption of a new approach towards building that the agency called 'the separation of parts' (Fig. 6). The idea was quite simple: to separate different building parts according to their lifespan in order to make buildings more adaptable to future changes, and cheaper and easier to maintain. The component parts of a building were categorised into three groups: (1) 'function or activity-related parts' that 'are short-lived, can be replaced or removed and can be adapted to changing activities'; (2) 'building-related parts' that 'are long-lived, static and cannot easily be moved'; and (3) 'environment-related parts' (also called 'society-related parts') which 'together with other parts constitute the whole environment'.[19] From this, a methodology was created through which KBS could organise the entire building process, leading to building structures in which short-lived parts could be exchanged and parts with longer lives maintained. Both the planning and construction phases were affected, as this way of thinking guided the ways that various parts were assembled, installed and maintained.

KBS stated in several reports that a building should be grounded in 'the society-related parts' — that is, the city's streets, blocks and supply systems such as water and sanitation.[20] Society-related parts were determined by city reference grids and coordinates, as well as traditional divisions into blocks and lots. Long-term 'building-related parts' included the structural framework of columns, beams and floors, together with façade cladding, windows, exterior doors and some interior walls. Finally, 'activity-related parts' comprised interior walls and partitions, as well as furniture and loose fixings.

Garnisonen was the first demonstration of this new approach. For the building parts the aim was to develop 'detailed solutions' that remained general enough to be applied throughout the entire complex. Variations of details were limited 'so that effects of repetition could be obtained', with details technically and aesthetically systematised and coordinated in relation to the whole, while ensuring that the solutions stayed within the cost limits of the building.[21] The separation of parts was compatible with other new ideas and practices at KBS and demonstrated the features that made the development of programmes at the agency successful: planning, costing, bidding, ordering and purchase of building components were all centrally managed, creating substantial savings in time and cost. Everything from prefabricated doors and windows to load-bearing wall modules and structural beams could be systematically coordinated during all phases of production. A single model of office desk that best met the generalised criteria of price, function and size would be ordered for all of the agency's ongoing office construction projects.

A new budget system brought yet more changes to the organisation. In 1968, KBS started using a programme budgeting system — a Swedish version of the planning-programming-budgeting system (PPBS) in the US — after it was selected as one of a dozen agencies to test the system in Swedish public administration.[22] This meant instigating budgets based on programmes that comprised many building projects of the same type.[23] Programmes and budgets for construction projects were divided according to building types, grouped in a way that would bring economic and administrative advantages, for instance, by putting all offices and buildings for higher education as a single budget item. This change promised the advantages of an economy of scale where everything could be streamlined. In terms of architecture, it meant at best that planning,

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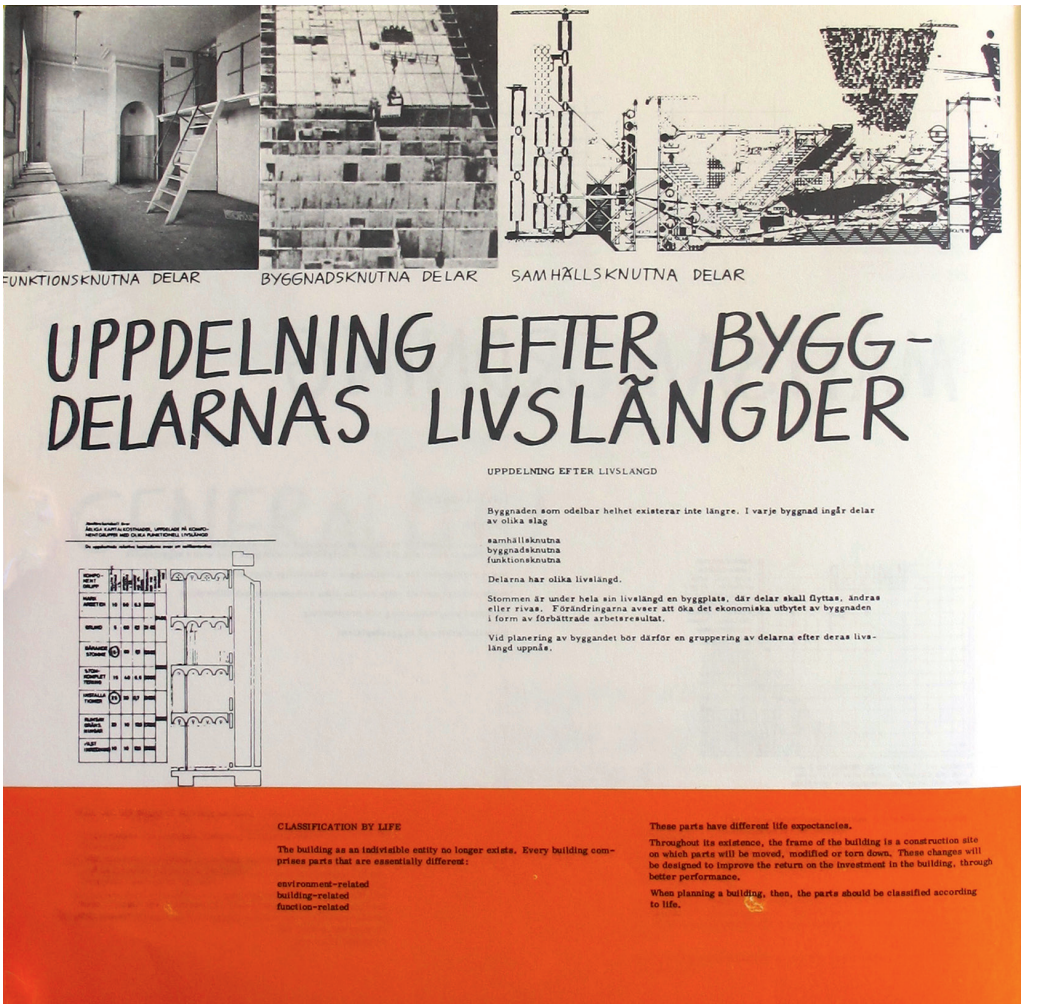

Fig. 6. *'Classification According to the Lifespan of Building Parts', from KBS,* Arkitektur-Struktur, *1969*

design and production would be generalised. At worst, it threatened to eliminate the traditional role of the architect as designer and reduce the architect to the coordinator of already ordered parts.

At Garnisonen, however, the architect was still very much in charge. Parallel to the planning and construction of the building, the lead architect Tage Hertzell worked with the consultants commissioned by KBS to conduct various technical and process-led investigations. He designed the concrete modules and selected the off-the-shelf products that were used in the building.[24] Although the project was guided by economic and management principles rather than spatial ideas, Hertzell and his team regarded these principles as building requirements and starting points for design that triggered

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their professional creativity.[25] According to Hertzell, the consultants who worked with KBS would 'read-up' on the agency's ideas so as to be able to incorporate them into the design and bring the building into line with KBS's overall aims.[26]

Nonetheless, Hertzell and his team were not in charge of all aspects of the design. Although the selection of off-the-shelf products could be regarded as design decisions, there were other aspects of the building that were determined by more technical and economic motives. The lightweight curtain walls at Garnisonen, for example, were designed and constructed following an open tendering process carried out on the basis of performance requirements.[27] In the procurement brief, firms were asked to 'construct and tender a complete façade according to specified conditions', including the needs of ventilation, cleaning, connecting lightweight interior walls and attaching sun shades and other objects.[28] Other aspects were conceived as absolute measurable performances — for example, heat, noise, fire and moisture-related requirements, as well as the total weight of the façade including external loads. Bidders received information on the connecting building parts and their tolerances, together with the permitted and anticipated structural movements; it was then up to the bidder to suggest the detailed design and choice of material finishes.

Making the tender process rely on performance requirements was in line with ideas of promoting open competition and freedom of suppliers. A number of arguments were advanced for this new direction: first, that it would further the building industry's efforts to industrialise construction; second, it would encourage suppliers to put more money and effort into research, development and innovation; third, it would use specific knowledge and expertise and align with the particular production capacity of the supplier; and fourth, it would reduce costs and risks for the builder/purchaser and increase competition between various construction systems and materials. The arguments for performance-based tendering and increased industrialised production were, on a more fundamental level, based on liberal ideas of economic development and smaller government, and aligned neatly with what would later be called supply-side economics. It seems unlikely that KBS understood all the ideological implications of the 'freedom of suppliers' argument (although the promotion of competitive markets was clear enough). Instead, the agency's realignment with these ideas seems to have been largely based on seemingly neutral new administrative methods and tools, which included a fresh emphasis on management and economic steering.

MODULAR PLANNING AND GRIDS

Closely related to the concept of 'the separation of parts' was the idea of 'dimensional coordination'. Set out in the KBS report *Kontorshusutredning 1966* (*Office Building Investigation 1966*), this concept also sprang from a quest for efficiency in building production and was directly linked to both the administrative/managerial and planning/design worlds. Dimensional coordination aligned well with the architectural programming of KBS, as it was not only a spatial practice of giving form to rooms, but also a non-spatial practice of, for instance, quantifying the number of same-size elements, parts, rooms, and so on. Central to the work with dimensional coordination was the use of grids. For KBS, it meant that grids should guide the localisation and

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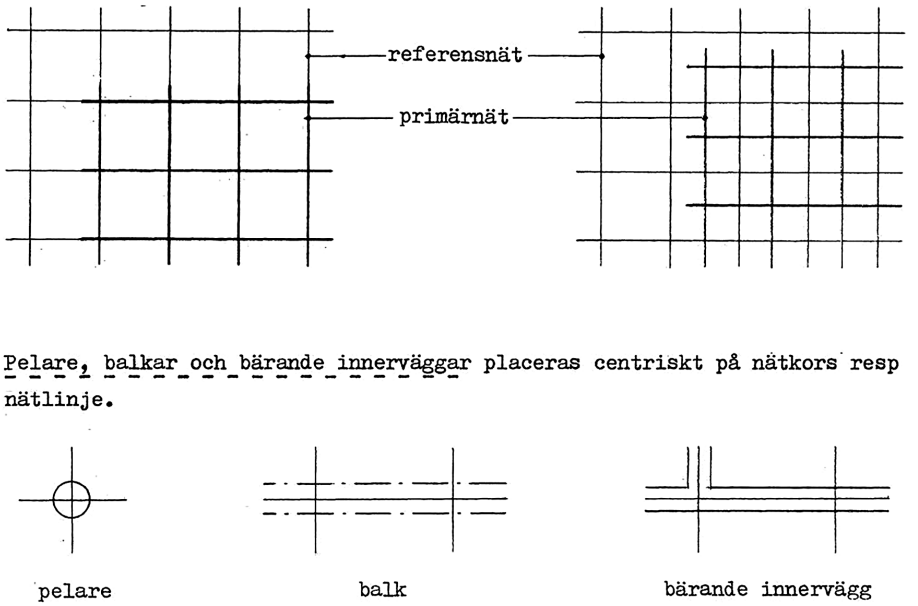

Fig. 7. *Diagram of different grids used by KBS, 1966, showing (top left) the primary grid placed in line with the reference grid or (top right) shifted in two directions in relation to it, with (below) columns, beams and load-bearing walls centred on either intersections or lines of the primary grid, from KBS report no. 12,* Kontorshusutredning 1966, *p. 34*

placing of buildings and also assist with the planning and design of buildings. For this purpose, the agency presented a typology of grids with a range of scales that included a reference grid, primary grid, secondary grid, vertical module and a spatial mesh (Fig. 7).[29]

The reference grid, it was outlined, should stand in direct relation to existing grids of cities or municipalities, and ultimately in relation to the national grid.[30] If possible, the reference grid should be oriented at right angles to an existing grid, or otherwise tilted so as to follow the site and the planned building. In principle, the reference grid was composed of a mesh of 12 × 12M, or 1200 × 1200 mm (the 100 mm 'M' or 'Module' being derived from the national building standards).[31] Once the reference grid was given, the building's placement could be determined with the help of a 'primary' and a 'secondary' grid, both of which were laid out squarely on the reference grid (see Fig. 7). The primary grid was also 12 × 12M and hence would either coincide with the reference grid or depart from it by 6M (600 mm) in two directions. Load-bearing columns, beams and internal walls were to be placed on the primary grid, whereas load-bearing outer walls had two positioning alternatives, either 'so that the inner surface is 1.5M inside the outer module of the primary grid' or 'so that its inner surface coincides with the outer module line in the primary grid'.[32] The basic idea of modular planning, based on predetermined modular dimensions or preferred sizes, was also related to the rejection by KBS of the functionalist precept of basing design and dimensions on functional

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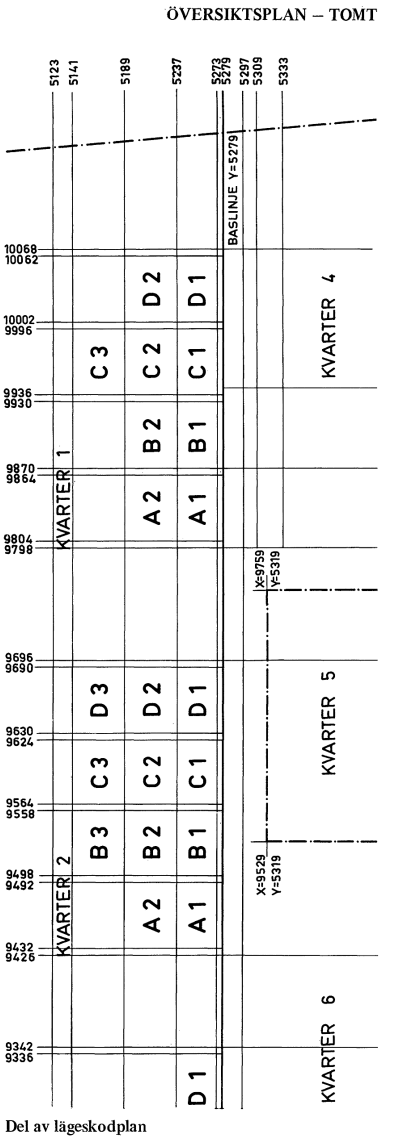

Fig. 8. *Location codes for Linköping University campus, showing positioning of buildings in different 'quarters' on the building site, from KBS report no. 80,* Metodredovisning Linköpings högskola, *1972, p. 33*

analyses unique to each building project. The modular planning and use of grids by KBS could be understood as systems through which the practices of architectural programming tested the various parameters in order to find an optimal programme and, eventually, an optimal design.

This article's third and last example, Linköping University, was, like Garnisonen, based on a generalised design scheme with flexible walls and fixings. Designed in 1970, the project was one of the clearest and most consistent examples of the KBS approach to

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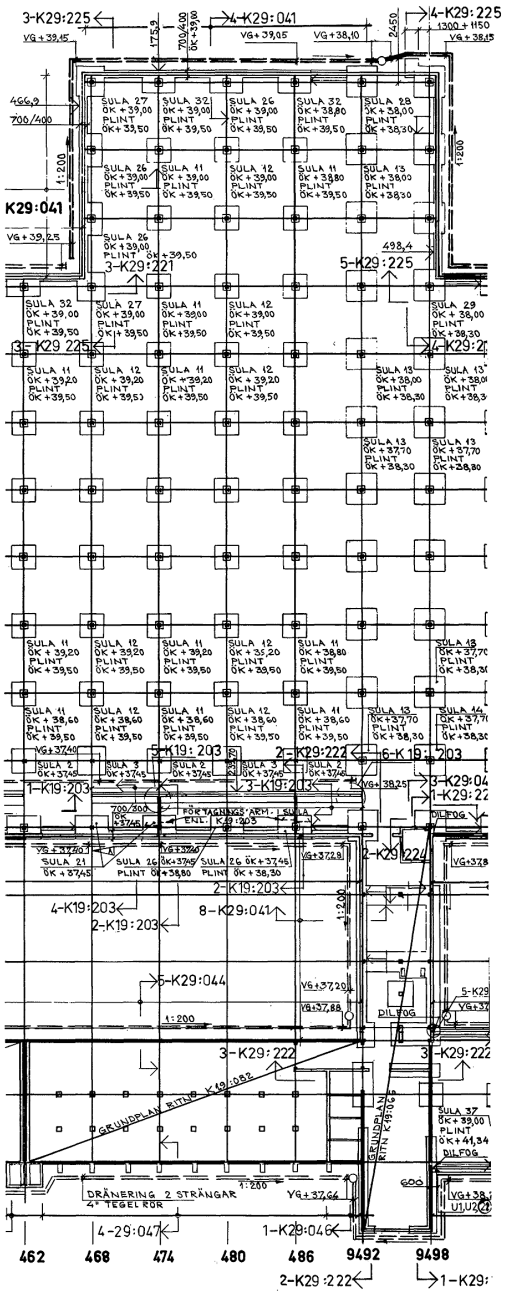

Fig. 9. *Linköping University, 1972, ground-floor plan indicating positioning of columns and load-bearing walls on the reference grid, which in this project corresponded exactly to the national grid, from KBS report no. 80*, Metodredovisning Linköpings högskola, *1972, p. 60*

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grids and modular planning, with the various university buildings meticulously placed according to the reference grid and primary grid, which in turn correspond directly to the national reference grid. Consequently, virtually everything on campus, from buildings to classrooms or technical installations such as ventilation, electricity and water, was identified by real GIS locations (Figs 8 and 9).

For this project, in 1971 KBS produced the *Produktredovisning Linköpings högskola* (*Product Presentation for Linköpings University*). This report was intended as 'a means for the transfer of intentions and knowledge from the planning stage to the management stage, in order for the user to get acquainted with the facility and its functioning — a type of instructions for use'.[33] The idea was that there was no need to supply final drawings of the buildings; instead, the product presentation 'better answer[ed] to the new approach' of KBS 'and to the current requirements for rational management of the premises'.[34] The building was treated like any technical product that could be maintained, repaired and fixed, but also adjusted, adapted and extended. The product presentation would enable the buildings to be properly understood and thus more easily maintained or adjusted, at a lower cost, while at the same time remaining true to the ideas of KBS, the planners and the architects.

AN ARCHITECTURE OF TOTAL EFFICIENCY

In some ways, architectural programming extended architects' area of interest, most notably through the immediate consideration of costs and building performances. But it also redistributed certain architectural duties and influence to other consultants. Dimensional coordination was one such example. In Linköping, the planning and design of the campus was done almost entirely by using mathematical calculations to find common denominators that provided the 'right' number of alternatives and combinations (Fig. 10). The goals of dimensional coordination were to meet the building and budget requirements, deliver the desired functions, optimise the potential of the building site and project brief, and produce a university campus with buildings that could be efficiently constructed. While clear in themselves, these goals were open to multiple interpretations.

Nevertheless, the efficiency of the completed buildings was not seen to be enough. Soon after it opened in 1972, the university organised an open discussion between students and university employees and the technical director (since 1965) of KBS, the architect Olof Eriksson (born 1926). Eriksson was asked: 'What ideology does one have when building these kinds of colleges? And what type of efficiency does one seek?' Eriksson tried to respond:

> One seeks total efficiency. But you have to understand that one does not only plan for education, but also the right education; one creates conditions that are good for the people who live and work in a school. Everyone who works in this field [the planning and design of schools] should agree on this objective. Then there are economic limits, which in the 1960s have meant that considerable time and brainpower have been devoted to the rational utilisation of premises. The most important economic factor when planning premises for higher education is the number of hours the different spaces can be used. Rooms that are

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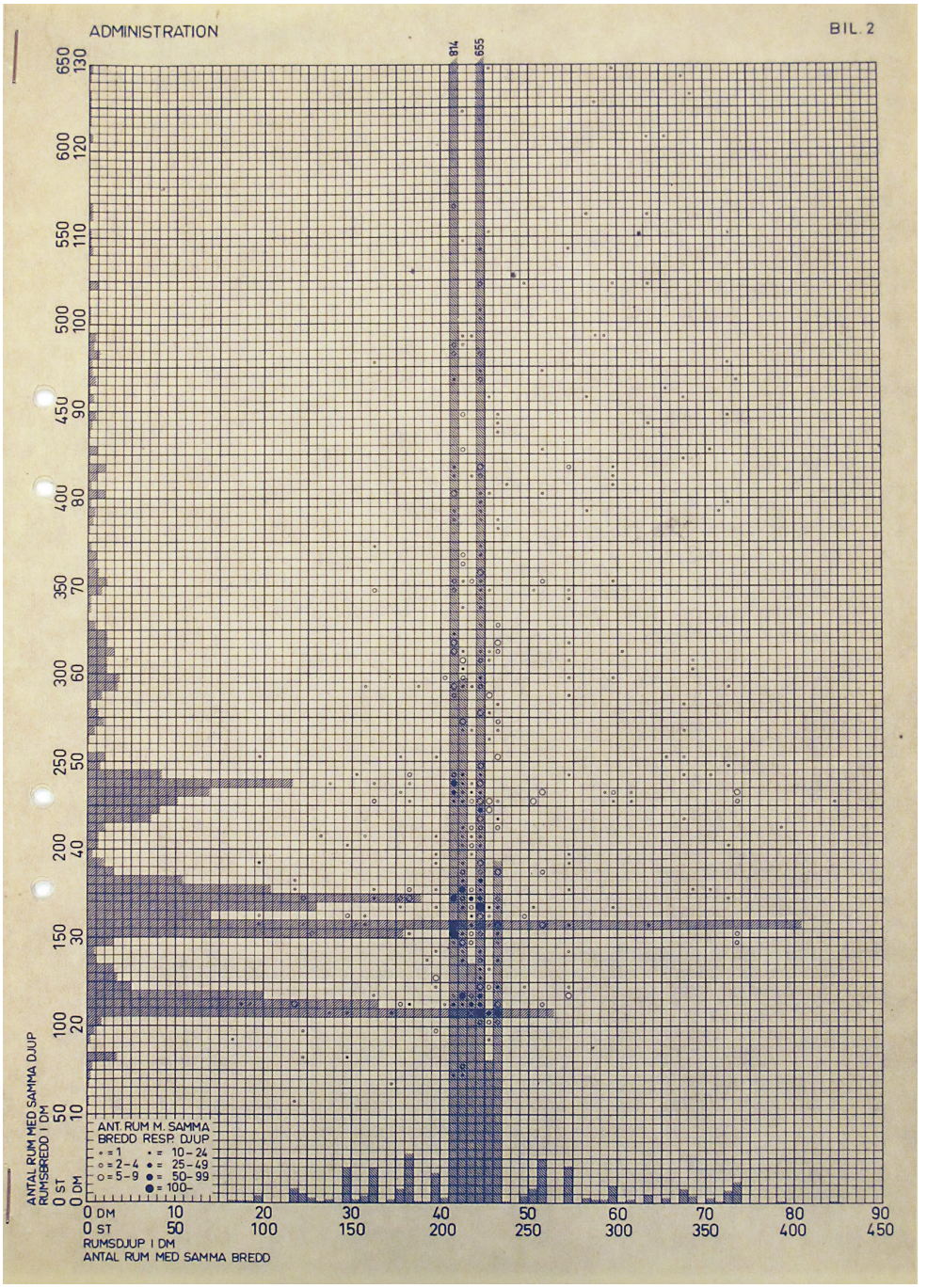

Fig. 10. *KBS diagram showing number of rooms with the same width (x axis) and depth (y axis), late 1960s, copyprint on paper (Riksarkivet, Stockholm)*

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> left empty for half the day are more expensive than the most lavish interiors. I think this kind of thinking has led to these types of organisations where rooms are brought together in zones, with laboratories separated from institutional premises. This is, however, first a question of how education is organised.[35]

The 'total efficiency' that Eriksson called for was not the sole responsibility of designers on the one hand, or educators and university administrators on the other. Instead, only recognition of the interdependency of design, education and administration could lead to total efficiency. The systematic planning of buildings for higher education was thus a practice requiring interdisciplinary and comprehensive thinking. This idea was hardly novel, since it had characterised modernist design and planning processes from the 1920s onwards. Yet Eriksson's response also illustrates the much more complex development of architectural design at this time and its increasing reliance on efficient financial planning. Eriksson stated that efficiency was primarily dependent on 'how education is organised', which we might think was rooted in pedagogical and educational expertise. In the subsequent debate, however, it becomes clear that it was merely a room-booking exercise designed to achieve the full exploitation of the premises (the goal was forty hours of occupation per week). The economic approach to maximising the available space is easy to understand. This type of planning identified the optimal number of square metres per student (or, depending on what was being planned, the number of students per square metre), with these 'facts' then becoming real requirements for the writing of programmes and the subsequent planning, design and construction of universities.

In this view, the success of university campus design was to be measured in relation to the number of square metres per student, as well as other requirements of standards and equipment. But when design and pedagogical considerations are linked to the fact-checking fulfilment of quantitative requirements, the link between design and quality is dependent on measurable prerequisites of the building programme. The safeguarding of quality was thus positioned in the written building requirements and tender documents which, it was hoped, would lead to an excellent product.[36] In the case of Linköping University, the economic restrictions of the project resulted in the omission or reduction of a number of basic facilities, including meeting and coffee rooms, leading to fierce criticism of the design and planning of the building. In contrast, the users of the Garnisonen building were more stable and they remained in the building (and often in one place in the building) for most of the day. Thus, the building programme was less dependent on the kind of administrative programming underpinning the Linköping University project.

However, the regularity of occupancy at Garnisonen led to other unforeseen consequences of a rather practical nature. When it opened, Garnisonen was described as 'the largest office building in northern Europe', housing around 2,500 workers.[37] When combined with those working in nearby institutions, this meant there were almost 5,000 people commuting to the immediate vicinity of Garnisonen at approximately the same time every day, resulting in congestion and delays on buses, subways and roads. The solution was to introduce flexitime, the first time it had been used in Sweden for public employees.[38] Ultimately, flexible working hours would be a

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more ground-breaking innovation than flexible working environments, but the ideas behind it, and the benefits or drawback of its introduction, stemmed from similar ideological underpinnings.[39]

KBS AND BEYOND

The redefinition of KBS practices and processes was, as we have seen, primarily the result of changes in the methods and instruments deployed at the agency. These practices and processes were in many ways ground-breaking — for example, the use of systematised modular coordination and early adoption of the performance concept in building specifications and evaluations. But they were also developed in relation to, and in tandem with, national building standards, in which KBS was heavily involved, in particular with the development of national building regulations. Both the building practices and the drafting and advising activities were directly influenced by the findings of various research projects and the agency's careful documentation of the learning gained during previous building projects. KBS was positioned at the heart of both research and innovation and the drafting of new regulations. And it is at this particular threshold between practice, research and policy-making that the bureaucratic nature of the agency is most pronounced. This bureaucracy encompassed not only practices and policies, but also a sort of institutional awareness that allowed, and perhaps even encouraged, innovative thinking, new solutions and creativity. Although the main perspective has been to view architecture and public administration at KBS as intertwined, there is clear evidence that design practices are subject to 'epistemic drift' whereby architectural duties and evaluations of quality are modified following 'external quality assessments' based on considerations of economy and organisation.[40]

With KBS we see how instructions, guidelines, standards, norms, regulations and rules directly relate to building practices and cultures, with building recommendations decided and judged in relation to 'codes of practice'.[41] The addition or revision of the same instructions or guidelines is often used to change codes of practice, whether to follow technical developments or to answer to new social or environmental requirements. Furthermore, the rationalisation of regulations, such as the merging of guidelines or the simplification or removal of rules (the cutting of red tape), is used to change both practice (making building easier) and economic frameworks (making building more profitable). From a negative viewpoint, changes to norms, standards and regulations can mean that these are no longer aligned with codes of practice and thus are experienced as substandard, excessive or irrelevant. In contrast, the same changes could be perceived as in touch with current realities, relevant and purposeful. What is clear is that norms, standards and regulations are directly related to professional knowledge and practice, to institutional and organisational settings, and to the role of power and the margins of profit.

ACKNOWLEDGEMENTS

I would like to thank the anonymous reviewers for their insightful comments and suggestions, which greatly improved the article. I also wish to acknowledge the professional and careful editing provided by the editors, and thank the guest editors for including my essay in the special collection and for giving valuable feedback and support.

BIOGRAPHY

Erik Sigge is an architectural historian and preservationist, currently employed in the Department of Architecture and the Built Environment at Lund University. From 2020–21, he was a postdoctoral fellow at MIT. Erik received his PhD in architectural history from KTH Royal Institute of Technology in Stockholm (2017), where he also taught and researched from 2010 to 2019. Previously, he was director of Educational and Cultural Programs at Scandinavia House in New York. He holds an MSc in historic preservation from Columbia University (2003) and a BSc in integrated conservation of the built environment from the University of Gothenburg (2000). Email: erik.sigge@abm.lth.se

NOTES

1 See Max Weber, 'Bureaucracy', in *Weber's Rationalism and Modern Society: New Translations on Politics, Bureaucracy, and Social Stratification*, ed. and trans. by Tony Waters and Dagmar Waters (Basingstoke, Hampshire: Palgrave Macmillan, 2015), pp. 73–128; Martin Albrow, *Bureaucracy* (London: Pall Mall Press, 1970); Ben Kafka, *The Demon of Writing: Powers and Failures of Paperwork* (New York: Zone Books, 2012); and David Graeber, *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy* (New York: Melville House, 2015).

2 See KBS, *Byggnadsstyrelsen: Byggnadsverk och verksamhet* (Stockholm: Byggnadsstyrelsen, 1983). The architectural office A4 was established in 1957 by Tage Hertzell, Lennart Lundström, John Sjöström and Ragnar Uppman. The office merged with ELLT in 1978 and formed a new practice called Coordinator, which then merged with White Arkitekter in 1991. Today it is one of the largest offices in Scandinavia.

3 Until 1960, KBS was in charge of developing and issuing Swedish building standards, and released BABS 46, BABS 50 and BABS 60 (*Byggnadsstyrelsens anvisningar till byggnadsstadgan* — the instructions given by KBS to the national building charter). During the 1960s, KBS continued to contribute to the new building standards issued by the National Board of Planning (Planverket), first issued in 1967 as SBN 67. For a history of Swedish building standards, see <boverket.se> [accessed on 24 July 2022].

4 KBS, *Byggnadsstyrelsen*, p. 38.

5 Olof Eriksson, *Byggbeställare i brytningstid: Bostadsektorn och statligt byggande under miljonprogramstiden* (Stockholm: Byggforskningsrådet, 1994), pp. 110–12.

6 For instance, KBS report no. 12, *Kontorshusutredning 1966* (Stockholm: Byggnadsstyrelsen, 1967), and KBS report no. 57, *Incitamentsavtal* (Stockholm: Byggnadsstyrelsen, 1970).

7 Ragnar Uppman, *I arkitektens öga* (Stockholm: Carlsson, 2006), p. 76 (author's translation).

8 As discussed by Katie Lloyd Thomas and Tilo Amhoff, 'Writing Work: Changing Practices of Architectural Specification', in *The Architect as Worker: Immaterial Labor, the Creative Class, and the Politics of Design*, ed. by Peggy Deamer (London: Bloomsbury, 2015), pp. 121–43.

9 Edith Cherry, *Programming for Design: From Theory to Practice* (New York: John Wiley & Sons, 1999), p. 3.

10 In Sweden, the use of performance requirements was established by SBN 67 — *Svensk byggnorm 67, Publikation nr 1* (Stockholm: Statens planverk, 1967) — and they were modelled on the Swedish classification system of the SfB (Samarbetskommittén för Byggnadsfrågor), established as a 'central secretariat' funded by the government in 1946. In the 1960s, the SfB system was adopted internationally for many national building standards (for example, NBS in the UK), followed later by performance specifications. On the early use of performance requirements in Sweden, see Jens Knocke, *En funktionsanalytisk byggnorm — Förslag till principer*, Byggforskningen report no. 21 (Stockholm: Statens institut för byggnadsforskning, 1970).

11 Cherry, *Programming*, p. 10.

12 Cherry, *Programming*, pp. 9–10.

13 The term 'programming' was increasingly used at KBS during the 1960s and denoted the general transformations within design and engineering in which the application of systems analysis led designers to work with 'programming' rather than form-giving.

14 KBS, *Incitamentsavtal*, appendix 2, p. 2.

15 For more on modular planning and production issues in the national telecom headquarters, see KBS, *Kontorshusutredning 1966*, and *Arkitektur*, 6 (1970), pp. 31–35.

16 KBS, *Kontorshusutredning 1966*, p. 217.

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17 'Televerkets förvaltingsbyggnader i Farsta', *Arkitektur*, 6 (1970), pp. 31–35.
18 'Televerkets förvaltingsbyggnader i Farsta', p. 34.
19 KBS, *Architecture-Structure*, exhibition catalogue, Swedish Museum of Architecture (Stockholm: Byggnadsstyrelsen, 1969). Somewhat confusingly, in the English version of the KBS text, 'society-related parts' was used interchangeably with 'environment-related parts'. The exhibition *Architecture-Structure* was organised in 1968 to commemorate the anniversaries of KBS and its forerunners, celebrating 50, 150 and 350 years of civil service. It was commissioned by KBS and produced by the Swedish Museum of Architecture.
20 See KBS report no. 55, *Lokalproduktionsprocessen* (Stockholm: Byggnadsstyrelsen, 1970), p. 4.
21 KBS report no. 38, *Kv. Garnisonen i Stockholm, Projektrapport, del 1* (Stockholm: Byggnadsstyrelsen, 1971), p. 3/2.
22 KBS, 'Programbudgetering', Rapport av Byggnadstyrelsen, Dnr A 312, 20.8.1968, unpublished report found at Riksarkivet in Byggnadsstyrelsen: Utredningsbyrån: F3: 13.
23 On programme budgeting overall, see William F. West, *Program Budgeting and the Performance Movement* (Washington, DC: Georgetown University Press, 2011). For Sweden, see Göran Sundström, 'Management by Results: Its Origin and Development in the Case of the Swedish State', *International Public Management Journal*, 9, no. 4 (2006), pp. 399–427. For KBS, see Erik Sigge, 'Architecture's Red Tape: Government Building Construction in Sweden 1963–1973. The Example of the National Board of Public Building, KBS' (unpublished doctoral thesis, KTH Royal Institute of Technology, Stockholm, 2017), chapter 4, pp. 99–121.
24 Interview by the author with Tage Hertzell, 24 May 2016.
25 Interview by the author with Tage Hertzell, Gunnar Landberg and Allan Westerman, 28 January 2014.
26 The consultants referred to here were primarily the architectural offices that worked with KBS on various projects.
27 The winning bid came from the Swedish firm Gränges Essem Allack. It was one of eight proposals, two of which came from abroad. 'Lätta yttervägger', *Arkitektur*, 1 (1972), p. 25.
28 'Lätta yttervägger', p. 25.
29 KBS, *Kontorshusutredning 1966*, pp. 31–37.
30 KBS, *Kontorshusutredning 1966*, pp. 10, 31–37. The reference grid presented by KBS related to the national triangulation net, sometimes referred to as the national grid (*Rikets nät*).
31 KBS had adopted from the national building standards the use of M as a module with a ground measurement in decimetres (100 mm).
32 KBS, *Kontorshusutredning 1966*, p. 10.
33 KBS report no. 84, *Produktredovisning Linköpings högskola* (Stockholm: Byggnadsstyrelsen, 1971), unpaginated.
34 KBS report no. 84.
35 'Möte med nyttjarna — ett diskussionsreferat', *Arkitektur*, 7 (1972), p. 21. Olof Eriksson had graduated from KTH in 1947.
36 This was the conclusion drawn by Olof Eriksson in his memoirs: *Byggbeställare i brytningstid*, pp. 167–75.
37 Karolina Andersson, 'Huset bakom flextiden', *Svenska Dagbladet*, 21 March 2003. svd.se/a/b5be2a66-1224-3d51-bb15-1217758544d0/huset-bakom-flextiden_[accessed on 25 April 2022].
38 The introduction of flexitime was preceded by intense public debate and its implementation was followed closely by the press.
39 On architectural notions of 'flexibility as political strategy', see Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture* (London: Thames & Hudson, 2000), p. 144.
40 Aant Elzinga, 'Research, Bureaucracy and the Drift of Epistemic Criteria', in *The University Research System: The Public Policies of the Home of Scientists*, ed. by Björn Wittrock and Aant Elzinga (Stockholm: Almqvist & Wiksell, 1984), pp. 191–220.
41 'Codes of practice' here means being attuned to current building methods and techniques. It is a phrase that was used by the Swedish Samarbetskommittén för byggnadsfrågor (SfB). See Lars Magnus Giertz, *SfB and Its Development 1950–1980* (Dublin: CIB/SfB International Bureau, 1982).