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Book reviews

Nixdorf, S.: **StadiumATLAS. Technical Recommendations for Grandstands in Modern Stadiums.** Berlin: Ernst & Sohn 2008. 368 pages, 695 figures. Hardcover, 30 × 21.5 cm. ISBN 978-3-433-01851-4. € 149.00

According to the preface, the aim of the "StadiumATLAS" is to provide "a planning guide for the construction of spectator stands". This falls far short of what this book really is: a most comprehensive study of all aspects related to the design of modern sports complexes.

The planning of sports arenas has evolved from the design of the simple and functional facilities of the past to the design of today's complex multifunctional arenas. As a result of this development, the focus has shifted from sports activities to issues of spectator comfort and entertainment. The demand for optimum viewing conditions has fundamentally changed stadium design, moving stands closer to the pitch and removing the historical athletics track from the stadium. If this trend continues, it will eventually lead to the controversial generation of completely enclosed multifunctional halls and to the transformation from outdoor sports to indoor sports. The author describes the evolution through his review of five generations of stadiums. The cultural impact of such structures is further emphasized in the following statement found in the book's epilogue: "stadia today … are making an important cultural contribution to architectural history. Stadia appear to have become a particular means of self-expression of a society".

This book attempts to cover all important design aspects systematically in 24 chapters. Starting with a historical review of stadia, amphitheatres and of the game of football itself, the author moves on to preliminary planning issues of urban design, noise control, traffic control and parking needs. The following chapters cover the questions of overall organisation, inside and outside the stadium, plus a description of all auxiliary functions such as VIP areas, corporate hospitality, stadium catering and media facilities. Due to their increasing impact on future stadium design, these auxiliary functions are described extensively in three chapters.

The requirements of the players, referee and stadium control are described with reference to the regulations and recommendations of the national and international football associations. These regulations, listed in a special chapter, are also largely the result of rising safety standards for the construction of spectator facilities following numerous casualties during sports events in stadiums. The greatest stadium disasters mentioned in chapter 19 underline the necessity to allocate not only an extremely well-documented portion of the book to this topic, but also to follow it up throughout the book. The author does so right from the start. When discussing overall organisational design concepts, he addresses general aspects of safety in terms of crowd control, security belts around the stadium, admission control systems and sector division and buffer zones within the auditorium.

The most obvious questions of safety, i.e. circulation and escape in emergencies, are explained in great depth. Based on European codes and standards, block layouts, gangways, stair dimensions and all possible variations of aisle design are discussed in a convincing and useful manner. In addition to addressing issues of spectator circulation safety, there is also a chapter allocated to the safety of athletes. This includes the design of the players' tunnel and aspects of securing the pitch by such controversial alternatives as fencing, barriers, moats or security guards. Safety issues also influence the design for optimum viewing conditions. The author thus shows us that the desire for visibility impacts on issues of safety because steeper stands require special measures in order to ensure safety.

The issue of optimum viewing conditions forms the central part of the "StadiumATLAS" in chapters 12 to 17. Anthropometrics and the physiology of the eye are the starting point for the design of grandstands, the geometry of which is thoroughly investigated with regard to its influence on C-values as well as on details and prefabrication of steps, seats and aisles. The author not only explains the complex determinants of C-values, but also shows how sightlines can have a significant influence on the overall shape of a stadium. In the last chapter of the book, this comprehensive description of sightlines is complemented by an evaluation of stand profiles and viewing distances for all stadiums constructed for the 2006 World Cup in Germany. The comparison of profiles clearly depicts the shallower gradient of the visual angle of stadiums with running tracks and the steeper gradient of the newer structures. The author refrains from making any value judgements. Instead, he intentionally wants to leave "a final evaluation of this particular issue to each individual planner".

The author exhibits the same attitude in the preceding chapter, in which he presents a more detailed analysis of all the stadiums for the 2006 World Cup. All projects are accurately represented in an unbiased description so the reader can draw his own conclusions. This seems to be a good strategy since all stadiums are indeed different, built to different criteria, with different contextual conditions and different budgets. However, since local conditions plus construction and maintenance costs are often more pressing design determinants than optimum viewing conditions, the lack of cost criteria may also be seen by some readers as the only drawback of this book. In light of this it would have been helpful for planners and decision-makers not only to be informed about all the detailed dimensions of a stadium, but also about local constraints and their impact on the overall costs, or at least the cost/seat ratio. The least expensive newly built World Cup stadium in Germany (Hannover) was built at one-fifth of the cost of the most expensive one (Munich) and the cost/seat ratios vary by more than 100 % among the stadiums analysed. As no more World Cup stadiums will be built in Germany in the coming decades, the "StadiumATLAS" will be most helpful for architects and decision-makers in other countries. Thus, the issue of local constraints and different financial conditions may have a tremendous impact on the design of stadiums. The standards of the FIFA as realised in the German stadiums have been considered a stepping stone for future World Cups. However, arenas such as the one belonging to the very affluent club Bayern Munich cannot be considered a seminal stadium in countries where clubs do not even own a stadium and where the city or state is struggling to develop a meaningful financial base for their venues.

Within this context, chapter 20 on adaptable stadiums hints at options for future stadium design. Since most stadiums are used only once every two weeks, their financial success often depends on secondary uses and on a multifunctional design. However, the most obvious alternative use (open-air festivals) requires additional money and

planning due to their additional accessibility and emergency features. The appealing qualities of retractable tiers and roofs, which address the potential for multifunctional use, have their price and can only be considered on the basis of a careful financial analysis of local options and conditions.

One of the most appealing features for resolving the financial burden of stadium operators could be achieved through ecological methods such as those put forward by the FIFA Green Goal programme in chapter 22. The examples show how intelligent and ecological design concepts can save costs by eliminating the need for frequent and costly turf renewal or for energy-consuming pitch ventilation and pitch lighting in narrow and high football stadiums. These issues could be addressed far more extensively and critically beyond the timid Green Goal programme, which seems to address ecological questions only half-heartedly. In modern stadiums, artificial heating of the pitch, floodlighting to TV standards, private cars driven right into the stadium parking structure and heated seats on the stands are clearly in conflict with the Green Goal programme. The cost- and energy-saving measures of the Green Goal programme have therefore seen only limited success so far (e.g. the introduction of waste management for the World Cup stadiums in 2006). Nevertheless, the reuse and return systems indicate a turning point in today's throw-away culture.

In the future, such initiatives will have to be extended to stadium design itself as the most disconcerting aspect is the rapid obsolescence of stadiums, leading to the dismantling of structures approximately every 30 years. Therefore, future stadium design, especially in less affluent countries, will have to address the question of how to recycle and reuse the existing stadium structure. In his analysis of stadiums already in operation, the author points out several projects that demonstrate how – through intelligent reuse and conversion – modern venues can be created that comply with the latest FIFA standards. These projects demonstrate a strategy towards what the Green Goal programme should be all about. How to design a stadium that is able to counteract obsolescence right from the start could be the theme of the author's next book. The "StadiumATLAS" is today's best-researched book on state-of-the-art stadium design and should be present on the desk of every planner involved in this field.

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