

ASIA SPORTS SUMMIT& EXPO BANGKOK

Prof. Jörg Joppien 24.09.2004

## **Developing Quality Sports Infrastructure& Facilities**

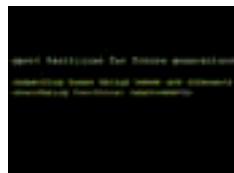
### **Sports Facilities for Future Generations Respecting Human Needs and Interests and Considering Functional Requirements**

I am very glad to have the chance to speak about sports here! Since my profession is in architecture and my passion is "Gestalt" design.

Therefore I have an aesthetic and social point of view.

When I think about "body", it is not only in the sense of a sportive body but generally about an architectural body in an empty space and particularly about the human body in relation to this space. I think about beauty, order and function.

In 1992 we won a competition for a sports hall. Since this time I have been involved with design and use of sports facilities.



This is the title of my talk:

Sports Facilities for Future Generations  
Respecting Human Needs and Interests and  
Considering Functional Requirements

As an architect I am not able to limit the aspects of sports facilities to functional requirements. I have to have a wholistic view- if possible - to the human being, to history and contemporary architecture developments.

So my questions are the following:

- 1. What are sports facilities?**
- 2. Who are the future generations?**
- 3. What are the needs and interests of these?**
- 4. And how are the functional requirements of the future sports facilities to be developed?**

## **First:**

### **1.0 What are sports facilities?**

We all have an idea what sports facilities might be, but this idea will differ from continent to continent, from human being to human being.



In Europe, at least, we have this picture of a stadium since antiquity and generally since the first modern Olympic games in Athens in 1896.



Here you see the Harrar Mountains in Ethiopia 2000m over sea level.

Now, is this another sports facility?

Obviously not.

But the Ethiopian runners whom we all know as gold, silver and bronze medal winners have apparently used these mountains as a training facility. So climatic and geological situations are just as important as static architectural manifestations.

Fundamentally we do not need sports facilities to do sports. All our vehicles to do sports are artificial. Basically sports are independent of set parameters. Sports are free, fun and for all.



We like to run in the sand or on the grass, we like the game and the competition in whatever space we find.

Why then do we talk so seriously about functional requirements?

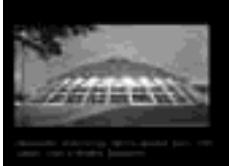
Apparently we do this in relation to the complexity of our cultural developments. These force us to invent stadiums, arenas, gyms, fields, courts, sports halls ...



... as this velodrome designed by the French architect Dominique Perrault intended for proposal of Berlin for the Olympic games 2000. This is designed for cold Germany, while in warm Sidney this covering design would not necessarily be needed.

He had the fantastic simple idea to design the roof as a bicycle wheel- a machine the cyclist is struggling in.

I as an architect in the tradition of the Bauhaus education like to think about sports facilities in relation to their special roofs, facade and seating constructions.



In 1957 the Italian architect Pier Luigi Nervi designed this sports hall, which looks like a modern pantheon for 5000 spectators.

I love the roof construction. It is nervous, sporty, muscular. The buildings aesthetic reminds me of an athletic body.



Also in my mind are usually more or less beautiful big buildings like the Nagano Olympic memorial Arena by Kajima Design Corporation with Kume Sekkei and HOK built in 1998, which I like to compare with the Amsterdam ArenA by Rob Schuurman and Sjoerd Soeters built for about 50.000 spectators in 1996.

Speaking about quality in terms of beauty, I personally like the Nagano Arena more, because it makes me think, that I could automatically shrink the huge building every time I wish. The roof is divided into parts and I have the sporty feeling of movement or rhythm.



The Amsterdam Arena to my mind is blown out of all proportion. It is a machine. But what for? Does it fulfill functional requirements rather than emotional?

Big is not, as the Netherlands architect Rem Kolhaas believes, necessarily beautiful per se.

Architectural quality for such sports facilities is not only determined by functional, technical and economical conditions.

I believe in a more "aesthetic simplicity" of the façade and the construction as a more humane solution.



In that sense my favorite sports building of the last decade is the Baseball Dome at Odate, Japan by Toyo Ito built in 1997.

I think you know that building. I like to show you only some details.



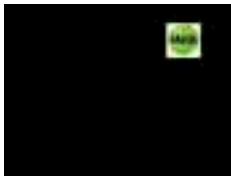
The dome follows the ballistic line of the ball



and the material follows with the wooden skeleton and the very thin skin the force of a very wide tension.



To me the roof is a perfect interpretation of the sportive activity below.



IAKS is organizing an international competition every 2 years in Cologne, Germany, which is, I think, a great contribution to developing architectural and functional quality for sport facilities. An independent jury has the possibility to compare built sport facilities not only by functional but also by aesthetics factors. After two years of use the client, architects and engineers are asked to apply for this.

But I like to come back to my question at the beginning, ladies and gentlemen.

What are in general sports facilities ?

Here I like to confuse you. What kind of facility is this?



It is called Basket Bar and was build by Dutch architects last year. It has a café or bar on first level and a basketball court on top of it.

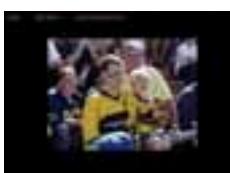
First of all- it is small,  
second, it is hybrid,  
and third, it is in the middle of the city or urban life.

I assume, that this kind of building in dense European cities is the future of sports facilities. Sports programmes and other programmes are put together and sampled in a way, we are not able to imagine right now.

If we put this in the context of the mountains of Ethiopia my thesis is, we should zoom down the size of our ideas and observe, what happens in every small special community and region in the world and at the same time we should zoom up and look at the climatic, geological and cultural, the religious and political conditions. We need more scales to get more prepared information and we need more creative visions for the development of sport facilities for our future generation.

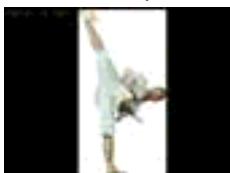
Now the second question arises.

## **2.0 What are the demands of the future generation?**



How can we know which generation we have to consider, when the generations are merging more and more into each other.  
Do we see here the son of the father of the grandfather?

Again, it depends, if we speak about aspects and conditions, for instance  
in Asia, kick boxing



or in Europe,



if we speak about male or female,



and so on...

Thinking about future generations we tend to think about young generations; in Europe it is different.

In Berlin, where I come from, 20% of the population is over 60 years old, and therefore they are more likely to be interested in fitness and wellness. We have many special fitness centers, which look more like health centers than body building centers.

In Bangkok there may be only 5% or less over 60 year olds.

Shall we draw then the conclusion, that in 20 years time we have also a lot of health centers in Bangkok?

Will the elderly be the sportswomen and -men of the future?

In any case developing new visions will be as simple or as complex as ever.

Their needs and interests depend on their social environment and their preconceived conditions. The environment gets more and more advanced and there is more and more information to be managed. At the same time the human needs stay simple. Water, food, shelter, work and games.

### **3.What are the needs and interests of this future generation?**

What are the needs and interests of this mixture of generations in a faster growing world?

We are having a revolution of speed. Airplanes, trains, cars accelerate. The human being is decelerating. He/ or she is sitting in the airplane, train or car. Which is now the main motivation for people to move?

I think it is more and more sports.

The so-called "young generation" in Germany has a love for sportswear



and sports equipment.



The sports shoe is more comfortable but what happens to the foot and to the knee running on asphalt.  
They like it so much that even other industries like the car industry use this to make designs for the elder generation.



Does not this car look to you like a sports shoe?

That does not mean, that the young generation generally works out, but they like to have the feeling that they are considered as somebody who does sports.



In Germany -not only in the USA- it is a problem that already every 5th school kid is obese.

I refer to the new US movie "super size me"?

I think the most popular sport in Germany is drinking a beer and having chips watching a soccer game on TV.

Passive sport is not to be neglected. It has an important impact on sports facilities.

The stadiums for the soccer world championship in Portugal and for the Olympic games in Athens were sometimes almost empty. To watch the Olympic Games in Athens for a week, a friend told me, required about 1000 Euro which roughly is 1200 Dollar. In future we probably do not need so much grandstands any more or if, then double sized with lift, chip machine and cool box, a VIP lounge for everybody.

I am aware, that now I am speaking about a special European problem, not to move and to eat as lot as you can and make events as expensive as possible.

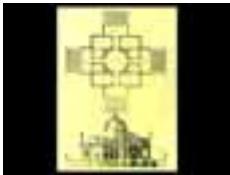
Discussing the needs and interests of a future generation in sports one could research human physics and psychology in different regions of the world.

For me as an architect it is helpful to ask, how the relationship between body and space changes and how it developed and impacted on buildings throughout history.

In the Renaissance Leonardo da Vinci drew the human being with beautiful measured proportions.



Today we know, he pressed the human being in a geometrical grid. In analogy to this Palladio designed his complicated buildings like the Villa Rotonda.



The "golden section" going back to human ideal proportions was used for all dimensions of this building.

Today in the western world we know, though buildings can be nevertheless ugly, that all our functional and aesthetic thoughts come out of the ideal proportions of the human body and its movements.



The ideal "man" for Le Corbusier in 1950 had the average size of a British Bobby 1.83m. He took for the first time real human measurements. As an architectural hero he forgot a little bit, that an English Bobby has not the size of an average human being. So all his modern buildings seem a little bit oversized,



but with quite nice and functional dimensions. Here you see Corbusiers Ronchamps. The curved wall and roof leads to the entrance area and let light flowing into the inner sacral space. Corbusier knew that the activity of "man" - here coming closer to a building - defines form and size of the space. The functions fit together as the organs in a human body.



Today we think human beings and their bodies can be designed by ourselves.



Doping,



genetic manipulation and silicon implants show possibilities and by the same times new limits.



This computer designed girl has unlimited long legs.  
Architecture offices like future systems do not only design virtual buildings, but actually build them,  
for instance this well known very expensive grandstand.



The "body" of this building seems so heavy, that nobody knows, how it stands up. It starts to fly. But buildings cannot fly. The Swiss architects Herzog&de Meuron designed the new Football Arena in Munich for the German Soccer Championship 2006 in that sense as a virtual piece of architecture.



The skin of the huge Allianz Arena changes according to its use of different sports clubs.



The material vanishes and changes into light.



Does the lonely soul in an anonymous western society vanish-swimming anywhere in a huge fat anonymous body?



No, I think it is different.

For the first time we, in some parts of the world, have the chance to get and to organize so much information, that we can fit any sport perfectly to our personal, individual body.

Sport becomes more and more individualized and so sports facilities might be sized down to a Basket Bar in the Netherlands.



What are the needs and interests of future generations? My thesis is, that we need sports facilities, which fit perfectly to the human body, to give room to the alternative movements of this body in an adequate environment. I may like to remind you, that if you are hungry you will not do sports, if you are handicapped you do different sports, if you are female, if you are a child and so on...

Why do I focus on this simple point, because I think we tend to forget in many sports facilities the human scale and I do not only mean over or undersized dimensions, I also mean an adequate general atmosphere of beauty, order and function.

Having this in mind, I like to come to the fourth question.

#### **4.0 How are then the functional requirements of future sports facilities to be developed?**

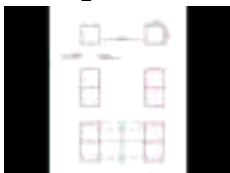
I like to look to another indicator for future sports facilities and its functional requirements, which are so to speak "trend sports" and I like to tell you this short story.



In Europe as in Germany industry is declining. An owner of an East German shuttlecock factory for badminton - about to shut down his firm- got the idea to develop another faster kind of shuttlecock and joint a large German sports equipment producer, the Fa. Benz- by the way member of IAKS. So a faster kind of Badminton, Speedminton, was born in Berlin.

At the same time German tennis superstar Boris Becker is lying on the beach in Mallorca and Steffi Graf gets babies in the USA.

50% of 1400 tennis halls are empty. Tennis is not a trendy sport anymore. So it was no accident that the competition area of speedminton just fitted into a normal tennis field.



On the following clip you see speedminton at night called "blackminton".



I like this image especially because the game defines the space like in a computer game. The actors are in a real situation that at the same time seems to be very virtual or unreal. They experience space in a new way.

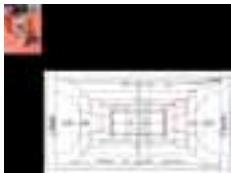
I think future generations are interested in intelligent and fast games with easy access everywhere and at anytime. They like more play, more games, perhaps less rules.



Sport is not only hard work.



Sometimes in the so-called "first world" it seems that sport is another kind of work ...



... with rules and requirements a young boy or girl does not know. Which colored line do they have to follow? Which game are they about to play?

As a nice thought: Shouldn't there be something like a laser beam, that projects every kind of rules on the floor, and a computer that can start to change these?

We all know that international competition rules change very slowly and if, mostly for commercial reasons.



Do you know this person? It is Willi Schäfer, the new German soccer coach of the Cameroon National Team. I guess this man will be the first person, who will change the size of a soccer field.

If the Cameroon soccer players learn former German soccer tactics **and** are running faster than all the other soccer players then the size of the soccer fields has to be reduced, so that the Germans have a chance to win.

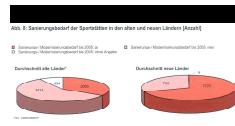


You must think, I am mad, but I personally like this kind of hilly sports field. At once you are able to invent a new game by yourself.

There is a fundamental difference between requirements of sports facilities for everybody and the one for competitive sports.

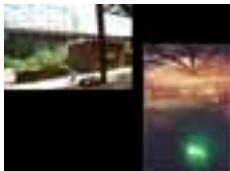
I have the feeling, that competitive sport is more and more a relic from the 19.century

Coming back to speedminton, it is good, that old empty tennis halls get converted into speedminton halls.

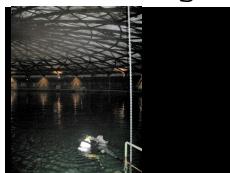


These graphics show the requirement of refurbishment of old sportshalls in West Germany (left) and (right) former socialist Germany. Red shows the requirement for refurbishment. Are we able to project this to all former socialist countries?

Not only empty sports facilities like tennis halls but also empty factories have been converted. Monuments of industry are being in different ways preserved.



An old huge gas tank was filled with water and lightened.



Divers do training or have fun flying with music in space.

Climbing - we put walls mostly in existing buildings as an additional element.



I just want to show you this picture to underline my thesis, what future generations interests might need in functional requirements. They like to do sport very near by and at anytime. So there is no need to travel to the Matterhorn for

climbing. One has the Matterhorn or Mount Everest just around the corner.



and the original natural rock transforms into an artificial object.



The Matterhorn here is a long years ago left factory.



Climber take it as their playground.



In the inside the given room or space creates a new kind of fun climbing.



Inline skating- just some tubes,



very easily to be put into an old empty factory, of which we now have enough in Europe.

If factories are built with high quality they last longer and are able to be reused for different programmes, for instance for sports facilities. Reminding you of the Agenda 2010 of Rio de Janeiro this would fulfill the requirements of economy, ecology and especially sustainability.

Ladies and gentlemen, this is not only a Western European phenomenon, it is generally a problem of Eastern Europe and all other former socialist countries, perhaps also of China in 15 years time. Industry changes dramatically and some of the old factories should be converted into sports facilities.

The factories were often built with high quality, flexibility and durability.



That does not mean, that facilities should last 1000 years as this Olympic stadium in former Germany from 1936 was supposed to do by the Nazis.



But if you put building materials together, which age at the same time, so if all materials have the same life span, for example, wooden windows in brick wall, they can be removed at the same time, maybe 5,10 or 100 years later. If you take windows made of synthetic material, you run into problems, because this material does not last as long as brick. It is expensive to renew this kind of windows. It is expensive to take this building materials to pieces, and they do not rot. So in these terms one can build synthetic buildings, if all materials are synthetic. This kind of building lasts only 2 or 5 years and therefore is perfect for temporary use. Another rule is, to use simple or as few materials as possible, for example brick just as in those fantastic old factories, or steel.

I like to come back to the so to speak "trendy sports" as a indicator for future devolpment of sports facilities.



Kite surfing is one. Here we need no buildings at all.

There was a time, when US prisoners invented a game in their courts,



which was later called squash.



Squash centers were built, usually in addition to existing sports facilities.

Trendy sports in general create no new type of sports facilities. Usually extentions or additions are sufficient. So the sportswear and equipment industry has a good new market, not so much the building-industry except under extraordinary conditions.

In Berlin we have another new trend. Since the economy did not work probally as much as hoped during the unification process, the mayor decided to change Berlin into a party city.



Temporary Pools were installed directly in front of the cathedral



and artificial beaches with swimming pools were created along the Spree River.

People in Berlin, of which nearly 20% are unemployed, do not travel any more to Italy. They stay at home for their holidays. Beach volleyball- now a most popular Olympic discipline - will suddenly be played in the middle of the city.



All these new sports seem to need at first no built facilities, but at second sight there is an interesting outcome that in Germany some schools decided to change their floors of gyms from wood or plaster to sand. The pupils do not need expensive sports shoes anymore. All kinds of sports with new funny rules are developing. After all it is healthier to run and fall on the sand.

In addition to that more and more sports clubs close down for economical reasons and do not control the use of the sports facilities anymore as before. More and more people can rent with some friends the next sports hall around the corner.

Is this not a dream of functional infrastructural requirements for future generations?

Coming to a conclusion, what are the functional requirements of future sports facilities (except sand floors)?  
I found finally five targets to develop more quality in sports infrastructure and facilities:

- 1.Social**
- 2.Locational**
- 3.Sustainability**
- 4.Security**
- 5.Aesthetics**

I am aware that there are more targets, but let me focus on these.

## **1. Social**

Respecting human needs and interests in a kind of "glocal" sense, that is combining the global situation with the local needs.



For example, the conversion of old sports halls or factories in relation to new sport programmes.



Or new hybrid multipurpose buildings like the Basket Bar.



As an other example, I am making a short trip to the world of soccer.



This is a picture of an empty soccer stadium in Japan Left over from the world championship



This is a recent picture of an empty soccer stadium in Portugal, left over from the European championship



... and this is a picture of a very differently used new German soccer stadium, Schalke 04 in Gelsenkirchen during a Biathlon Competition last year. (seating 50.000 people)



What will happen with the reconstructed Olympia Stadium in Berlin from 1936 with a new roof after the German soccer championship 2006?

Remembering the TV-Society we spoke about, what amount and size of seats do people really need under the aspect of sustainability? I have no real answer, but I know there is a huge field of research, which amongst others I am involved in as professor for sports and leisure at the technical university of Dresden.

Coming back to the needs and interest of human beings for social requirements.

I think, that people's interest is more for fun than for rules.



The sitting and leaning basket are funny comments by critical artists.

Sports equipment gain human behavior. Who is the machine? Rethinking the needs, how do sports facilities change?

## 2.0 Location



The infrastructure for large sport facilities depends on traffic. Here you see the Dodger Stadium from 1959-1962 by the Architects Praeger, Kavanah, Waterbury, surrounded by a sea of asphalt with parking space for 16.000 cars.



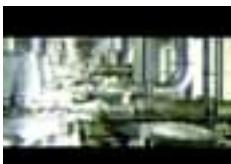
Where is the parking at the Max Schmeling Halle we designed? There is none. 10.000 spectators come by subway some by taxi - all green park- even on 2/3 of the roof. It is a building, which is for ecological reasons under

earth. (By the way under a mountain of rubble built from the bombed residue of buildings after the 2.WW)  
We created a green lung in the middle of the city on the site of the former wall between East and West.  
I think one should simply respect, that new sports facilities should be located very next to areas, where people live, in as dense urban situation as possible.

### 3. Sustainability



Technology of sport facilities should be as simple as possible, but not neglecting the climatic and cultural situation of human beings.



In cold areas you have a far advanced heating system in warm regions you really need just a textile for shadow.



At the MSH we re-invented an ecological heating system over 2000 years old, the hydrocaust system. Concrete tubes 1,5 meters diameter were laid like a labyrinth on earth and covered with earth to make it a hill.

Air is sucked from the heating system from the bottom of the hill to the service area under the seating arrangements along the earth, which in the summer time is colder than the environmental air and in the winter time warmer. The air comes pre-conditioned to the heating system. Almost 70% of the general heating cost are saved in climated areas like this.

Here you see the wholes in the construction of the seating on site.



Another point of sustainability is to consider more new materials, watching their ecological impact for future generations.

In the Technical University of Dresden we invented an insulation which fulfills all requirements of a former 20

centimeter thick styrofoam insulation and it is only 4 centimeter thick and almost transparent. Sometimes we might be able to build sports halls just out of insulation.

#### **4.0 Security**



In a world with more and more terrorism, I believe, that we need more sports for everybody not only for competitive great events.

It is important to find a good balance between security and openness.

Is then the new sport "indoor-jogging" for American women the right answer? Do women not need fresh air for running? The need of security for a woman is greater than this. So any social problem as this has a tremendous impact on sports facilities.



At the MSH you sit under earth, but from every seat you are able to see the park where you came from and one has the feeling you are able to be free to escape at any time one wishes.



It is not a black box, but can be darkened by special roll screens.

#### **5.0 Aesthetics**

For all technical, functional, social and economical factors, we should not forget, that sports and its facilities should be beautiful in a wider range of sense.



Not only, because my personal ideal body is a sportive one, but also I believe that a beautiful environment leads to a gentle behavior.

For me it would be fabulous and grand, if sport facilities would look like a special kind of modern temple. I think such an atmosphere creates fair games and creates human beings with not only nice bodies, but also nice brains.



This kind of temple must not be luxurious as this fantastic sports center in Switzerland by Ueli Brauen and Doris Wälchli finished this year (6,25 Mio EUR)



But if buildings fit as naturally as possible in their regional context with regional materials



I believe sustainability is not only useful but also beautiful.



In that sense I cannot stop to show you this marvelous recently built soccer stadium in the town Braga in Portugal. An existing mountain on the one side and landscape as a borrowed scenery on the other.



Nature and artificial building close by close.

I think it was a great risk for little Braga to follow the idea of architect Souto Moura not to build seating on the fan club sides. Not to follow reasonable requirements is sometimes a better way to come to a solution in relation to human being needs.



After all- what is the target for planners who are involved in sports facilities?

Aiming as exactly as possible human being needs by thinking global and reacting local.

The Asia Summit in Thailand for me is a great opportunity to widen the range of my local knowledge and loose my prejudices.

Last year I was involved in the functional and economical assesment of the Olympic application of the NOC Germany for Düsseldorf in the middle of a declining industrial area and Leipzig which suffers a tremendous reduction of the population.

Considering human needs for sports facilities I had a dream and as an architect I do not know if it was a nightmare.

Sponsored by all nations accredited to the IOC, all Olympic "heavy" sports facilities like arenas, roofs, walls, sanitary and catering facilities, special technical and constructional facilities would be collapsed into containers. So every city in the world with access to a harbor, for instance, could have the Olympic Games.



In the end, the new Olympic Games could happen for everybody and everywhere

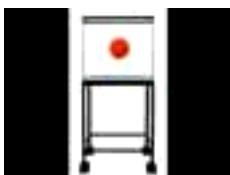
How about doing sports on the ice of Greenland or the sand of the Sahara desert. All people would meet in a spirit of tolerance and respect having playful games.

I think, this would be more financially successful than ever.

It is a social planners, politicians or businessmans dream, not an architects, because there is perhaps no beautiful architecture in those games in the box.

Architects have no solutions for the problems of the world, but they have a sense for function, order and beauty as Vitruvius 2300 years ago said.

In that sense I wish you all a good time and business at this Sport Summit. And above all the wish that you are respecting the needs and interests of human beings in a nice balanced way as this basketball floating in a glass box does.



**Hardware:**  
Computermodell: PowerBook G4 15"  
CPU-Typ: PowerPC G4 (1.1)  
Anzahl der CPUs: 1  
CPU-Geschwindigkeit: 1.33 GHz  
L2-Cache (pro CPU): 512 KB  
Speicher: 768 MB  
Busgeschwindigkeit: 167 MHz  
Boot-ROM-Version: 4.8.4f1

**Software:**  
Mac OS X 1.33 GHz PowerPC G4, 768 MB DDR SDRAM  
Microsoft Word and Microsoft Powerpoint with jpg's

Jörg Joppien: Bangkok 25.09.2004  
[www.joerg-joppien.de](http://www.joerg-joppien.de)  
mail@joerg-joppien.de