UGE1 *MADE* Project

Allotment Garden Park BUGA'87, Düsseldorf

Prof. Ralph Johannes, Dipl.-Ing., Architekt HBK (Berlin)

*This is a much abbreviated version of a complete **MADE** Project, representing only some illustrative highlights. The project was carried out by second- and third-semester architectural students at the University of Essen, Germany.*

Preparation stage

In 1987 a Federal Garden Show (see Note 1) which featured allotments among other exhibits, was held in Düsseldorf, the regional capital of North-Rhine Westphalia. This provided the impetus behind the **MADE** Project „Allotment Garden Park BUGA '87" (Figure 1: Total Plan of BUGA '87, Düsseldorf) documented here. The following teaching and learning aspects were relevant to the selection of the project.

(1) Motivation: a real event provided the students with the opportunity to develop alternative proposals to the Allotment Garden Park which the Düsseldorf Parks Department had already designed.

(2) Relevance to architectural practice: this was to be established by

- User polls in existing allotment garden facilities.
- Cooperation with a public client, in this case the Düsseldorf Parks Department, and its staff.
- Consultations with experts in relation to topics such as ecological building construction or drainage and sewerage to biological principles.

(3) Interdisciplinary studies: lecturers at the University of Essen from other disciplines and fields relevant to the project were to be involved.

(4) Teaching and learning by example: on the basis of a complex and realistic task which contained aspects of building, town planning and landscaping, the students were to obtain important insights, knowledge and experience which could be applied to other, similar design problems.

Organization stage

To carry out a **MADE** Project in the best possible manner, the lecturer was obliged to devote attention to teaching procedures and design activities, and their related organizational problems, one of which was the fact that the University of Essen does not provide students with drawing

boards or other relevant facilities for design work, thus they have to work at home. They only 'commute' to the university for lectures, seminars and the correction of their designs. The lecturer's decisions with regard to the course requirements (e.g. for the achievements expected of the students and the schedules to be maintained) were thus set down in the 'Project Plan' (Figure 2: Project Plan). This included the following:

1. Project Task
The Allotment Garden Park BUGA '87 is to be designed in a given area of the Südpark in Düsseldorf-Oberbilk, where there are currently 17 allotment gardens. 15 of the existing allotments are to be preserved (Figure 3: Site plan for MADE Project.) In addition, the following facilities are to be designed:

66 allotment gardens in sizes of 250-300 m^2
1 garden house per allotment
1 clubhouse af approx. 200 m^2
1 games and party lawn
1 store area of approx. 200 m^2
27 car parking places.

Requirements to be taken into account are:

Allotment Park
- This should be a public green area accessible to everyone.
- The existing trees marked in the site plan must be preserved.
- The 15 allotments to be preserved are to be integrated harmoniously into the new facility.
- A reduction in plot size to 300 - 350 m^2 is desired.

2. Project Object Definitions (Figure 4: Project Object Definitions: „Allotment garden facility", „Allotment garden", „Garden house", „Clubhouse")
This clearly describes the objects to be designed by linguistic means, and conveys the appropriate technical terms. These definitions are intended to facilitate terminological distinctions between the objects to be designed and others, thus making a systematic search for relevant information possible. Furthermore, they are intended to make understanding between the students working on the project easier, and to enable individuals to approach the subject matter in as independent a manner as possible.

3. Project Structure Breakdown (Figure 5: Project Structure Breakdown)
This forms the framework within which the organization, supervision and control of each complex **MADE** Project is to take place. It provides a simple, clear and complete picture of the work required to achieve the aim of the project. In addition, it facilitates a clear allocation of responsibilities.

4. Project Programme (Figure 6: Project Programme)
This specifies the textual and graphic presentation of project results and the dates for submission. These rules on presentation contribute to uniformity, facilitating the exchange of information

between those involved in the project, and thus permit 'more objective' evaluation of the learning results.
5. MADE Process Plan (Figure 7: MADE Process Plan)

6. Project Learning Result Catalogue (Figure 8: Project Learning Result Catalogue for the MADE Project: „Allotment Garden Park BUGA '87")
This has two targets and six broad aims and the project modules to be worked through for this specific Project Task.

7. Project Time Schedule (Figure 9: Project Time Schedule)
This is used to plan the sequences and dates for the teaching/learning and designing processes. Following a set pattern, a bar chart whose simplicity and clarity makes it easy to handle is drawn up for each **MADE** Project. This chart contains the following data
Horizontal = time divisions (days, weeks, months)
Vertical = **MADE** phases (following the MADE Process Plan).

The work submission dates set down in the Project Programme (Figure 6: Project Programme) are marked by a submission symbol. The students can therefore clearly see how much time they have between the proposed submission dates to achieve the project learning results required by the Project Learning Result Catalogue.

8. Project Literature List
With notes on relevant specialist literature and sources of information such as architectural periodicals, bibliographies, catalogues of building research work and booksellers' listings.

Implementation stage

This follows the **MADE** Process Plan (Figure 7: MADE Process Plan)
and the Project Learning Result Catalogue (Figure 8: Project Learning Result Catalogue).
It starts with the subsidiary phase A.

Subsidiary phase A: manage project procedures

The Project Plan was first introduced and explained to the students. The project was scheduled to last two semesters including the vacations. Four hours per week were available for formal activities during the two semesters. The project group met regularly on two days each week and started work as a team with clarification of the Project Task. This process was initiaited by the following subsidiary phase B.

Subsidiary phase B: identify the situation and acquire information

The first stage of this was a lecture on „The history of allotment gardening in Germany and its significance for the present day" delivered by Prof. Eick of the Landscape-Architecture Department.

Project module B 1: collect and process object literature

This section was designed to fill the students lack of specialized knowledge, providing them with enough information to perform their tasks. To do this, it was necessary to obtain, select and process information in order to acquire knowledge. Relevant articles from professional journals, textbooks and research reports were examined for information relevant to the project. To reduce the large amount of time which would otherwise have been expended on procuring literature, relevant texts were provided as photocopies, which were then jointly read and analysed.

The information obtained was recorded in 'Data Lists' under the separate headings of 'Allotment Garden FaciIity (AGF)', 'Allotment Garden (AG)', 'Garden House (GH)' and 'Clubhouse (CH)', sorted and stored.
Here, the students learned, among many other things, that

The Allotment Garden

- has undergone a change of use tending towards being a family and recreational garden
- is becoming increasingly important for active leisure
- should preferably be oriented in a north-south direction so as to catch more sun.

The Garden House

- should be suitable for DIY construction
- should not cost significantly more than DM 10,000 (relative to 1980 price levels)
- should be located in the north-east corner of the allotment (for the sunshine)
- should be constructed of appropriate materials for the purpose and have a colour which blends in with the surroundings
- would be an eyesore with large roof tiles or large smooth plastered surfaces
- should not be a 'miniature residence' or 'baroque castle'
- could create a nuisance, particularly noise, if several were grouped into a single building, and this should always be taken into account in the planning
- should have an appropriate internal layout for the purpose and should be adaptable to permit future modification
- should have a sitting room (8-12 m^2), a storeroom with dry toilet (3-4 m^2) and a roofed-over open sitting area (8-9 m^2).

The Clubhouse

- in relatively small allotment facilities should be located near the entrance, so as to avoid unnecessary disturbances and high development costs
- should be situated and fitted out in such a way that it becomes the communications centre of the facility
- should be an attractive design, even if the available funds are severe limited
- is in most cases built by joint effort
- can accommodate a bar.

Project module B2: view, describe and assess existing objects
The next step consisted of excursions to three existing allotment facilities in Düsseldorf and Duisburg. The impressions obtained were recorded in Excursion Reports. The overall conclusion following the tours was: „We could never design such ugly garden houses as those!“

The Allotment Garden Park designed and already completed by Düsseldorf Parks Department for BUGA ‘87 (= the **MADE** Project „Allotment Garden Park BUGA ‘87“) was not viewed, so as to prevent students' deliberations and design ideas from being influenced by the existing solution.

Project module B3: interview users und record existing objects
In connection with the user poll which was carried out, 21 existing allotment garden facilities throughout the Ruhr were visited. Garden houses were photographed inside and out, and their rooms measured. Each project worker had to interview at least two allotment tenants with the aid of a 50-item questionnaire to discover their special needs motives. Although the statements of the interviewees are not representive in a scientific sense due to the small scope of the poll, they nevertherless revealed some interesting and constructive points. It was thus, for example, discovered that with regard to the garden house:

- almost all garden houses had electricity and running water, a cooker and a toilet (chemical or biochemical disposal of excreta or earth closet in older facilities)
- almost all had heating (predominantly with propane gas, as this is cheaper than electricity)
- half had sleeping accommodation (in some cases, holidays were spent there by up to four people).

With regard to the users (= tenants):

- half of them washed at the washbasin in the lavatory or storeroom, a quarter at the sink in the sitting room, a quarter at the pump or tap in the garden
- a quarter had a shower inside the garden house, a quarter outside the garden house, and half none at all, but the overwhelming majority would not be adverse to having one, preferably on the outside of the garden house
- half were in favour of larger garden houses with an area of more than 20 m^2
- more than half were dissatisfied with the size of their storeroom. It should not be smaller than 2.5 m^2
- the majority were in favour of garden houses in brick or stone, both because of the greater resistance to fire and security from burglaries, and because of the better internal climate
- half wanted to build their garden houses themselves, a quarter to buy and erect them themselves, and a quarter to buy them and have them erected
- 99% rejected the idea of double or triple garden houses.

The last question on the questionnaire was „What further ideas or wishes do you have to give us?“ Some of the answers the allotment tentants gave are as follows:

„We need more allotment facilities.“
„Rather allotments than tennis courts.“
„New garden houses should be larger and gardens smaller: that cuts the work down.“
„Let us design the garden houses as we want them, with no regulations.“
„No rectangular gardens.“

„More opportunities to build your own garden house - not so many strict limitations on what you can do.“
„A parking space for every allotment.“
„There should be a telephone box near the facility.“
„Not too many different types of garden house; two at most.“
„A continuous path without dead ends.“
„Curving pathways.“

Only two allotment tenants from a total of 75 questioned were ‘totally satisfied’. Finally, six existing clubhouses were viewed, measured, and the floor areas and space allocations analysed. With the aid of a 19-item list, clubhouse tenants and allotment club chairmen were questioned about their experiences and suggestions for improvements. It was shown, for example, that it is more advantageous from the point of view of financing the building and providing services to guests to design a clubhouse for construction in two stages: in the first stage without, and in the second stage with a bar and cafeteria.

Now that the situation had been recorded in detail and the information had been processed (Above and beyond this, the individual students were able to note their own personal ideas and thoughts in private ‘Idea Archives’) to constitute a body of knowledge, the first assessments could be carried out in the next two project modules B4 and B5.

Project module B4: examine and analyse the object circumstances typologically
With the aid of the data obtained in B1 and B3, Typological Synopses were compiled with relation to the layout of allotment garden facilities and the grouping of garden houses (Figure 10: Typological synopsis of allotment garden facility layouts and Figure 11: Typological synopsis for garden house grouping)

Project module B5: determine and define the object characteristics
The project group had to clearly define the concepts *(Concept:* unit of thought constituted by those characteristics which are attributed to an object or to a class of objects. It should be noted that concepts are not bound to particular languages. They are, however, influenced by social or cultural background.[1]) of the objects (*Objects* are buildings, other structures, outdoor constructions and interior spaces.[2]) to be designed, i.e. a ‘Garden House’ and a ‘Clubhouse’. To do that, it was necessary to identify the characteristics (*Characteristic:* element of thought which reflects a property of an object and which serves to form and delimit its concept, e.g. one of the characteristics of the concept ‘fish’ is ‘having fins’.) of these two objects. Four kinds of object characteristics were to be covered, viz.

- *User characteristics*
- *Type characteristics*
- *Purpose characteristics*
- *Inherent characteristics.*

[1] ISO International Organisation for Standardisation (Ed.): Draft International Standard ISO/ DIS1087 Terminology - Vocabulary Terminologie - Vocabulaire. Geneva 1988

[2] Architektenkammer Nordrhein-Westfalen (Ed.): Verordnung über Honorare für Leistungen der Architekten und Ingenieure (HOAI) of 01.01.1885, contained in: *Architektenjahrbuch* 1986/87. Christians & Reim Verlag, Eutin 1986

User characteristics
These tell us for whom or what (people, particular groups of people, animals, plants or artifacts) an object is designed, e.g.

- People:
  tenants → block of flats.
- Special groups of people:
  handicapped → workshop, elderly people → old people's home,
  small children → kindergarten.
- Animals:
  horses → stable.
- Plants:
  orchids → greenhouse.
- Artifacts:
  paintings → gallery.

The User characteristics for the objects 'Garden House' and 'Clubhouse' were derived from the Project Object Definitions (Figure 4) and the data obtained in B1 and B3.

For the 'Garden House', these were:

- tenants (allotment gardeners)
- relatives (possibly children or young people)
- visitors
- possibly plants.

For the 'Clubhouse', these were:

- the public
- members of the club
- relatives (possibly children or young people)
- friends
- wheelchair users
- clubhouse tenant
- kitchen staff
- suppliers.

Type characteristics
These provide information pertaining to the type of an object, i.e. on the type group to which the particular object belongs, and with which it has fundamental characteristics in common, defining it as, for instance, a 'building', 'outdoor construction' or 'interior space', and information on its special type or use where applicable.

Examples:
The type group of 'buildings' *(Buildings* are defined as independent usable, roofed constructions, erected for the long term, which can entered by people and are suitable or intended to protect people, animals or artifacts .....[3]) comprises, for instance:

- Residential buildings (e.g. detached houses, terraced houses, halls of residence, old people's homes)
- Nonresidential buildings (e.g. hospitals, barracks, office building, agricultural buildings, hotels, public houses, university buildings, museums, theatres, opera houses, sports buildings, school buildings, nurseries, churches, community centres, monasteries, garage buildings, petrol stations, slaughterhouses, parliament buildings, factories, buildings for accommodation of animals or plants).

The type group of 'buildings of special types or use' comprises, for instance:

- Skyscrapers
- Commercial buildings (e.g. department stores, shopping centres, cash and carry markets)
- Assembly buildings (e.g. cinemas, theatres, concert halls, conference centres, circus facilities, large auditoriums)
- Restaurants, public houses and inns
- Entertainment facilities (e.g. slot machine arcades)
- Office and administration buildings
- Hospitals, nursing homes, maternity homes
- Schools and sports facilities (e.g. rifle ranges).

The type group of 'interior spaces' comprises for instance:

- Accommodation spaces (e.g. living rooms and bedrooms, kitchens, housework rooms, workrooms such as offices, shops and salerooms, workshops, public houses and assembly rooms, classrooms, hospital rooms, sports and playrooms, DIY and hobby rooms)
- Nonaccommodation spaces (e.g. halls, stairwells, washrooms, lavatories, pantries and boxrooms, laundries, garages, boiler rooms, storerooms).

The type group of 'interior spaces of special types or use' comprises for instance:

- Spaces covering large areas (e.g. exhibition and trade fair halls, warehouses)
- Spaces with high risks of fire or explosion (e.g. paint spraying shops, explosive stores).

The following Type characteristics were arrived at for the objects to be designed:

- The Garden House: belongs to the type group of „buildings" and „nonresidential buildings", and in particular to the group of „subsidiary buildings".
- The Clubhouse: belongs to the type group of „buildings" and „nonresidential buildings", and in particular to the group of „public houses", and „assembly buildings".

[3] Statistisches Bundesamt Wiesbaden (Ed.): Systematische Verzeichnisse - Sytematik der Bauwerke. W. Kohlhammer Verlag. Stuttgart and Wiesbaden 1978

Purpose characteristics
These provide information on the purposes to be served by the object. In relation to the object „building", a distinction is made between two groups of purposes: (a) general purposes and (b) specific purposes. According to the definition of the concept „building", all buildings are used for a *general* purpose, i.e. „to protect people, animals or artifacts" (Figure 4: „Project Object Definitions"). Above and beyond this, each „building" also serves *specific* purposes, which characterize each individual building. For example, a „Motorway Service Station" serves in *general* to protect people, animals or artifacts, and *specifically* to provide supplies for road users and their vehicles. A „Kindergarten" serves in *general* to protect people, animals or artifacts, and *specifically* to provide care, stimulation and education to children aged between three and five.

The *general* purpose for the „buildings" to be designed for BUGA '87, i.e. the „Garden House" and „Clubhouse" were derived with the aid of the „Type characteristics" (see above) and from the Project Object Definitions (Figure 4: „Project Object Definitions"). The *specific* purposes were formulated with the aid of the Project Object Definitions (Figure 4: „Project Object Definitions") and/or from the information acquired in project modules B1 to B3.

For the „Garden House", this resulted in the following Purpose characteristics:
- *generally*, to protect people, animals or artifacts; *specifically*, for only temporary accommodation and for use in connection with tending the allotment.
- and for the „Clubhouse", this resulted in the Purpose characteristics: *generally*, to protect people, animals or artifacts; *specifically*, for eating and drinking, organizing club activities, specialist consultancy and training and for social events within the club.

Inherent characteristics
These tell us something about the external and/or internal appearance of an object as the bearer of a 'message' with which the owner or user identifies himself, e.g.
- Image projection by a public client: „Democratic building with values such as freedom, openness, accessibility, coming together and tolerance" (Prof. Dr. Rita Süssmuth, late President of the German Parliament, on the planned new Parliament building in Bonn).
- Image projection by a private client: „A palace for Emperors and Kings who visited him; a massive monument to himself and the economic power of the company" (Alfred Krupp, 'Villa Hügel', the former private residence in Essen of the Krupp family who, in the late eighteenth century, owned the largest factory in the world).
- Image projection by a corporation: corporate identity expressed by a 'typical' colour or symbol, logo, or the building as an advertising medium.

For the objects to be designed, the 'Garden House' and 'Clubhouse', the Inherent characteristics with regard to the 'owner' or 'user', respectively were taken from the Data Lists for the 'Garden House' and 'Clubhouse' compiled in B1:

For the 'Garden House' they were:
- „The need for a habitat, predominantly based on a villa in miniature, ... the desire for freedom - the ranch of the wild west . . .[4]

[4] Nohl, W.: The aesthetics of home separated gardens in Germany: Traces of participatory aesthetics. *The Journal of Architectural and Planning Research, 4:3 (1987), pp. 212-227*

For the 'Clubhouse' there were no such Inherent characteristics. The students found the process of determining the object's characteristics difficult, as they had little practice of analytical and terminological ways of thinking. But only when *what* is to be designed is clear (Figure 12: „Object Characteristics Table 'Garden House' and 'Clubhouse'") should one move on to the next subsidiary phase, namely *how*.

Subsidiary phase C: plan and ascertain use, gestalt and technology factors

This subsidiary phase is the pivot point around which everything else in **MADE** revolves. *How* the course is set for a solution to the Project Task depends on the creative, clever and consistent handling of this (solution-oriented) phase. The basis of this work is the information processed into a body of knowledge in the previons subsidiary phase.

The following documentation deals with the **Garden House** only.

Project module C1: develop und present a guideline image for the object design in words and pictures

With the aid of an '***A-B-C*** procedure', group work was first carried out in an attempt to set the process of discovery of a guideline image in motion by '***A***ssociation'. Suitable concepts were selected from the Project Task or the object characteristics to serve as stimuli for the formation of trains of thought in various directions (word association) (Figure 13: „Association Chart"). The 'messages' in the word sequences which evolve were then discussed. Each student had the opportunity to decide on a promising concept or combination of concepts from these word sequences to explain his or her own guideline image for the object design. Where necessary, new word sequences were formed by students on their own.

The students then individually worked on an intensive '***B***reakdown' of the selected guideline images in relation to their intellectual and sensory perception effects on the user (Figure 14: „Breakdown List for the guideline idea e.g. 'Eco Garden House'). The interpretation of these effects was then to be visually represented in the form of a '***C***ollage' („*Collage*, a picture made entirely or in part of photographs, tickets, fabric, newspaper clippings, and other 'found' objects and materials, which are pasted or glued to the picture surface.[5]) (Figure 15: „Collages")

The purpose of this process is to educate the students in thinking and make them aware of how we use our sensory receptors, or at least to make them more sensitive in this respect, as the time required for active experiencing of the senses would go far beyond the bounds of solving a Project Task. Nevertheless, the procedure described succeeded in promoting creative abilities and training the capacity for association, combination and variation.

Depending on the level of talent he or she possesses, the student creates in this manner an object which - either as a 'tangible' interior, an 'individual' building or a 'memorable' location - which is identifiable in its intellectual effect as the bearer of a message and will have a greater or lesser effect on the sensual perception of human beings.

[5] Shores, L (Ed.): *Collier's Encyclopaedia*. Vol. 6. Crowell-Colliers Educational Corporation, New York 1969

As Figure 16 *Sensuous effect of 'building'* (Figure 16: „Sensuous effect of 'building'") clearly shows, the senses are addressed: the form and material of an object can he felt. It can, of course, also be seen, and the gestalt perceived visually. But the senses of smell and hearing too are not left out in the cold, if we think for example of the cosy smell of wooden materials or the acoustics of a hall (following Reference[6]). When this occurs, the user can identify himself with 'his' building - and, in reverse, it is also identifiable from the inside and outside as 'his' building.

Project module C2: determine, structure and link object users, functions and spaces
This was carried out in parallel (Note 2) with the concept analysis and the production of a collage. On the basis of the *users* with their needs and possible handicaps, *functions* (A *function* is the mode (perhaps we could also say *way* or *method)* of a subject's self-realization vis-a-vis the external world.[7]) were deduced and allocated to *spaces (Spaces* - in the sense of **MADE** - are to be understood either as indoor spaces (e.g. rooms with walls or delimited by pillars) or as outdoor spaces (e.g. natural spaces in the environment or designed open spaces). which would then constitute the objects 'Garden House' (Figure 17: Principle of the „Object Matrix") and 'Clubhouse'.

These three interdependent complexes, Users → Functions → Spaces, were linked with the aid of an allocation grid in the form of a 'matrix' (Figure 18: Object Matrix for the „Garden House"). The process involved here should be examined in further detail.

Guided by the User characteristics (Figure 12: „Object Characteristics Table" under User characteristics) - each student was able to decide for which user e.g. a retired couple, a family, a wheelchair user, a blind person etc., the Garden House was to be designed -, the functions relevant to the building to be designed GH or CH) with regard to the user requirements were to be determined. These were derived from the Type and Purpose characteristics already determined (Figure 12: „Object Characteristics Table" under Type characteristics and Purpose characteristics) resulting first in the main functions. For the 'Garden House', these were:

a) Protecting users and artifacts (from the Purpose characteristic '*generalIy* to protect people, animals or artifacts')
b) Using the object and artifacts (from the Type characteristic 'subsidiary building')
c) Accommodating users temporarily
d) Using the object horticulturally ('c' and 'd' from the Purpose characteristic '*specifically* for only temporary accommodation and use in connection with tending the allotment').

The Main functions arrived at deductively and listed under a) and b) are the *general* functions, i.e. these apply across the board to all buildings, and do not have to be deduced again each time. They were presented the students in a hierarchically structured form as a 'finished product'. The Main functions deduced and listed under b) and c) are the *specific* functions, i.e. these must be deduced anew for each building to be designed.

---

[6] Schwanzer, B.: Die Bedeutung der Architektur fuer die Corporate Identity eines Unternehmens: Eine empirische Untersuchung von Geschäften und Bankfilialen, *Architektur-Marktforschung*. Vol. 1, Modul Verlag, Vienna 1986
[7] Burbank, J. and Steiner, P. (Eds.): *Structure, Sign and Function. Selected Essays by Jan Mukarovsky.* Yale University Press 1978

The subsequent derivation (from the Main specific functions) of further Subsidiary, Partial and Basic functions was a process which the students found difficult (because they had little practice in function-oriented thought) but extremely revealing. Complex reflection was required, in which an attempt was made inductively to take the various concrete needs and motives of the users into account. It also took a certain effort to formulate (Note 3), delineate and interrelate these functions until they were equivalent to the relevant Main function and could be arranged in a clearly hierarchical order (Figure 18: „Object Matrix“ under ‘2. Functions’). This process not only touched on exclusively rational intellectual and cognitive fields, but these were embedded in a uniform approach and all-encompassing fields of experience. To this extent, one can also speak of ‘conceptual experiences’ in this form of conceptual education and its processes: an important condition for the subsequent conversion of the specific and general function-orientated requirements of the users into the creation of ‘spaces’ which are to make up the ‘Garden House’ (Figure 18: „Object Matrix“ under ‘3. Spaces’) and the ‘Clubhouse’.

Critics oppose this type of conceptual education on the grounds that it requires an unreasonable degree of time and effort at the expense of ‘real’ designing (i.e. the architect's pet activity). It must, however, be stressed that this education in ways of thinking for tomorrow's architects places more weight on *user processes* (e.g. living, working or playing) than only on objects and their production (without of course neglecting these).

Thinking in functions (an important condition for the determination of the performance of a building in its entirety and in its parts in the sense of function-orientated methods such as the ‘Performance Concepts’[8-10]) is of fundamental importance for the **MADE** teaching and design model, because it is intended to prevent: attention being centred on objects rather than their *users*, lack of originality and the development of only one possible solution.

To ensure that the spaces for the objects to be designed (‘GH’ and ‘CH’) function correctly, i.e. that they are capable of fulfilling the assigned functions with regard to use, gestalt and technology in a manner acceptable and beneficial to users, project module C3 was then used.

Project module C3: identify, order and group design objectives for the object

This involved the formulation and compilation in Catalogues of Objectives for each of the objects ‘Allotment Garden Park', ‘Garden House’ (Figure 19: „Catalogue of Objectives for the ‘Garden House’“ and Figure 20: „Catalogue of Objectives for the ‘Terrace Area’ in the ‘Garden House’“) and ‘Clubhouse’ of mandatory, recommended, optional and desirable objectives, known in **MADE** as *‘Must’, ‘Should’, ‘Can’* and *‘Wish’* objectives.

Must objectives: are objectives which comprise *regulations* or *given conditions. Regulations* are statutory requirements or prohibitions which must be followed. These set down current standards in the form of minimum qualitative or quantitative requirements, with the intention that ‘public safety or order, and in particular life or health, are not endangered’. The implementation of such

8 National Bureau of Standards (Ed.): *Performance Concept in Buildings.* Vol. 1, Washington D.C. 1972
9 International Organisation for Standardisation (ISO). ISO Standard 6241-1984 (E), *Performance standards in building - Principles for their preparation and factors to be considered.* (1st edn), Geneva 1984
10 Rush, R.D. (Ed.): *The Building Systems Integration Handbook.* John Wiley, New York 1986

regulations can he enforced by administrative or legal means. Any infringements can result in criminal proceedings or statutory fines. *Regulations* comprise the laws and by-laws of the area in which the object is to be constructed, and stipulations imposed for example by planning and zoning boards, design and architectural review boards, building code officials, environmental protection agencies, health and safety boards and public utility commissions. *Given conditions* can he natural (e.g. site and soil conditions, climate and vegetation), technical (e.g. power supply, roads) or legal (e.g. site data, property rights, contractual clauses) in character.

Should objectives: are objectives which contain *standards* or *agreements. Standards* are guidelines formulated by privately organized institutions, European Community committees or international standardization institutes, and set down and compiled in sets of specifications whose application is recommended. No special dispensations or exceptional rulings are therefore required for projects which deviate from these. *Standards* only have a legal effect when stipulated in agreements (e.g. between the owner and the architect), laws, by-laws, and with the creation of the Single European Market in 1993 the 'Codes' compiled by the CEN programme committee on the construction industry. These codes specify mandatory aims to be achieved. The individual member states of the European Community are, however, free to choose how they incorporate the requirements of the codes in their national laws or statutes.

Such *standards* are issued by associations and quality control institutions such as:

- International Organization for Standardization (ISO) = ISO Standards
- Comité Européen de Normalisation (CEN = EURO Codes
- Federation International de Natation (FINA) = FINA Pool Construction Guidelines
- Deutsches Institut für Normung e.V. (DIN) = DIN Standards
- Verein Deutscher Ingenieure e.V. (VDI) = VDI Guidelines

Agreements are supplementary arrangements between public or private clients and the architect (e.g. on town planning, form and use related, financial, energy and ecological aspects), which are set down in writing in the architect's 'schedule of designated services' and are to be fulfilled by the architect, or otherwise litigation may follow.

Can objectives, are objectives which contain *requirements. Requirements* comprise qualitative or quantitative properties of the object to be designed and its parts, which are stipulated by the architect. In stipulating these *requirements,* he will use his own expertise, i.e. his scientific knowledge and practical experience, supplemented or backed up as necessary by relevant information, data or advice from third parties (e.g. research reports, professional literature, specialists in individual fields).

Wish objectives, are objectives which contain *ideals. Ideals* are future-oriented wishes which represent a conscious challenge by the architect or client to the actual conditions he encounters. The conditions, i.e. the circumstances created by the time or physical environment in which the object is designed, generally prevent these *Wish objectives* from being achieved in practice. One can only strive towards the closest approximation.

For the ‘Garden House’ and ‘Clubhouse’, the *Must objectives* were derived from the stipulations and prohibitions of the relevant regulations (Note 4) and the given conditions of the site and its environment.

The *Should objectives* were arrived at from standards and from agreements between the ‘client’ (= lecturer) and the students.

The *Can objectives* were taken from the relevant Data Lists (see project module B2) and agreed jointly by the students and lecturer. Furthermore, each student was able to formulate further *Can* and *Wish objectives* from his or her Idea Archive.
In the following two project modules, the design objectives contained in the Catalogue of Objectives which refer to the floor area of individual spaces and linking of distinct spaces were determined and represented in drawings.

Project module C4: determine and group the floor areas required
The aim of this module was to produce a Floor Area Schedule for each of the objects ‘Garden House’ and ‘Clubhouse’, a list of all the spaces coming into question and their areas in m^2.

Project module C5: link the spaces inside und outside the object
An Adjacency Graph was produced for each of the objects ‘Garden House’ (Figure 21: „Adjacency Graph for ‘Garden House’“) and ‘Clubhouse’. The sequence adopted in the construction of such a graph (A *graph* is a collection of points, certain pairs of which are joined by lines. In practical applications of graph theory the points usually represent a set of objects under investigation, and the lines usually represent relationships between pairs of objects.[11]) is as follows:

1) All the spaces concerned are listed and sequentially numbered. The result is the *numbering list.*
2) In accordance with the stipulations of the Catalogue of Objectives, each space is allocated to another space in sequence in a binary form. The result of this is the *binary list.*
3) All the binary relationships are interlinked in a *matrix*, and the number of links per line totalled.
4) The *graph* is drawn.

Project module C6: relate the object spaces to each other
On the basis of the result from project modules C4 and C5, project module C6 involved the drawing of outlines for each individual floor area for the spaces of the object ‘Clubhouse’ to scale and arranging them in such a way that they corresponded to the linking relationships defined in the Adjacency Graph ‘Clubhouse’. This was accomplished by shifting and exchanging the individual spaces until the required linking relationships were established. The result of this work was a Block Diagram showing the Clubhouse spaces with the correct areas, taking adjacency relationships into account. This diagram formed the basis of the creation of possible layout solutions for the Clubhouse in subsidiary phase E. (Figure 22: Block Diagram for ‘Clubhouse’)

[11] Levin, P.H.: Use of graphs to decide the optimum layout of buildings. *Arch. Journal.* Vol. 140, No. 15, 1964, pp. 809-15

Subsidiary phase D: weight and rank aspects of quality

In **MADE** Projects assessment procedures are used as a design aid. Thus, more precise guidance for the creation and evaluation of quality (Note 5) is provided for possible solutions that are worked out in subsidiary phase E.
Due to time constraints, a simplified procedure, the *points method* (Explanation of Points Method), is employed in under-graduate studies, hence also in the project described here. This method concist of two separate stages, the first before the start (Figure 23: Rating Table for 'Garden House') and the second on completion of subsidiary phase E.

In the first stage, suitable *Can* and *Wish objectives (Must* and *Should objectives* are not normally used for assessment as compliance with these is mandatory) were initially selected from the Catalogue of Objectives for the individual objects, the 'Allotment Garden Park', 'Garden House' and 'Clubhouse'. These were declared as 'target criteria', and entered in separate Rating Tables for each object. In consultation with the students, these target criteria were assigned a weighting in points according to their importance.

Subsidiary phase E: create and evaluate possible solutions

Subsidiary phase E then followed in which at least two variants *(Variant* = a design solution to the same or only slightly different requirements as another. *Alternative* = a design solution to fundamentally different requirements) of the relevant objects 'Allotment Garden Park', 'Garden House' and 'Clubhouse were to be produced in the form of sketches (Figure: 24 „Variant sketches of 'Garden House'"). This creative act was supported and controlled with the aid of the relevant Project Learning Results previously compiled, i.e. the

- Catalogue of Objectives (Figure 19: „Catalogue of Objectives for the 'Garden House'" and Figure 20: „Catalogue of Objectives for the 'Terrace Area' in the 'Garden House'")
- Adjacency Graph (Figure 21: „Adjacency Graph for 'Garden House'")
- Floor Area Schedule
- Block Diagram (Figure 22: Block Diagram for 'Clubhouse')
- Rating Table with the weighted target criteria. (Figure 25: Evaluation table for 'Garden House' Variants)

Where appropriate, a working model could be produced to assist in form-finding. The second stage of the *points method* (see above) then started: the quality of the possible solutions sketched (variants) was assessed in pair by pair comparison using the criteria established in the first stage, and marked for fulfilment of these in Evaluation Tables. The variant with the higher total in each case constituted the Scheme Design, which was used as a basis for the last subsidiary phase.

Subsidiary phase F: complete the scheme design

This section aimed to produce the drawings for a 'refined' design af the 'Garden House', 'Clubhouse' and 'Allotment Garden Park' with accompanying written Explanatory Reports. All the project learning results were then compiled and submitted to the lecturer in the Project Report.

Project module F7: construct a representation model of the object

This Project module produced the three-dimensional composition of the 'Garden House' (Figure 26: Designs of „Garden Houses") and 'Clubhouse'. A scale of 1:20 was selected to ensure that the models appeared realistic and reflected the original as closely as possible. Great value was attached to the quality of workmanship, as a model is easier to comprehend in toto than the original. It conveys the complete appearance of the object from inside and outside, from all sides, and with all details. Frequently, a model displays inter-relationships and sizes better than they can be experienced in reality. A total time of one month was allotted to produce the models.

END

of the MADE Project Allotment Garden Park BUGA '87 Düsseldorf

It has in the meantime become customary to exhibit the results of **MADE** Projects from undergraduate courses publicly, either in the university or elsewhere, depending on the 'client'. The 'exhihition' is seen as a medium to provide the student with specific opportunities to present and 'sell' his or her design work. The exhibitors learn to deal with the circumstances of an exhibition and familiarize themselves with the presentation aids required (e.g. uniform presentation for the exhibition, poster design, press releases). Furthermore, they can check the response to their exhibits, e.g. by a questionnaire in which visitors are asked to express their criticisms (Figure 27: Results of the opinion poll „City Hall" Essen).

The results of the **MADE** Project division 'Garden House', were exhibited at both the Düsseldorf and Essen City Halls and elsewhere. In Düsseldorf, they were in competition with the prize-winning entries for a garden house competition which the garden show organizer, BUGA '87 Düsseldorf GmbH, had launched among students of architecture at the Düsseldorf Fachhochschule (University of Applied Sciences) and the Academy of Arts. The visitor opinion poll conducted at this exhibition revealed that three designs from Essen students received the greatest public acclaim. BUGA '87 Düsseldorf GmbH kindly had three **MADE** Garden House designs built, and had them erected in the Allotment Garden Park for which they had been designed.

Concluding remarks

With the ***Model for Architectural Design Education (MADE)***, a challenge is issued to the figure of the 'architect by divine right' who designs buildings for architects rather than for users. The same applies to designing 'by gut feeling', 'facade fetishism' and architectural design by so-called artistic inspiration. In the final analysis, the aim of this teaching and learning model is to educate students to be quality-conscious, so that the may be enabled in their future roles as architects to design building objects both for the *owner* (client) and for the *user* in the best possible way in terms of form, technology and economy, attaching due importance to the location. **MADE** provides a broad range of procedural options for the achievement of this aim.

Notes

1 *Garden exhibitions, garden shows:* national or international public exhibitions or developments in horticulture, which are mostly connected with the establishment of permanent parks and gardens. In Germany, the Bundesgartenschau (BUGA), the Federal Garden Show, usually takes place every two years. Every ten years it is replaced by the International Horticultural Exhibition (IGA), held in Hamburg in 1953, 1963 and 1973, and in Munich in 1983.[12]

2 It was carried out in parallel; firstly, to save time, as the process of discovery of a guideline image, to which the students were unaccustomed, and the subsequent representation of this image using 'collage' is usually time consuming. Secondly, because the development of the ‚specific functions' and the search for a guideline image can have a cross-pollenating effect.

3 A *function* is described by a noun and a verb. It should be ensured that the data given only refers to the 'mode', e.g. of an object, und not to the means by which the function is fullfilled. For example, a function should not be articulated as 'climbing stairs' but as 'changing level'. Designations which express the manner in which a function is fullfilled, e.g. 'changing level safely' are also to be avoided, as this formulation already contains a design objective.

4 These were located with the aid of the Vorschriften-Informations-System (VIS). VIS is part of the data sheet library of the German Construction Document Centre in Celle. They provide, free of charge, a list of the laws, by-laws, ordinances und subsidy conditions which have to be complied with for a particular object to be built in a particular federal state.

5 *Quality* is defined as the totality of features, attributes and characteristics of a facility, product, process, component, service or workmenship that bears on its ability to satisfy a given need (fitness for the purpose). It is usually referred to and measured by the degree of conformity with a predetermined standard of performance. In simple terms, quality involved meeting the owner's requirements, which may be simple or complex. They may be stated in terms of a required end result or as a detailed description of what is to be done.[13]

---

[12] Trilitzsch, F.: Warum bewerben sich die Städte um die Durchführung einer Landesgartenschau? (Why do cities apply to stage a state garden show?). *Garten + Landschaft,* Vol. 91, No. 2 (1981), pp 81-97 (in German and English)

[13] American Society of Civil Engineers (Ed.): *Manual of professional practice: quality in the constructed project: a guideline for owners, designers and contractors* (preliminary edn. for trial use and comment) Vol. 1, American Society of Civil Engineers, New York 1988

Universität
Gesamthochschule
Essen

Universität Gesamthochschule Essen Postfach 10376 44300 Essen 1

Fachbereich 9
Architektur
Bio- und Geowissenschaften

Prof. Ralph Johannes

Fernsprecher
(02 01) 1831 oder
Durchwahl 183
Raum Nr.
Mein Zeichen **jo/s**

National Society of Allotment and Leisure
Gardeners
Hunters Road
Corby, Nothants NN17 1JE
ENGLAND

Essen, den 2.12.1986

Dear Madam, dear Sir,

I am a professor of architecture at the above university and am presently doing some research work on allotments in Germany and other European countries. In this connection, I wonder if you could kindly answer the following questions for me:

1) Do allotments exist in your country in the sense in which they exist in Germany?
2) Do allotment owners initiate clubs in which they have certain rules and regulations that all members have to observe?
3) How many members do clubs of this nature have, on the average?
4) Are there club houses on the allotment grounds that are used for member meetings and social events?
5) How large are the individual allotments and do they have garden houses or sheds on them?
6) Are there building regulations for such houses?

In addition to this any printed material, fotos etc. would be appreciated.
Thanking you in advance for your kind cooperation,
I am
Yours faithfully

Prof. Ralph Johannes Arch.HBK, Dipl.-Ing.

Dienstgebäude
Universitätsstr. 15

Telex
8579091 unie d

The National Society of Allotment and Leisure Gardeners Ltd.

Your Ref:SA/PAG 8th January 1987

Prof. R. Johannes,
Universitat,
Gesamthochschule,
Essen,
Postfach 103 764-4300,
ESSEN 1.

Dear Prof. Johannes,

Thank you for your letter dated 22nd December 1986.
The answers to your questions are as follows:

1. Yes but usually not up to the standard and style of Germany.
2. Yes.
3. Average of fifty.
4. Yes but these are limited and are not a general thing.
5. Modern sites tend to be about 300 square metres. Older sites can be 600 square metres. They do sometimes have garden houses and sheds on them.
6. Permission usually has to be obtained from the Local Town Planning Authority but some areas do not always stipulate that planning permission be obtained for the erection of sheds.

I regret that I cannot let you have any printed material or photographs at this time. However, I am making enquiries and if I can trace some I will send them on to you.
I hope this is of some assistance to you in your research.

Yours sincerely

Pauline Grice
National Secretary.

Registered office:
HUNTERS ROAD, CORBY, NORTHANTS NN17 1JE Tel: 0536 66576