CZASOPISMO TECHNICZNE A
WYDAWNICTWO POLITECHNIKI KRAKOWSKIEJ

z. 4-A/2007
ISSN 0011-4561
ISSN 1897-6271

IVONNE DEAN*

EXAMPLES OF EXPERIMENTATION IN TECHNIQUE AND MATERIALS USING LANDSCAPE ARCHITECTURE AS A MEDIUM

PRZYKŁADY EKSPERYMENTALNYCH ZASTOSOWAŃ TECHNOLOGII BUDOWLANYCH I MATERIAŁÓW W ARCHITEKTURZE KRAJOBRAZU

Abstract

The possibilities available to architects within the discipline of working in partnership with landscape architects or very directly with the landscape need more formal recognition. There are opportunities for a higher level of experimentation in either re-evaluating traditional methods of building or developing new techniques. The case studies used here are the structures built in two gardens in France for Jardin Mosaic for Espace Naturel of Lille Métropole, France. These were built with the landscape architect John Medhurst who was lead consultant. They are useful teaching tools not only for students but also the teams that build them at every level.

Keywords: landscape architecture, vegetal structures, earth structures

Streszczenie

Możliwości stojące przed architektami w zakresie współpracy z architektami krajobrazu lub samodzielnego projektowania architektury krajobrazu, wymagają bardziej formalnego rozpoznania. Istnieją sposobności eksperymentowania na wyższym poziomie w odniesieniu zarówno do wykorzystania i docenienia metod tradycyjnych, jak i rozwoju nowych technik. Zamieszczone przykłady dotyczą struktur zbudowanych w dwóch ogrodach we Francji. Są to: Jardin Mosaic w Espace Naturel na terenie metropolii Lille, zaprojektowane przez Johna Medhursta – głównego konsultanta projektu. Są one użytecznymi narzędziami dydaktycznymi nie tylko dla studentów, ale również dla zespołów, które budowały je na każdym etapie procesu projektowo-realizacyjnego.

Słowa kluczowe: architektura krajobrazu, struktury roślinne, budowle ziemne

* Prof. Yvonne Dean, Architecture, RIBA, London Metropolitan University.

1. Background

This is a small but important case study about how to carry out work as an architect but finding ways which allow for experimentation with technique or materials. The main example shown here is within the context of a landscape architectural project. It was only while doing it I realised that here was an extraordinary opportunity for some experimentation – not yet fully realised. There is a tradition for this kind of work and I will only mention two examples that have inspired me. The first being Parc Villette in Paris by Bernard Schumi[1] and the second being the Osaka Pavilions[2] a project undertaken in Japan by the Architectural Association. Here the most memorable example for me was an extraordinary structure by Peter Salter. I am sure that this helped him to do the very fine pieces of architecture he undertook later in Japan. From these small seeds come extraordinary architecture. The last paper I gave was on the work of others and I showed you an amazing building by Simon Conder, built on the beach in Dungeness and clad in black rubber. It extended and imitated the traditional timber fishing huts coated with black pitch. This building has been re-appraised and you can see the construction and technical details in "Architecture Today"[3].

This field work brings attention to the very real opportunities for experimentation on a small scale with architectural innovations but within the context of landscape architecture. These projects have less of a timescale from inception to completion and often less of a life expectancy so there is less risk in trying out new ideas. There must be obvious safeguards for public use.

The project also allowed for working in a much freer way with models to test out the ideas of some structures. The use of models can validate the basic structure. There can be problems of scale but for example, 1:10 models in timber can be very good indicators of performance. This proved to be a more realistic way or working-given the methods of communication from English to French. These are just small examples from my own practice but they have been extremely enjoyable as a process in testing ideas and useful. We always insist that students work in this way but often do not allow enough time for us to go through the same process. They have given me the confidence to work in a very direct way again with people.

My own experience as an architect is unusual, often doing many individual projects with details that are not repeated and sometimes with unusual buildings. As a large part of my work was in writing books, I was collecting ideas and seeing unusual examples of building from all over the world. In a rather odd way I have also started very late to put all this knowledge into building.

---

[1] Parc de la Villette, Porte de la Villette, Paris, 1986. This was built on the site of the old meat market under the responsibility of Mitterand but from an idea initialised in 1977 by Valery Giscard d'Estaing.

[2] Osaka Pavilions were part of a great garden exhibition in Osaka, Japan, 1990.

[3] Simon Conder's beach house revisited, "Architecture Today" No. 179, June 2007.

2. The gardens

For the last few years I have been working on two gardens, for the people of South East Asia and Great Britain with the landscape architect John Medhurst, which we won in open competition for Espace Naturel of Lille Métropole, France at Parc de la Deŭle. This public garden, Jardin Mosaic created from winning funds when Lille was European Capital of culture, celebrates the life and origins of eight communities from all over the world that have come to settle in Lille[4]. Each garden has its own flora and fauna with small structures reminiscent of the original countries. All the gardens have some interesting and innovative features, some complex and others very simple and worth replication using very cheap materials. They have developed a new ethos of sustainable landscape and architecture developing the notion of patronage for artist and landscape architects. Thanks to the efforts of Pierre Mauroy, Pierre Dehnan, and the local mayors, the gardens have been a great success[5].

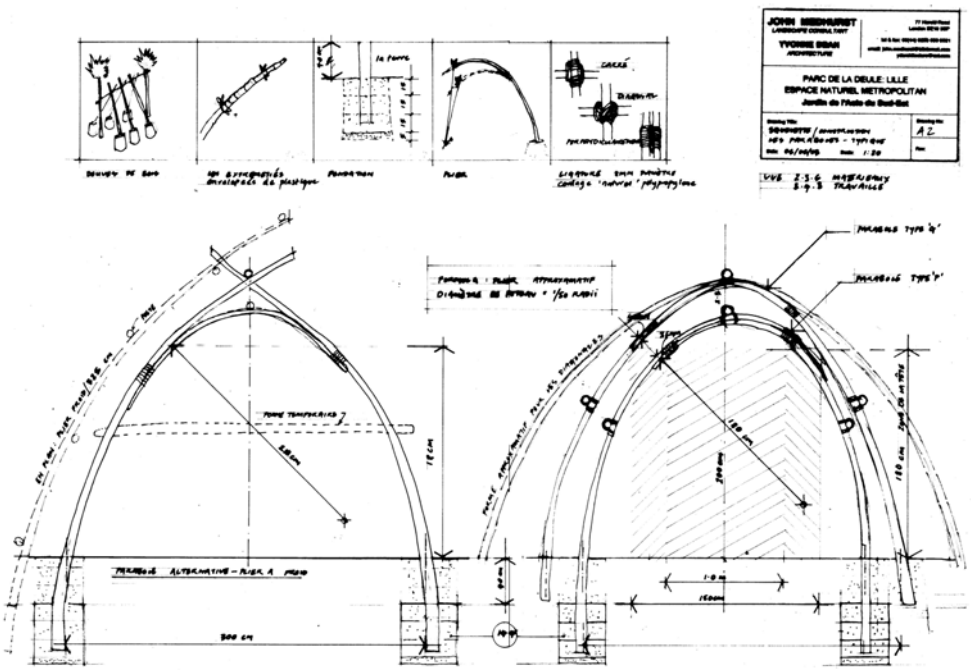

Fig. 1. Working drawing for the pole structure

Ryc. 1. Szkice koncepcyjne struktury szkieletowej

2.1. South East Asian Garden or "Dragon Garden"

The first garden for South East Asia had a traditional "Yao" pavilion (typical of structures in Lao, Thailand and China). This traditional method of building does not use truss sys-

[4] MOSAÏC, le jardin des cultures, 103 rue Guy Mocquet, 59263 Houplin-Ancoisne, France.
[5] Prix du Paysage, A national French prize, 2006.

tems but direct transfers of load from the roof to the posts. These were interesting to construct but it is the curving "dragon body" which gave greater challenges. This was impossible to draw, so a model was used with natural twigs, carefully made by Amy Woodrow.

The structure is 3 dimensional to give greater strength and optimised pole construction which has to work by producing curves that do not exceed the natural pole bending radii. In this example, using a ratio of 1:50 bole (size to radial curve)[6] was used for the durable hardwood of chestnut, abundant in France. The poles also have to be bent when relatively flexible within a short time of being cut. Any mechanical fixings will weaken the timber so tied junctions were used but there are proper tying methods for joints which should be used. The use of frictional joints is underestimated in architecture seen as too "low-tech". However it is a perfectly good technique. The use of poles generally something to advocate involving no mechanical cutting. As cellulose fibres are not exposed, the timber is less likely to rot. The tail of the dragon was constructed as a basketwork, also from a wire model and forms a Ying and Yang symbol as it curves over the pool. This was difficult to make at the time from willow, and now extra money has been found to construct it in steel.

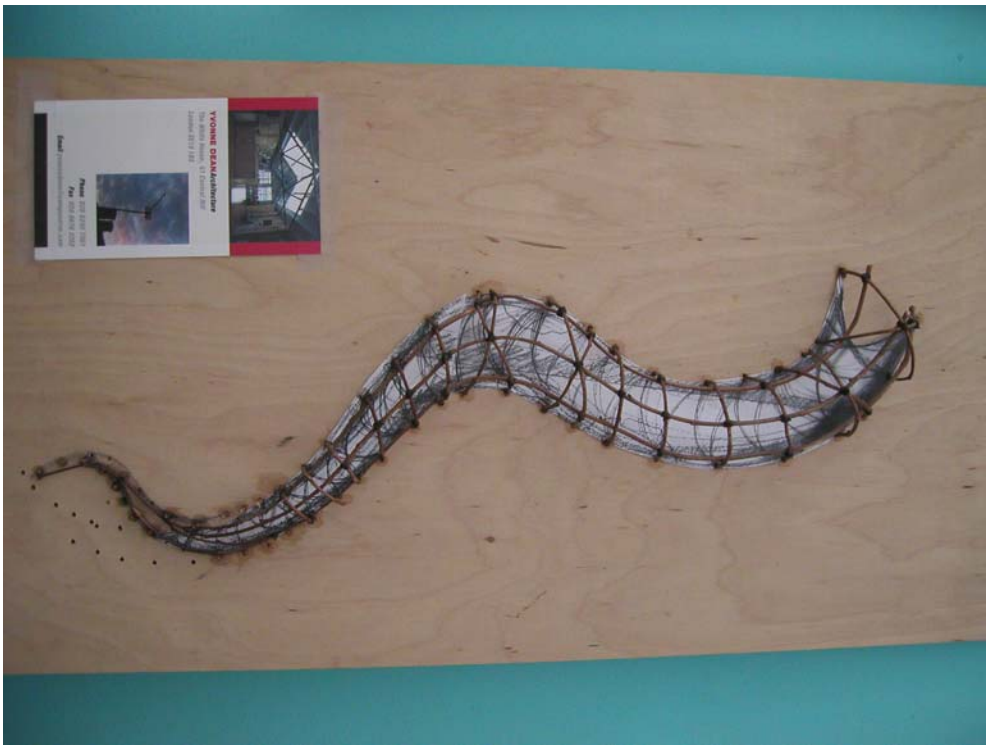

Fig. 2. Model of the "Dragon Structure" made in hazel by Amy Woodrow

Ryc. 2. Model „Struktury smoka” zrobionego z leszczyny przez Amy Woodrow

[6] L. Jayanetti, *Timber Pole Construction*, Intermediate Technology Publications, 1990.

The main building structure in this garden was a medieval lychgate using traditional fourteenth century oak framed, trussed and pegged details. It proved a good training exercise for a group of young people (FCP)[7] who had no experience of building before. They found it difficult to make even with the advantage of modern power tools. This became a fuller educational project for these young people as we took them on a tour of traditional English villages in Kent to see these very typical structures found in front of every church for the resting of the corpse prior to service and burial.

2.2. Garden for the British Isles or "Rain Garden"

Another feature of the garden was the weather clock. The design was carried out by the Polish designer and ceramicist Magda Weldon (I work with in a pottery) and her designer/calligrapher husband Brian Weldon. It was a challenge for her to realise large slab tiles, on a curve that would shrink exactly to fit with the granite block patterns. The sculptor Andrew Ewing also engineered new free form bicycles that produced a fountain of rain over the weather clock as the pedals were pushed. The illustrator and artist Isabelle Merysignac reinterpreted famous characters from English Literature for children, bringing them up to date. Here is Peter Rabbit, a modern day graffiti artist. I want to show that this project in its entirety became a unique realisation from John Medhurst's ideas which were blended carefully into an outstanding framework of small gardens, a village green, a meadowland with memories of farming set against the backcloth of the existing woodland.

2.3. Future work in the Rain Garden

The structure I am working on at the moment form the garden is a cowshed which will use the traditional techniques of earth building and appear to grow out of the ground with a turfed roof with a structural form in the shape of a leaf. The leaf form will give a natural veined structure, hopefully using poles again, which will naturally taper. The roof will use a very cheap membrane used for reservoirs which I have used on my own garage roof, together with an experimental mixture of pulverised fuel ash and peat to grow a meadow and grass mixture. This will match the surrounding meadow. I have already proved this mixture works in pots using both weathered and fresh pulverised fuel ash (see photographs). This material is normally used as aggregate and is abundant as a cheap waste product from power stations. The walls will use pisé (earth architecture) also known as cob building techniques. It may be possible to line the walls with ferro-cement panels. These panels are "rejects" for a project from 3 years ago but show a technique I have been developing when I have time over about 8 years.

For that I must acknowledge the help of Paul Nedwell in the department of Civil Engineering at the University of Manchester who has helped with their specification and testing. This is a large subject in its own right[8] but I have managed with my Polish builder Tom Renski to get high strength flat slabs, only 25 mm thick used as kitchen worktops. More

[7] FCP: Formation Culture Prevention, Lille. An educational programme for young people.

[8] P.J. Nedwell, R.N. Swamy, *Ferrocement*, Proceedings of the fifth International Symposium, E&FN, Spon 1994.

recently I used the project of making a ferro-cement tray to hold tiles for International Women's Day, to show I can start to make these structures hollow and so easier to lift.

Fig. 3. Underside of Lychgate by FCP (see note 7)

Ryc. 3. Więźba dachowa w Lychgate. Autor (FCP) (patrz przypis 7)

3. Conclusion

Like many architects I have a number of projects that have never been realised. These include the low energy timber study centre for the Centre of Alternative Technology, documented in the EU passive solar programme Building 2000; and more recently the recycled tapered wall structures for Hyde Housing Association for the Annie McCall centre. These structures were inspired by Tibetan architecture combined with memories of the graphics for similar structures by Herge in Tintin. This was to be a complex of housing and artists studios.

It was a great blow not to see these major projects built. However, it is important not to lose some of those basic ideas and to try and incorporate them into projects that can be as small as the slab structures I have shown. It is important to keep these ideas "alive" then they can be re-born or transformed into other projects later. I was amazed to find in a book

some years ago an abandoned project by Frank Lloyd Wright for a curved and spiralling multi-storey car park. Later on he built the Guggenheim.

Fig. 4. General view of "Yao" Pavilion and end of "Dragon Structure"

Ryc. 4. Widok ogólny pawilonu "Yao" i końca „Struktury smoka”

In conclusion the examples of landscape architecture discussed show a new viable form of patronage. Here, the ambition and driving force of the local community and individuals to make these important parks happen can be matched by giving important opportunities for architects and designers and teachers at all levels.

References

[1] Parc de la Villette, Porte de la Villette, Paris, 1986.
[2] Osaka Pavilions were part of a great garden exhibition in Osaka, Japan in 1990.
[3] Simon Conder’s beach house revisited, Architecture Today No. 179, June 2007.
[4] MOSAÏC, le jardin des cultures, 103 rue Guy Mocquet, 59263 Houplin-Ancoisne, France.
[5] Jayanetti L., *Timber Pole Construction*, Intermediate Technology Publications, 1990.

[6] FCP: Formation Culture Prevention, Lille, An educational programme for young people.
[7] Nedwell P.J., Swamy R.N., *Ferrocement*, Proceedings of the fifth International, Symposium E&FN, Spon 1994.
[8] Project 1 John Medhurst (Landscape Architect) and Yvonne Dean (Architect) "Jardin de Sud Est Asie" or "Jardin du Dragon", 2003.
[9] Project 2 John Medhurst (Landscape Architect) and Yvonne Dean (Architect) "Jardin Brittanique" or "Rain Garden", 2007.
[10] Dean Y., *Use of green timber and pole construction*, Materials Technology, Mitchells Building Series, Pearson Education, 1996, 191-194.