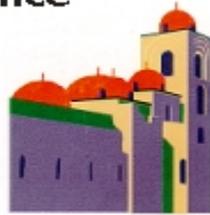


Multimedia and Architectural Disciplines

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Abstract

This paper describes how Hypermedia can be used as unifying tool, marrying together many strands of work related to architectural design and CAD.

The project which we describe was undertaken with fourth year students at the University of Liverpool and is entitled the Electronic City. It is founded on the premise of assembling a Hypermedia package which describes the city and its architecture to a lay person. There are two strands to the project; the Hypermedia strand and a graphics/CAD strand. At the end the task was then to stitch the strands together to produce a common, coherent Hypermedia package.

At the end of the project we expect that the students will have developed skills and an appreciation of:

- *the architecture and history of the city*
- *the design of Hypermedia interfaces*
- *the design of Information structures*
- *three dimensional modelling and rendering*

Introduction

There are many educational researchers who have promoted Hypermedia as an easily understood and adaptable tool which can be used productively in education by a variety of disciplines (Siviter and Brown 1992; Whistlecroft 1992). We are, however, very wary of this view. It greatly underestimates the significance and power of the design element which is embodied in the creation of Hypermedia. It is far too frequently that we read of a certain Hypermedia or multimedia tool can be applied effectively by academics without programming skills (Warren and Wesley 1992), without any mention of the crucially important design skills that are needed to achieve effective Hypermedia.

Like others (Fouler 1995) we strongly believe that the design of Hypermedia is best accomplished by professionals who have a training and talent for design. We include architects amongst this group. In fact we would go much farther and say that the analogy between the design of good Hypermedia bears a strong relation to the design of good buildings. In this way we come to the conclusion that the study of Hypermedia design is a particularly relevant area for architectural education.

Some of the obvious parallels between building design and Hypermedia design are:

1. A coherent structure is essential to the successful functioning of the system

2. The quality of the system depends critically on the power of the form which is *de facto* visual.
3. Human interaction is a key element

There are notable examples of how, in the hands of designers Hypermedia becomes much more than a book on cards connected by buttons. The system described by McCall, Bennett and Johnson (1994) is one such example where hypermedia is used as the integrative core which can lead to improved quality in design.

The overall plan

The Electronic City project lasted seven weeks and formed the Advanced CAAD course for fourth year students. The students each chose a significant building in Liverpool, possibly one in a book on the architecture of Liverpool written by one of our colleagues in the School (Hughes 1994). After a short period of research, they were then to model the building and produce a HyperCard stack to describe the building.

The Hypermedia element

In addition to describing the mechanics of how HyperCard worked, we used the formal sessions to discuss the kind of general issues mentioned and inferred above. In designing card interfaces we looked at proportion, consistency, balance and colourways. In designing the information structures we discussed the need for a degree of consistency and the good design guides proposed by developers such as Schulmeister (1994).

The particular principles which we encouraged were:

1. Paths for navigation
2. More than browsing: interaction
3. Avoid being lost in Hyperspace
4. It isn't a book: restrained use of text

We felt that these were enough given the shortness of the project. As a starter we suggested an opening image for the stack, shown in Figure 1.

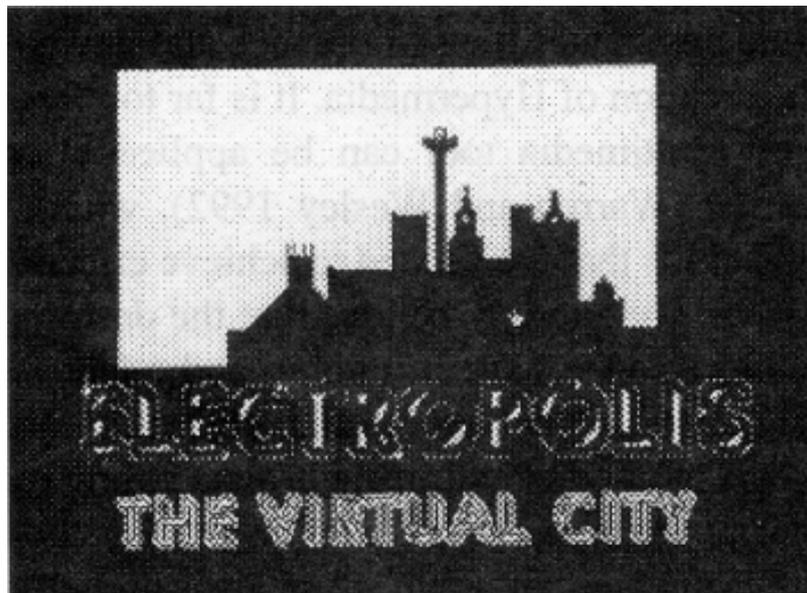


Fig. 1 - The opening image

The next stage was to agree a way of structuring the information in a consistent way. We developed the following major categories initially (later modified):

- history and theory
- technology

- architect and engineer
- drawings and models

Each of these was given its own icon which then appeared on each card as a visual reference (Figure 2).

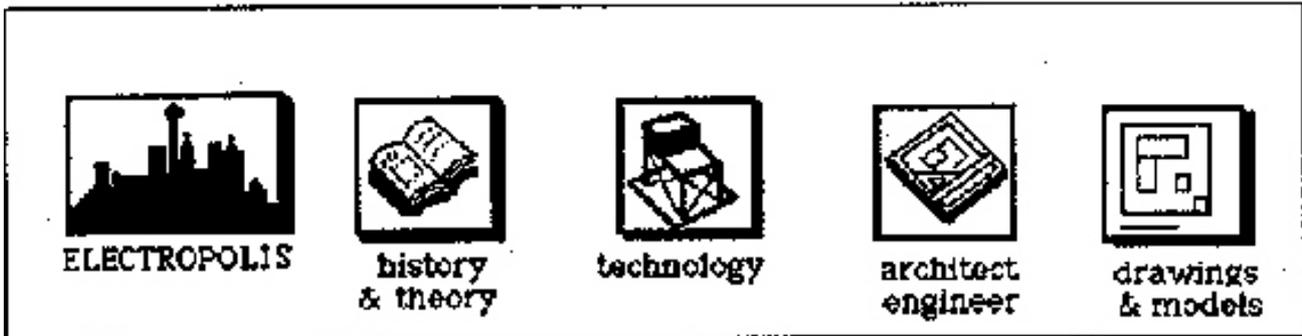


Fig. 2 - The subject groupings and their icons

In the drawings and models section would appear scanned versions of the original drawings and models, plus the computer drawings and models from the CAAD element of the project described in the next section.

Each of the subject areas was given its own mini-icon which then appeared on each card as a visual reference (Figure 2).

The next stage was for the students to assemble text and images, after which the text was edited (often severely) and the images scanned. This was done in conjunction with the production of a "storyboard" of the stack structure.

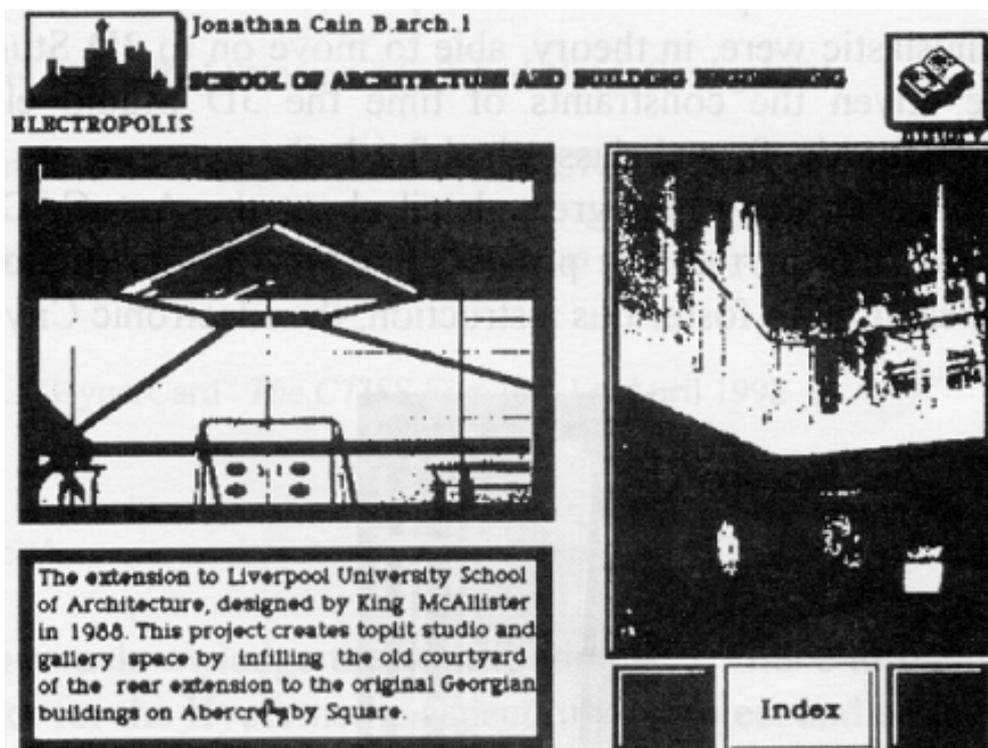


Fig. 3 - A typical card: in this case a "History and Theory" card from the School of Architecture building description

There was more variety in the card designs than we really wanted, but knowing how individual students of architecture are and wish to be this was not wholly surprising. The card in Figure 3 and the one below in Figure 4 give an idea of the variations.

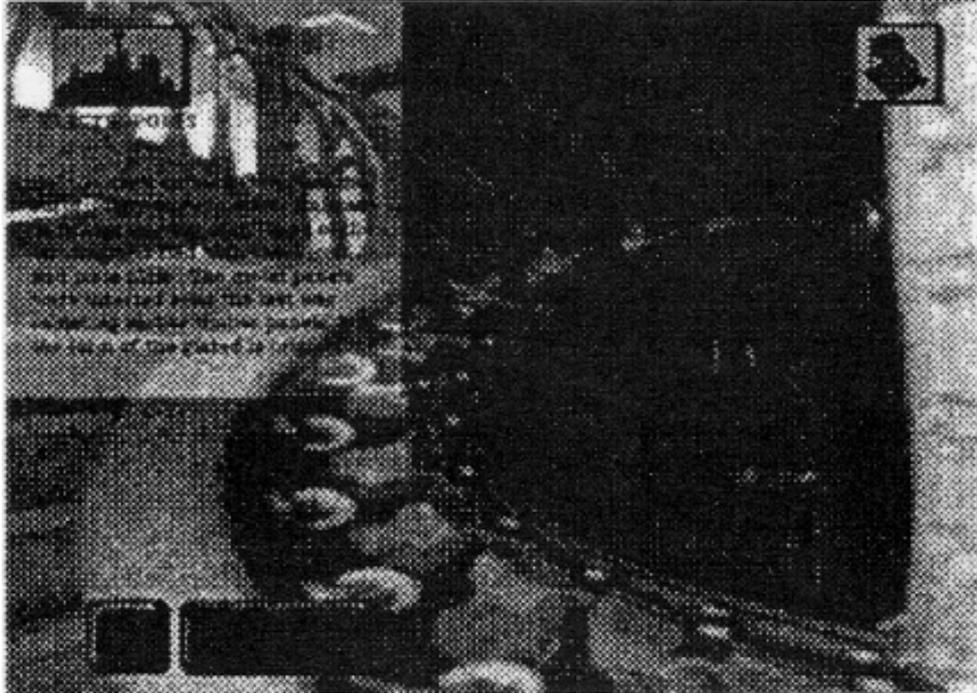


Fig. 4 - Another typical card: this time a "Structure and Construction" card from the Cook Street building description

The Cook Street building shown above serves as a good example of the Hypermedia and CAAD strands of the integrated project (see Figure 5 in the next section).

The CAAD element

For each of the buildings modelled we laid down a minimum expectation of a simple 3D model. Some of the students taking the course were already quite experienced in AutoCAD and were thus expected to develop a more detailed model. The most experienced or enthusiastic were, in theory, able to move on to 3D Studio to render the model. In practice, given the constraints of time the 3D Studio element, where it happened, happened after the formal classes had finished.

There is little virtue in going into great detail about the AutoCAD and 3D Studio instruction needed for this part of the project. It is not the instruction itself which is notable but the vehicle used to foster this instruction, the Electronic City project.

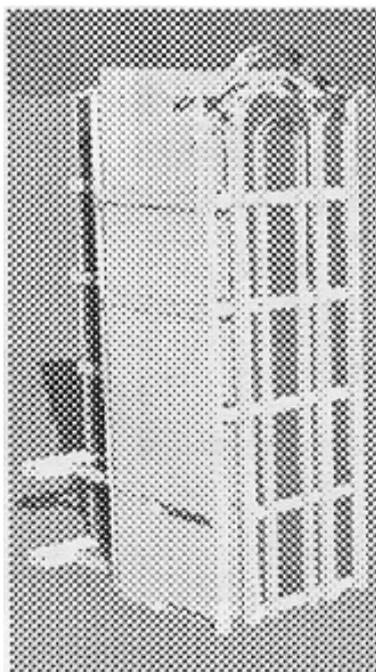


Fig. 5 - Model of the Cook Street building

Some concluding thoughts on the final integrated project

Like any project in a school of architecture (and in particular a computer-based project) there was a mixture of success and failure in the project. It was, however, an undoubtedly effective way of introducing two computer based skills to students. The assembly of the Hypermedia package was more challenging and interesting to students than the traditional bland report or essay. The introduction of modelling and rendering was enhanced by the fact that there was a clear purpose to the production of the model and the images taken of the model.

Added to these gains was the real benefit of having a collaborative and common design problem, the design of a coherent Electronic City Hypermedia stack. This brought students together to discuss and agree common themes and compromises. Sometimes this was difficult but mostly it was salutary. We would recommend a similar project to those involved with teaching computing in other schools. We know that City models have been produced in other schools around Europe but the idea of linking part of a city model to a Hypermedia information system has proven to yield many interesting and productive educational issues.

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