Design, Qualitative Analysis and Digital Media
An Experimental Pedagogic Approach to the Cultural Evaluation and Integration of Media

Arturo Montagu, Diana Rodríguez Barros and Lilia B. Chernobilsky

Globalization is a multidimensional process which impregnates all the facts and events of our present culture and, as a by-product of this situation, there is a set of complex relationships where “intuitive behavior plus knowledge and information technology” are central issues of the new pedagogic procedures of our times. In this paper we assume by “knowledge” the data obtained from a set of relationships orientated towards the “heuristic approach” from the point of view of “qualitative analysis” concepts (Muhr 91).

Our main “provisional hypothesis” is to use this methodology to control the analysis-synthesis process as a continuous procedure during the design stages.

One particular aspect of this view is going through the “informatic culture phenomena” which is the base of the present “turning point” of design procedures in most of the architectural and design schools around the world.

This paper discusses how “media” is affecting the “design process” regarding three aspects: the conceptual, the instrumental and the representational one.

These aspects are affecting also the cultural models and creating new paradigms in the way how new design methodologies combine “heuristics procedures” with the growing set of computer graphics parameters.

Keywords: Architecture, Design, Qualitative Analysis, Digital media

Introduction

In the last five years we had the opportunity to check different “design methods” using digital procedures in our Architectural Studio at the CAO Center in the Faculty of Architecture of the University of Buenos Aires but also in other educational institutions as the CEAC of the Faculty of Architecture of the University of Mar del Plata, both state universities of Argentina.

We will show an applied design experiment performed to test the provisional hypothesis mentioned before, and to emphasize the use of several CAD techniques integrated with the design process using an “heuristic approach”.

The Heuristic Approach

The “heuristic approach” consists of a combination of analog and digital procedures in an iterative mode, and we wanted to stimulate participants to use the computer not only as a drafting tool (Herbert 95), but to generate a “creative environment” where they could be motivated avoiding the usual references of CAD systems (Bermudez 97).

Another input that we wanted to experiment was the influence of other art expressions as painting and
sculpture (Neimann 98), which could contribute to operate new design ideas, including the influence of certain films regarding spatial organization, sequences and characters. (Goldman 95), (Hermanson 97)

We are also experimenting for the first time the use of “computer aided qualitative analysis software” (CAQAS) to assemble the vast amount of digital information that has been produced during the exercise, because it allows us to extract a set of relationships that contribute to the understanding of the final results of the design alternatives.

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<th>Quotation window No.</th>
<th>Codes</th>
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<tbody>
<tr>
<td>1</td>
<td>Landscape domain Urban-architectonic domain Urban identity Urban image Urban integration</td>
<td>Residential area of Mar del Plata Villa Victoria, Villa Silvina and Villa Mitre</td>
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<td>2</td>
<td>Cultural activities Cultural axis-focus point</td>
<td>Area of cultural activities and museums</td>
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<tr>
<td>3</td>
<td>Functional dimension Morphological dimension Spatial dimension</td>
<td>Villa Victoria digital model</td>
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<td>4</td>
<td>Historical heritage Architectural domain Picturesque architecture Landscape domain</td>
<td>Villa Victoria architectural components</td>
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**Qualitative Analysis. The ATLAS/ti software**

“Qualitative analysis” is mostly used in sociology, antrophology, psychology and pedagogy but also in architecture and urbanism because the existing software (Atlas/ti, Muhr 98) enable us to take advantage of the written and graphic discourse by means of digital media.

“Atlas/ti” is a powerful workbench for the qualitative analysis of large bodies of graphical, textual and audio data. It offers a variety of tools for accomplishing the tasks associated with any systematic approach to “soft” data, e.g., material that
cannot be analyzed by formal, statistical approaches in meaningful ways.

The Atlas/ti system was developed by the German psychiatrist Thomas Muhr based on sociological theories by Renate Tesch(94), Anselm Strauss(96) and Matthew Miles(96).

The main principles of the “Atlas/ti” methodology can be termed VISE: Visualization, Integration, Serendipity and Exploration.

**Visualization**

“Tools are offered to visualize complex properties and relations between objects which accumulate during the process of eliciting meaning and structure from the analyzed data.

The object-oriented design of ATLAS/ti tries to keep the necessary operations close to the data they are to be applied.

The visual approach of the interface keeps you focused on the data and quite often, the function we need are often just a few clicks away”. This leads to the following comments:

The facility of using graphic procedures allows the selection of fragments of the design by means of “windows”, in the same manner as in most CAD systems. The system is able to import JPG files and each window is linked to a code that enables to declare a series of

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<td>Urban-architectonic domain</td>
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<td>2</td>
<td>Architectural identity</td>
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<td>Morphological dimension</td>
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<td>3</td>
<td>Architectural components</td>
<td>Digital operations with the shell generic system</td>
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<td>Spatial dimension</td>
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<td>4</td>
<td>Urban-architectonic domain</td>
<td>Digital and analog operations during the design process</td>
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<td>Digital model</td>
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<td>5</td>
<td>The shell generic system</td>
<td>Basic geometry system</td>
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“notes” related to “qualities” of the image selected. These windows can be observed in the Figures 1 to 3.

Integration

“Not to lose the feeling for the whole when working on details -this is another fundamental design aspect of this software-. Given the often analytical operations needed especially in early stages of an interpretation, synthetic operations keep and bring together the pieces. The main -container- object integrating all the other entities are the -Hermeneutic Unit-. Resuming work on a complex project with hundreds, or thousands of files is only a matter of loading one file”.

This leads to the following comments:

One of the fundamental laws of the Gestalt theory (Kohler 47) was “the whole is more than the mere addition of components” and, applying to ATLAS/ti, it is possible to infer that we can operate with the segmented components and with the global view simultaneously.

Taking a creative approach into the design process (analog and/or digital procedures) we work simultaneously with the whole and with segmented images for validating a certain idea.

Through ATLAS/ti we can assign to these images a set of logical relationships to link codes as we can see in the networks included in Figures 4-5.

Serendipity

“According Webster’s Dictionary we find for -serendipity- a seeming gift for making fortunate discoveries accidentally. In the context of information systems we can add: To find something without having for it. The term serendipity stands also for an intuitive approach to data. A common operation making use of the serendipity effect is -browsing-”.

This leads to the following comments:

The exhibition -Cybernetic Serendipity was organized by the “Institute of Contemporary Arts in London (1968).

This pioneer exhibition was organized by Jasja Reichardt”, an art critic, who in 1971 published -Cybernetic, Art and Ideas- a compilation of papers related to -computer and the arts-. It is interesting to mention subjects as: computer graphics, computer animated films, computer composed and played music by Iannis Xenakis, and Gordon Pask’s cybernetic machines -colloquy of mobiles-.
We suppose that there is a correlation between -Heuristics and Serendipity- because during the design process in architecture and design, many of the intermediate pre-forms or partial solutions are made of a combination of creativity-invention (heuristics), chance and morphological laws of different qualities.

**Exploration**

"Through an exploratory yet systematic approach to your data as opposed to a more -bureaucratic- handling of data. The whole conception of the program, including getting acquainted with its own idiosyncrasies, is aimed towards an exploratory, discovered-oriented approach".

This leads to the following comments:

The Design Methods approach of the sixties (Jones 63), (Broadbent 68) taught us about -exploration- as a typical stage during the design process in architecture and design. Again ATLAS/ti allows us to “explore dynamically” a “mental territory” between the analysis and the synthesis of the design process.

This territory can be adjusted permanently taking into consideration the two types of networks generated by the system; the first type is generated automatically based in the selection of a set of quotations (windows) and their codes as shown in Figure 4. The second one is built up by the designer using a set of “logical operators” in order to reflect the “qualitative” characteristics of the whole design. Figure 5.

“Networks are the main ingredients for constructing theoretical models with ATLAS/ti. The system uses networks to help explore conceptual structures and to make them transparent. The networks add a heuristic “right brain” approach to qualitative analysis”.

**Main hypothesis**

1. The first hypothesis is that “media” could give us the possibility to systematically fragment the “chaotic amount of information” existing nowadays in the architectural world. “Qualitative analysis” could be the tool to set up, also systematically, a strategy to deal with “soft data” as the different lines of architectural theories existing nowadays can be interpreted.

2. The “qualitative analysis” methodology gives us the possibility to research the “mental territory” existing between the analysis-synthesis procedure in a dynamic approach using digital media.

**Design methods applied part I (brief)**

The design experiment was performed during 1998...
at the Faculty of Architecture of the University of Mar del Plata. The brief for the students (postgraduate level) was to develop “a cultural area around 3 urban blocks which enables to integrate an existing residential area with a set of art exhibitions, music and theater performances”. (Figure 1)

In these 3 urban blocks there are 3 villas which belong to the historical heritage of the city and “Villa Victoria” is the focus point where the design experiment was applied since that villa is used as place for the above mentioned performances, at present.

There were 4 groups of participants and we selected just one group, “the snail group” to describe the design experiment (A).

The proposal of this group consists of the development of semi-basement modern art gallery based in a geometric snail-shell structure analogy including some additional complementary spaces.

This group has purposely assumed a “contradictory” operation regarding the dominant environment of the area. (Figure 2).

Design methods applied part II (analysis)

The VISE four principles were taking into consideration during the analysis-synthesis phase of the design experiment.

It is possible to establish some analogy to process data and to fulfill the three concepts mentioned before: conceptual (written and analog drawing discourse), representational (2D and 3D discourse) and instrumental (operational discourse).

Each one of these discourses is able, firstly to be integrated to a graphic and alphanumeric data base by means of the “qualitative analysis” methodology using the software mentioned before, and secondly to be interrelated through “media procedures”.

Design methods applied part III (handling data)

Firstly the area, the villa buildings and the environment were surveyed by means of manual sketches, digital photos and with video cameras. Some of the analogue information was then digitized through scanning and manual schemes, also video digitalization completed the work.

A digital catalogue was created of architectural elements and components of the site and context (mainly plans, facades, materials and vegetation) together with those from some other local or international scenarios as semantic references (Montagu, A.).

Design methods applied part IV (operational procedures)

Once the initial instances of unconditional acceptance or rejection of computer graphics were overcome, in many cases intermediate positions of superficial adjustment have developed, such as the digitalization of projects generated manually or only using the possibility of 3D modeling. In such circumstances, it would be convenient to formulate theories, criteria and practices aimed at researching into the complementation, contamination, enhancement and mutual processes and their graphic expression in Architecture and Design, to analyze the relationship between the analogue and digital media involved.

Design methods applied part V (ATLAS/ti applications)

Figures 1 to 5 are the result of the ATLAS/ti software application to the analysis and interpreting work during the design process.

The primary data material (primary documents) and all the by-products and results of our conceptual work on these documents are maintained in containers called “Hermeneutic Units”.

The Hermeneutic Unit can be considered as an organizational data structure. It is composed by:

- primary text: a text, an image, or audio file that has been assigned to a H.U. E.g. Figures 1 to 3 are primary text.
- Quotation: in the course of image analysis,
the images are segmented into regions called “quotations” most commonly connected to keywords and/or memos at the time of creation.

A quotation is a continuo piece of graphical region within a primary document marked with the mouse as a window frame.

Figures 1 to 3 show the different windows selected for the analysis procedure.

- **Code**: is a usually short piece of text attached to quotations in the process of coding. Codes may also refer to other codes, resulting in conceptual networks. E.g. Figure 4.

- **Networks**: is another grouping device that is used for conceptual, theory building work. Networks are created using a graphical editor. The nodes in these networks are usually codes that may be linked with specifiable relations to form semantic networks which allow greater freedom to express more complex relations between the entities. Therefore networks in ATLAST/ti can be considered as devices to support the creative process (mind mapping) in general. E.g. Figure 5

- **Relations**: are used to create links between codes or between quotations (conceptual and hypertext networks). Examples for code-codes relations are: ISA (is subterm of...), IS PART OF, IS CAUSE OF, IS ASSOCIATED WITH, etc. additional relations may be defined by the user E.g. Figure 5.

**Conclusions**

We are showing here just a small fragment of the potential possibilities of the ATLAS/ti software, related to the use of digital media associated with architectural and design procedures; we believe that there is a new tool for conceptual and operational procedures in the field of architectural theory and design.

We are also aware of the present situation of architectural models based in “authors” more than in an entire corpus of theoretical implications.

This could lead to a chaotic situation without any valid parameter in terms of pedagogic strategies; this is way we want to contribute to clarify the possible use of these new tools.

When experimenting new tools for the analysis and synthesis of the design process procedures, we run the risk to be involved in an unsuitable simulation of the reality, just a tautology.

Anyhow along this design experiment we discovered that the ATLAS/ti software could provide us with appropriate tools to deal with graphics entities and to operate a series of additional logical procedures as: “network vs. network view, relation vs. link, nodes, layout and topological sort”.

These tools are opening a new “mental territory”, of research into the logical procedures of design assisted by digital media, and these are our main wishes to do it.

**Bibliography**

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**Qualitative Analysis**


**Web References**

This network is a ubiquitous and powerful tool that serves to represent complex information by intuitively accessible graphic means. “This means that the designer is able to modify the structure of this network in order to adjust the design of theoretical models and also exploit the structural properties of code-networks to enhance the retrieval of quotations”.

Type of relations:

isa: is a
===: is associated with
[@]: is part of
=>: is cause of
<>: contradicts
???: is context of

Notes

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