



XIV del 1 al 5 de diciembre de 2008
CONVENCIÓN CIENTÍFICA
DE INGENIERÍA Y ARQUITECTURA

ANIVERSARIO
44
cujae
2008

Congreso
SIGraDi
Cuba 2008

Gráfica Digital
Integración y Desarrollo

La Habana
1 al 5
Diciembre
2008

Architectonic Brand Valuations using PICANICO: A Tag-Based Machine Learning

Zenovia Toloudi

Abstract—Brand is a set of attributes associated to an object. In architecture, such an object can be a building, an architect, a firm or a process of practice. Architects may be able to control the act of constructing their identity (branding). However they are not able to control the perceived identity (brand) by others. This probably happens due to the lack of methods or tools to quantify information related to architectural identity. This paper explores a direction to empirically evaluate the architectural brand by using computational methods like PICANICO in order to investigate the awareness, reputation and differentiation among architectural firms.

Key Words—Brand, identity, machine learning, tagging.

I. INTRODUCTION

Globalization has raised the need to generate strong *identities* for individuals, nations, organizations, products, and companies. The results of the increased competition are: multiple choices for product purchases and a wide diversity of ideas and promises. Differentiation becomes hard. Therefore, it is difficult to compare features and benefits among choices. People need believes, meanings, religions, or just shortcuts that can lead them to a successful personal selection [1], [2].

In architecture, *identity* has been usually associated with the popular terms of *iconic*, *star architecture*, *signature building* and others.

In this work I will introduce and use another term, borrowed from business world, that of *brand*. The concept of *brand*, similarly to DNA, reconnects the notion of *image* with the fundamental values of the object rather than being restricted to the surface, style or look. There are *brands* that are strong but do not rely on profound characteristics, either



Fig. 1. Demand for the *iconic*, *star architecture* and *signature building*

because the main value of the object is hidden (*ingredient brand*) or because it is changing continuously (technology markets).

The underlying purpose of this research is to bridge the demand for name and *identity* with the traditional values architects are trained to think, develop and use.

A. Definitions

The definition of *brand* depends on the various contexts within which it emerges.

1) Abstract World- No Context

Identity is a set of personal characteristics by which an individual is recognizable or known. They constitute the condition of being oneself and not another [3].

2) Product Industry

Every *brand* is represented by *brand elements* like name, URL, logo, characters, slogan, package and other that communicate the company's *identity* to its audience. Sometimes the *brand* concept is mixed up with these *brand elements*. But *brand* is not only that. For Keller, *Brand* refers

to the awareness, reputation or prominence created around a *brand* [4].

Birak Libai defines *brand* as a set of associations related to an object from a particular source. These associations are tied to the *brand elements*. Through them customers construct the associations for the company or product. If all these are strongly connected, people like the *brand* and select it. In away, *brand* is a promise that the *brand* and its products will meet the expectations generated over time.

In this paper I define and use the word *brand* as a set of attributes, associated with an object (product, person or service).

According to this definition, *branding* is *brand's* action or process. If *brand* is about perception, *branding* is about creating this perception.



Fig. 2. According to Marty Neumeier, in today's decision making the method of comparing the features and benefits of similar products has been replaced by a kind of *brand religion* [1].

3) Architecture

Since *brand* is a term used in the business world, it is reasonable to wonder how it can be transferred to architecture and what are the implications it will bring. Should architecture considered a *service* or a *product brand*?

Architecture is a discipline that offers buildings to clients. Since architecture addresses both product and service, therefore it relates to *brands* and *branding*.

As a *product brand*, the architectural firm differs from the industrial *product brand* in two very important aspects: its products (buildings) last longer and they affect not only their user but also the citizen [5].

As a *service brand* and similarly to other *service brands*, the architectural firm needs to clearly position itself in the market. It is pivotal for the *service brand* of architecture to clarify to both clients and others the exact services it is offering and the particularities of its contributions. Services are less tangible than products but architecture privileges in delivering a rather permanent and concrete product in the end of the services process. The service of a tailor or of haute couture provides a very efficient paradigm in the understanding of architectural services.



Fig. 3. From *product brand* to *service brand* to *architectonic brand*.

The *brand* of the architect or the firm is called *architectonic brand* and is the set of attributes related to the work of the architect or the firm.

The attributes emerge either from the firm's architectural values by the owners, partners, employees or by the associations built by the various agents related to the firm like clients, users, collaborators, academics.

The *brand elements* for the architectural firm range from name, logo, and website to drawing style, photography or text style of the work, and others depending on the level of innovative promotion of the firm.

The process, including conscious or unconscious mechanisms like marketing, promotion, and others, of associating the architect's work with the *brand* is defined as *architectonic branding*.

B. Problem Statement

While architects control the construction of their *identity* (*architectonic branding*), however they cannot control how this *identity* is perceived by their users (*architectonic brand*). Therefore, the feedback process between the firm and its environment cannot work. One of the main reasons that disconnect this loop is the lack of an objective tool that quantifies information and data of the nature of the *architectonic brand*.



Fig. 4. How is the *architectonic brand* perceived?

C. Proposal

This research explores a direction to evaluate and measure the *architectonic brand* through the use of PIKANICO, an interactive machine learning of architectural taste. PIKANICO investigates the awareness, reputation and differentiation of the firm among other ones, as this is perceived by others. This work is an experimentation of the possibility to quantify preference and popularity.

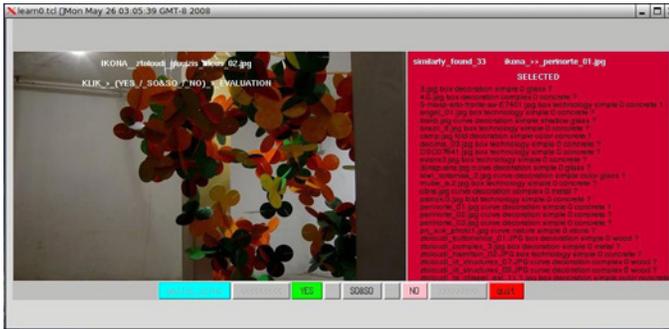


Fig. 5. Instance of Picanico tool.

D. Research Value

The outcome of this approach can provide an analysis and metric tool of the *architectonic brand* strength in different firms. Furthermore, it can help architectural firms to understand better how they are perceived by others in order to improve their *brand* image and associations.

Brands are not valuable only for the clients but also for the firm itself. Understanding the value of *brands* for different agents may affect the importance given to it.

TABLE I

BRAND VALUES FOR DIFFERENT AGENTS

agent	benefit
client	knowledge risk minimizing special connection
firm	communication contracts (partners, developers, employees) market crises competitive advantage brand extension/ elasticity

II. MATERIALS AND METHODS

The methodology is based on case studies in which the *brands* of different types of architectural firms are analyzed, measured and compared to each other. For the analysis, measurement and comparison, a two-fold process is followed: a. development of Picanico tool to statistically measure the *architectonic brand* and b. interpretation of the results of the measurements

A. Tool Description

This paper presents Picanico, an interactive, *machine learning* tool that gradually "learns" user preferences by classifying their choices in a database of images of buildings. The concept to be learned by this machine is *a building I like*. Picanico tries to guess the architectural taste of the user by proposing similar images based on positive samples ranked by the user.



Fig. 6. Picanico constitutes *machine learning* for architectural taste.

1) Tagging

Each image is described as a vector of attributes which are all contained in a database. The values of these attributes are assigned through tags. For example, an image can be described by the following 5 attributes and each one can be assigned by one of the values in the brackets:

- GEOMETRY: {box, curve, fold, 0}
- USE OF: {technology, decoration, nature, 0}
- STRUCTURE: {complex, simple, 0}
- LIGHT: {color, shadow, 0}
- MATERIAL: {wood, concrete, stone, metal, glass, 0}

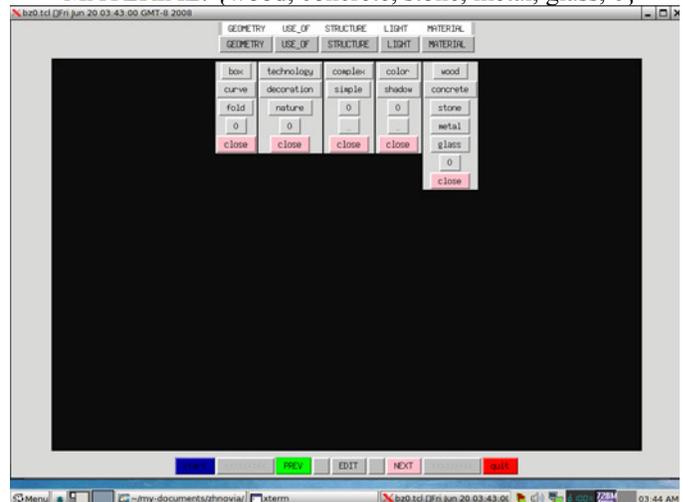


Fig. 7. An example of attributes and their values.

The tags can either be assigned or created by the architectural firm (top down tagging process) or they can gradually emerge by users (bottom up tagging process). Tagging is achieved either manually or through an interactive tool through which the user selects the values of the attributes from an existing library. Nevertheless, tagging and evaluation of images are two different processes: the Picanico user has no access to the vector representation.

The vector representation represents the *brand mantra* of the firm. Based on Keller's definition [4], *brand mantra* (or *brand essence* or *core brand promise* or *brand DNA*) is a short 3-5 word expression of the most important aspects of a *brand* and its core *brand* associations.

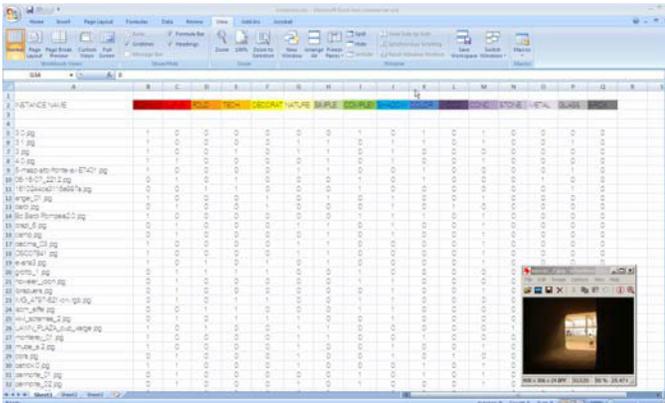


Fig. 8. Manual tagging process

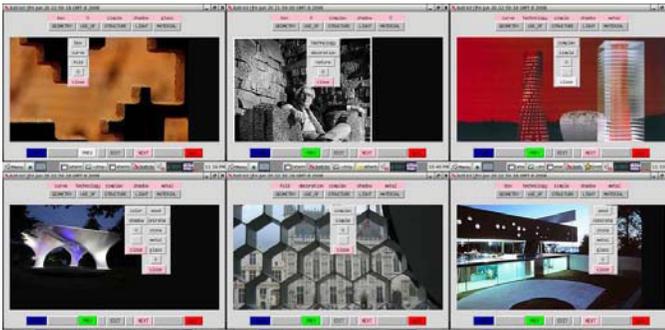


Fig. 9. Tagging process through interactive tool: Selecting values of the attributes from an existing library.

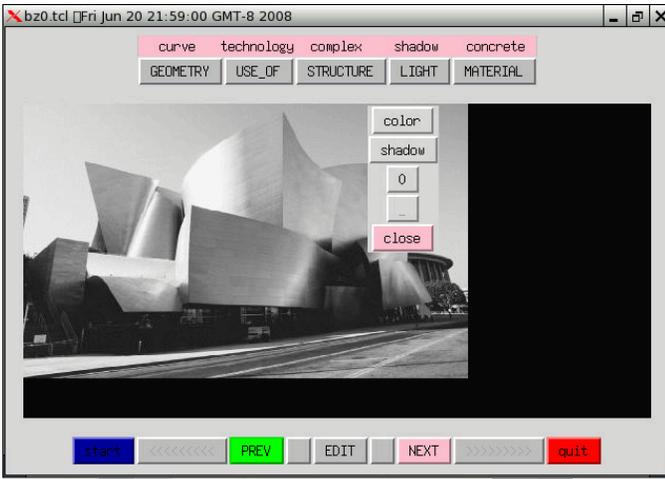


Fig. 10. Tagging process for an image.

2) Process

This tool has been developed in tcl/tk language. The goal of the tool is the categorization of similar photos. The photos with all but two attributes the same, are called similar. This definition can change for photos having exactly the same or less than two attributes different.

To be more precise the process goes as follows: By pressing the button random show of the tool, the first image appears randomly to the user. After the appearance of the random image there are three options for the user to select: no, yes, so-

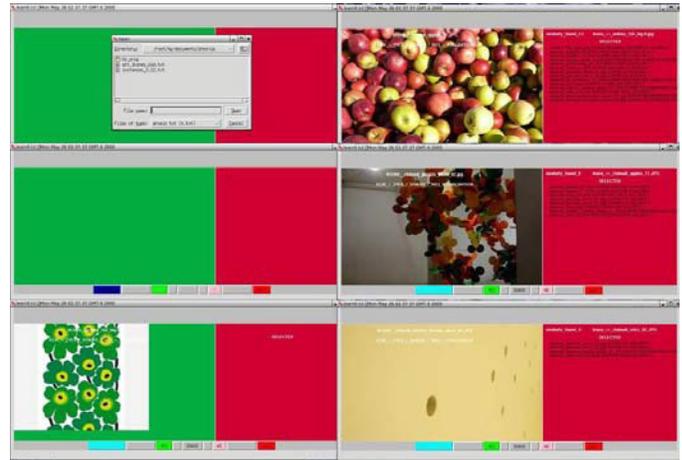


Fig. 11. PICANICO process of learning (counter-clockwise).

so. Each one of the choices means to the tool the following:

- no: brings a new random image.
- yes: suggests a similar image.
- so-so: (same task to yes so far)

3) Yes

Every image is a vector of five attributes and has the name of file: att1 att2 att3 att4 att5. In case the user clicks the yes button the procedure goes as follows: The program reads one by one all the vectors of the file and checks which vectors have three of the five attributes the same (or those that have two different attributes). If it finds a similar vector, it keeps it in a list. Once the tool has checked all the vectors, it shows the list with all the selected vectors to the red box on the right as in Figure 12. Then it shows another similar image with a new list of the similar ones.



Fig. 12. Image list on the red box.

The random selection is happening through the initial list, which is the whole image database. However, if the initial list changes with the new one which is smaller, there will be eventually a very small group of exactly similar images. Until this point the program does not know how to learn, but through successive yeses, it acquires a small number of possibilities. This means it has rejected those that are not similar.

B. Tool Possibilities.

The significance of this methodology is based on the following qualities:

- It gives statistical information about the preference, awareness of architectural firms based on the user input (initial sample and feedback)
- It can be used within each case study to reveal coherence among the projects of one firm or among case studies so as to identify a cross-pattern of differentiation between competitors.
- It can be used as a questionnaire for quantitative research.
- It categorizes photos of similar content.
- It is a consistent methodology where image (as tool) measures the *image* (as *brand*).

III. RESULTS AND DISCUSSION

There are two types of results expected to come out of this research: one has to do with the *architectonic brand* and the other one has to do with the PIKANICO tool itself.

A. Brand or Not

Does every architectural firm constitute a *brand*? Is there a *brand* or not? How strong is one *brand*? How the *brand* of a firm relates to the other *architectonic brands*?

B. Tool Further Development

While developing PIKANICO there are some issues that need to be taken under consideration. This may help towards the improvement of the tool, process and measurements. The improvement revolves around three major areas:

- Tagging
 - Towards a non-linear, bottom-up system
 - Need for a better description and organization of the attributes and associations
- Evaluation
 - Towards statistical information
 - Need for bigness: size of database and number of users
- Feedback
 - Towards a better description of users likes
 - Need of personalized profile

IV. CONCLUSION

PIKANICO measures the *brand*, the perceived *architectonic identity*. Another level of exploration in this field relates to *architectonic branding*: the strategies that create the *brand*, the links between the associations and the object. The application of *branding* strategies to different types of architectural firms might have different effectiveness to their *brand* strength. Is there one best strategy to achieve *architectonic branding*?



Fig. 13. Is the *architectonic brand* strong?



Fig. 14. Is there one best strategy to achieve *architectonic branding*?

ACKNOWLEDGMENT

Special thanks to my advisors Spiro Pollalis, Kostas Terzidis from Harvard Graduate School of Design and Bill Mitchell from Massachusetts Institute of Technology for the discussions, comments and critiques and to George Toloudis for helping me to develop the *machine learning*.

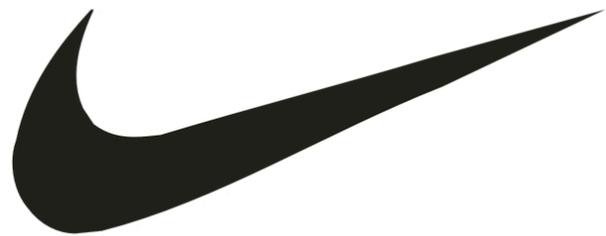


Fig. 15. Which are the links between the associations and the object?

REFERENCES

- [1] Neumeier, M. *The Brand Gap: How to Bridge the Distance between Business Strategy and Design*. Berkeley: New Riders, 2006.
- [2] Tybout, Alice M. and Calkins, Tim. *Kellogg on Branding: The Marketing Faculty of the Kellogg School of Management*, New Jersey: Wiley, 2005.
- [3] Minsky, M. *The Society of Mind*. New York, NY: Simon & Schuster Paperbacks, 1985.
- [4] Keller, K. L. *Strategic Brand Management. Building, Measuring and Managing Brand Equity*. New Jersey: Pearson Prentice Hall, 1998.
- [5] Klingmann, A. *Brandscapes: Architecture in the Experience Economy*. Cambridge, MA: The MIT Press, 2007.
- [6] Heusser, H.-J. and Kornelia, I. *Art & Branding: Principles- Interaction- Perspectives*. Zurich: Swiss Institute for Art Research, 2006.
- [7] Messedat, J. *Corporate Architecture : Entwicklung, Konzepte, Strategien = Development, Concepts, Strategies*. Ludwigsburg: AV Edition, 2005.
- [8] Mitchell, W. *Placing Words: Symbols, Space and the City*. Cambridge, MA: The MIT Press, 2005.
- [9] Clifton, R. & Simmons, J. *Brands and Branding*. Princeton, NJ: Bloomberg Press, 2004.
- [10] Haig, M. *Brand failures: The Truth about the 100 Biggest Branding Mistakes of all Time*. London: Kogan Page, 2003.
- [11] Bruner, Jerome. *A Study on Thinking*, New York: Science editions, 1956.
- [12] Minsky, M. *The Emotion Machine*. New York, NY: Simon & Schuster Paperbacks, 2006.
- [13] Mitchell, T. "Concept learning", in *Machine Learning*, In T. Mitchell, Ed. McGraw Hill, 1997.
- [14] Russell, S. & Norvig, P. "Machine learning Overview" in *Artificial Intelligence: A Modern Approach*, S. Russell & P. Norvig, Ed. New Jersey: Prentice Hall, 1995.



Zenovia Toloudi is a Doctor of Design Student at Harvard Graduate School of Design. She holds a Master of Architecture from Illinois Institute of Technology (IIT) where she was studying under the Fulbright Program. She also holds professional degree in Architecture Engineering from Aristotle University of Thessaloniki (AUTH). She is a registered architect in Greece since 2004. In Chicago she has been working on high-rise hotels in the city. Her work was part of the Venice Biennale 2006 on the cities, architecture and society. In her doctoral thesis she examines the role of brands and branding in the process of architectural design and production. Her research interest has been on flexible structures, systems and strategies of architecture that can fluctuate among the scales of globalization, localization and personalization. (zenovia@gmail.com)