From Information Pollution to Recommender Systems

Information Overload: Raining Cats and Dogs
Bateson defines information as a difference that makes a difference (Bateson, 2000, 459). However, today we are experiencing an overload of information that has led to information pollution (Nielsen, 2003). This overwhelming of information affects all aspects of our lives, from products to ideas, to necessities and desires; we are bombarded by confusing information bits. People are lost within the wrong information and cannot understand or find what they like.

From Info-Anxiety to Archi-Anxiety: Online Shopping Is Bad for Your Health
Information anxiety (Wurman, 1989, 334) affects the architectural image-based world as well; iconic pictures, star architectures, and signature buildings deluge the market and confuse the audience. Architecture’s authors and audience (clients, users or citizens) suffer from these fads and trends in both the physical and virtual world (Wurman, 2001, 1). Everyday new architectural databases are popping up like mushrooms, filling screens with lots of good designs, ideas and social networks.

Architecture is piling up on our screens, and in our brains and time schedules; we are no longer sure whether it is indeed good architecture or where we can find architecture that we like.

Vision: Connoisseurs of Taste
In the post-era of ubiquitous computing and mass customization, people cannot afford making an effort; they need an environment fit to themselves. The new type of information consumer is both consumer and producer, a term that Wurman defines as prosumer (Wurman, 2001, 8). The kids of the Google generation are demanding and impatient. They want customized small boutiques, not massive crowded malls, where connoisseurs of taste can direct, influence or at least guarantee a successful satisfaction to their demand.

Filtering Forms
Who is the contemporary connoisseur of architecture that can match my taste with the right architect and projects? Can anyone predict what I like or guess my architectural taste? Is it possible to remove all redundant, irrelevant, useless information (imagery, architecture, architect) that will confuse me and consume my time? Can I look only what I like, even if this is subjective, subconscious or intuitive, or even not yet known to me?
Can we invent filters that will allow only the forms we like to arrive to us? Can these filters shape the taxonomies of form and styles based on our personalities? Can these filters eventually construct a recommender system that will inform us wisely? An automatic match-making mechanism based on algorithms and filters that can make the links for us?

An Architectonic Language Based on Mental Shortcuts

If there is a language for architecture that connects the building with its images and the images with words of people (Fig.1), then we can connect buildings with tags in a smart architectural image-based dictionary of form, a modular communication tool that can predict people’s architectonic taste. PICA-NICO is an attempt at establishing just such a system.

Background

A field in which judgment, preference, style, and other subjective assessments have been more clearly linked with the structure of the artwork itself, is music. The last years a few internet radio stations have begun an effort to define radio stations that would fit people’s preferences and play similar types of music like Pandora Internet radio, Lust FM, and others. In order to sort preferences and define similarities among pieces, Pandora analyzes the songs based on their “DNA genes”. These genes eventually form the Music Genome Project.

This concept of customized radio stations has appeared in other areas of the Web, especially those linked with online dating and people-matching services. Similar algorithms are being used to create groups of similar “objects”. The success of these algorithms increase analogously with the number of people using the online platforms: the more active websites can provide more feedback, the better information available to help them to adjust.

Following these examples, I propose PICANICO and ARCHITASTE.

PICANICO

PICANICO is an interactive machine learning tool (Toloudi, 2008) that gradually “learns” user preferences by classifying their choices in a database of images of buildings. Each image/building in this database is described as a vector of attributes. The vector representation is essentially the brand DNA of the building.
building, since these attributes express the most important characteristics of the architectural work. PICANICO guesses the architectonic taste of the user by proposing similar images based on samples positively ranked by the user. Through this process PICANICO can offer statistical data regarding popularity, consistency and likeness/semblance among projects, architects and attributes of the works. A possible application of PICANICO is to be used as an interface between the architect and the client, where PICANICO can learn about the taste of the client through feedback.

PICANICO is a recommender system that, through a filtration process, deals with information anxiety caused by information complexity, overload and pollution. It leans towards information underload and attention economy through a mental shortcut process by defining identity as a set of keywords assigned to an object by a subject. In PICANICO, identity is eventually what is engraved in people’s minds. Such a definition allows subjectivity and multiple forms of identities to coexist and be valid. In this way PICANICO is a tool of customization that allows users to understand and form “images”/architectonic identities through their own perceptions and understandings.

ARCHITASTE

As the PICANICO interface is being formed, ARCHITASTE, a series of survey questionnaires, is set up to guide its engineering. ARCHITASTE investigates how architecture is perceived and chosen by people. They are both ongoing research methodologies to explore perceptions and constructions of the architectonic identity. On one hand ARCHITASTE tries to render the different understandings of architecture and on the other hand PICANICO is learning about users taste while advancing it with similar proposals. One can compare PICANICO and ARCHITASTE explorations with eye tests looking for the perfect prescription or aptitude tests searching for inclinations and biases. (The structure of ARCHITASTE questionnaires structure is confidential since the surveys are still ongoing).

Experimenting With Language

Many Languages

While developing his pattern language, Christopher Alexander argues that every person has its own pattern language. That is why emphasis in the title of his book A Pattern Language is on the “A” (Alexander, 1977). He continues by saying that all great architects have had their own pattern languages. In these languages, experience has created rules of thumb that are used by them to make a building. Some keep them secret (Frank Lloyd Wright), some write books about them (Palladio); in any case they all use them to make their designs (Alexander, 1979, 203).

Signified-Signifier and Beyond

A critical part of this research is to reveal the most salient characteristics (similar to Alexander’s rules of thumb or patterns mentioned above) of each architect/architectonic work/firm as these sowed and hoed among different segment groups. The role of the subject in defining the identity of the photos (or buildings or architectures) is assigning them their most important features.

There are multiple levels of signified-signifier concepts for the subjects. It is not obvious what is the signified or signifier. However, there is some hierarchy. On the top of pyramid is architecture with its notions, followed by the buildings, then the photos, and finally the words/tags. Architecture is eventu-
ally understood through the vocabulary deriving from photo-
building descriptions.

Robert Klein also deals with the problem of representation. He
refers to Panofsky’s essay on iconology and he brings up the
issue of the two meanings of figurative work. Primary and sec-
ondary meanings are different from each other. The primary
meaning relates to conventional or learned experience (un-
related to the actual model represented) and the secondary
meaning relates to the iconographical belonging to the things
represented. Rigorously classifying the categories of meaning
is not possible (Klein, 1980).

The Tag Initial Experiment

A group of Harvard Graduate School of Design March II stu-
dents was asked to assign the first names that came to mind
when they thought of architects and architectural firms (Toyo
Ito, Zaha Hadid, OMA, Frank Gehry and HdeM). These individ-
uals were considered as experts.

Some words with similar meaning were merged as synonyms
to allow more links to appear among the responses. The re-
sults were visually presented in the following graphs gener-
ated by the UCINET social networks software. These graphs
formulate the “brand DNA” of the architects, as understood
by this specific group of people. They depict the similarities
and differences among architectonic works, architects, and
the characteristics of their work.

The Graphs

More specifically the graphs are of three types that render: 1)
the relationships among architects and the characteristics of
their work, 2) the relationships among architects that share
common characteristics, and 3) clusters of characteristics
that tend to link to each other based on frequency. For ex-
ample one can see which are the keywords that characterize
each architect the most, how strong the connections to these
features are, which architects share the same words, and how
these characteristics tend to cluster to each other.

Conclusions

Through the use of PICANICO and ARCHITASTE tools, this re-
search aims to generate the most salient features of architec-
tural form and link them with preference, judgment and taste.
Issues that emerge while developing this language are related
to the taxonomy and classification of the characteristics, gen-
type to phenotype distinctions among traits, and also levels
of control over the audience’s participation and interaction.
Although participatory online platforms and social networks
appear to be very democratic places, in reality many decisions
are driven by the networked power practiced (Castells, 2009,
42) by the people that program or edit them. The next steps
of this research are to play with this control/structure by con-
ducting a number of experiments under different settings.

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