

## About systems of representation in design and digital media

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During the last decades of the 20<sup>th</sup> century the switch from analog to digital media effected a major transformation on the fabric of human society. Throughout this time of upheaval we witnessed the birth of the digital media with its convergence of art, science, and technology resulting in novel modes of human expression in communication, education, social interaction, and design.

The Information Society, as it was labeled indeed opened up new dimensions for creativity and research. The profound influence of such changes will continue to be the subject and fuel of much research and development work. Certainly our epistemological assumptions that is, “What do we know? How do we know what we know? Why do we think that what we know is true?” have been challenged.

An interesting example—in spite of the tragic dimension—was Sept. 11, 2001. Through our media and communications systems we were provided with front row seats of the events as they unfolded. Unlike in previous events of such magnitude, we do not ask: “What were you doing?” For it is very likely that many of us were watching.



Figure 1: Spiderman banned World Trade Center teaser.

The teaser shown at the beginning is an idealized re-working of the events. The debate on the Internet, as recent as July of 2006, has been on whether it was banned, or pulled out, because of the sensitive imagery of the Twin Towers or because of the use of the Nokia telephone in the sequence.

What accounts for the difference between tragedy of September 11 and the banned teaser? Of course there is the loss of lives, the tortured metal and the cement that burned for weeks juxtaposed against so-called virtual sets and synthetic wire frame structures. But there is also a more fundamental ontological difference for, as a representation that is presented to the viewer via the genre of film the latter only *appears* to be real.

Consider now the difference between the film teaser and another variation on the theme of Spiderman and 9/11 but which utilizes a different genre, namely that one of comic book art.



Figure 2: Spiderman in 9/11.

It is highly likely that, like the film teaser shown before as well as this comic book were both produced using digital media.

Interesting to note is our role and use of such material culture artifacts such as these, as both consumers and producers of our contemporary mythology.

Today I am going to speak about 3 items that are key to the use of representation in design for digital media. These are the concepts of placeholder, ontology, about the difference that makes a difference.

### **Placeholder of interpretation and representation**

An axiomatic principle of a difference that makes a difference between the new digital media and its previous analog counterparts rests on the essence of the digital as being placeholder for *interpretation* and *representation*.

Technically speaking this means that, unlike analogue media that transcribes information into a material or substance, in digital media information (and representation) is stored in mathematical relationships and using abstractions, or numbers, that have no concrete physical existence. (Binkley, 96-98)

For us working with the digital media this is a good situation for it also turns out that as one of its characteristics, digital media is easily converted into diverse material manifestations. It is this aspect of transfiguration that literally that prompted Alay Kay to label the computer “the meta-medium that is able to emulate all other media.” (Kay in Brown)

The general meaning of the adjective protean, is “versatile”, “mutable”, “capable of assuming many forms.” (Wikipedia)



Figure 3: The god Proteus

Indeed there is a religious aspect to this uttering for even the term *protean* comes to us from Greek mythology, Proteus being an early sea-god, or one of several deities whom Homer in the *Odyssey* calls the “Old Man of the Sea.”

[Proteus] “...He can foretell the future, but ... will change his shape to avoid having to; he will answer only to someone who is capable of capturing him.

### **Digital media artifacts and ontology**

Ontology can be defined as a formal, explicit description of concepts in a domain of knowledge. Whether we are aware or not, when we use a particular digital system, we are committing ourselves to the ontology of that system and its entailments.

Because design happens in language, an important task for the designer is that of ontology creation. An interface design for example, is about creating a representation of a particular view of the world.

Please note that this is not a completely new position with respect to design in general but rather, a continuation of the work developed during the 1930’s in the Bauhaus by Lazlo Moholy-Nagy who sought to systematize design through the establishment of precise terminology. (Wick)

Because of the condition of immaterial, unlike in Moholy-Nagy’s days, nowadays, when we initially imagine an artifact of design in the digital dimension, whether it is a 3D animation like the Spiderman movie, or an interface design for a web page, we need to construct an ontology that describes the item itself. From the inside out (beginning with the ontology, the information architecture and the metadata) and outwards into the very skin (towards the interaction and interface), that is how we build digital artifacts.

An example of this is the design of the digital facsimile of the Map of Mexico 1550. In creating the replica of this valuable item of cultural heritage we had to consider how to represent the different properties of the artifact. This included the highly irregular epidermis of the parchment, with the hills and valleys it acquired as it had aged through time.

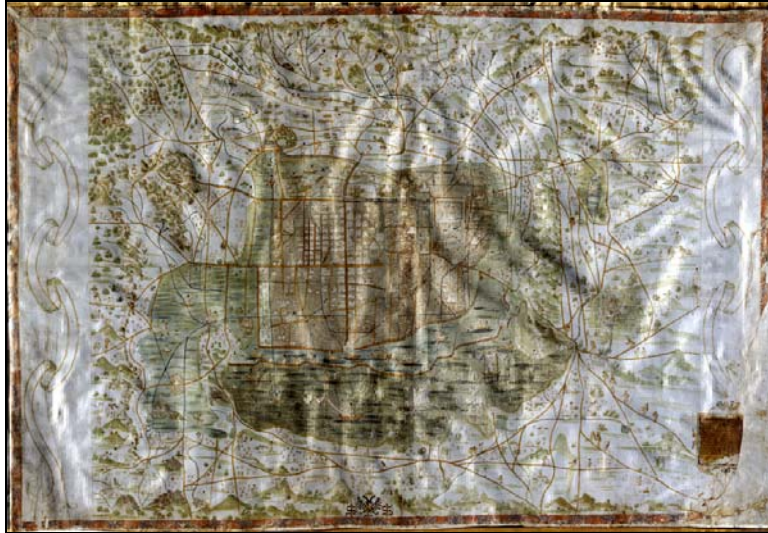


Figure 4: Representation of 3D aspects of the Map of Mexico.

At first there was the problem of simply obtaining the proper data that would allow us to build as accurate representation of the item as possible. Representation here meant not just “showing” of the item to the public but enabling of a meaningful interaction with the object. For the *recorded* image is not simply about more precise representation of what is already visible but rather about the revelation of new structural formations of the subject. As Walter Benjamin remarked: “The act of reaching for a lighter or a spoon is a familiar routine, *yet we hardly know what really goes on between metal and spoon.*” (Benjamin, 230)

We began the work by describing the functionality, the interactive structure of the tool, and the context in which it would be utilized. The design representation in Figure 5 articulates the model that we sought to achieve and in which data is experience in a coordinated visual and tactile experience.

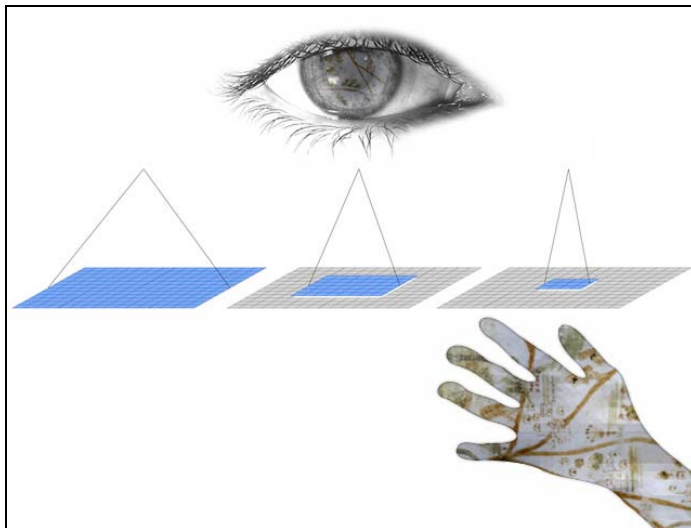


Figure 5: Structuring interactivity

With the loss of aura comes the rupture of the object of art from the flux of history and tradition. This condition can be superseded by new emotional, cognitive, and social experiences designed with digital media. Since 2002, the digital facsimile of

the Map of Mexico 1550 has successfully participated, in *lieu* of the original, in major international exhibitions. Though the data remains constant, in many instances, the interface and the way that the facsimile is represented has varied according to the needs of each particular site.

Like their material counterpart, digital cultural artifacts become and exist in space and time. In this manner these artifacts are also *autopoietic* entities. They are *expressive* and their state-of-being is commensurate—or corresponds with—the state of the world that they populate and influence.

Since the year 2002, I have also been working with the Carta Marina of 1539 by Olaus Magnus. In our CIPHER project, we created the first interactive online version from the original map that you can see displayed here using our ImaNote software and we also developed a new method for ontological description of classes, the Soft Ontology Layer (SOL) tool. The tool makes use of the Self Organizing Map (SOM) algorithm to visualize non-hierarchical and low-level descriptions of artifacts.

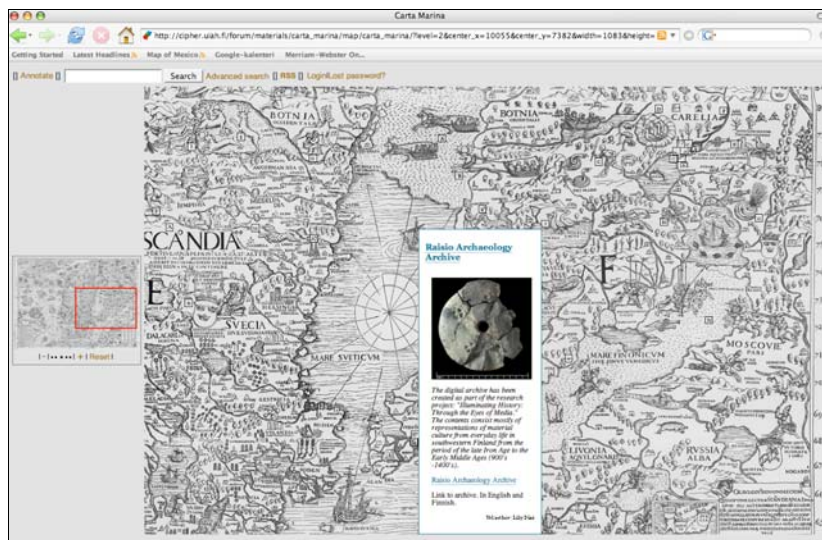


Figure 6: Digital Carta Marina.

The interface for the tool was created in collaboration with a group of primary school children and their teacher in the Raisio municipality in Southwestern Finland. (Please note that both the work with the Map of Mexico and Carta Marina are carried on as a collaboration with the Uppsala University Library in Sweden, as well as with other colleagues here in Finland.)

The teacher in Raisio made use of the tools we were developing in her courses about Finnish language. She also used art activities to teach about the history and geography of the Nordic countries.

Inspired by the Carta Marina the children also created narratives about the monsters in their everyday life. If a monster is that which resists classification, it was interesting to read properties assigned by the children such as: “It is Yellow”; “It smokes cigarettes”; and “Eats carambolas” a tropical fruit that is part of the new exotic, and I imagine previously unknown, imports in Finnish supermarkets.



In speaking about style and art, Bateson also questioned the nature of cross-cultural communications, “How can the art of one culture have meaning and validity for a critic from in another culture?” He asked. He used the term **Algorithms of the heart** to indicate that what we know through the senses, can also become knowledge in the mind.

Knowledge about the universal in human expression, however, requires a translation that seeks **not** to unlock the meaning of an encoded message—this would imply assuming a position of power--but rather the meaning of the *code chosen*.

As designers we have an ethical responsibility. This is because design is about sense making and meaning always exists within a system other than that of the designer. When we as designers, question ourselves about the meaning of an artifact, we are indeed translating from one system to another. That is, from our understanding into an understanding of the understanding of others.

In the use of representations from foreign cultures in the comic book of the adventures of TinTin, for example, Hergé always insisted that inspiration be based on research and knowledge about the actual items being depicted in the comic. (Hergé, 14) Based on this approach, an exhibition labeled TinTin’s Imaginary Museum was created.



Figure 9: Two images from from Tin Tin’s The Temple of the Sun featured in TinTin’s Imaginary Museum exhibition. The images portray the use of material culture by Hergé in his development of the comic book series TinTin’s Adventures.

Likewise, in digital design, a systemic approach to all the variables involved in creating representation should begin by recognizing and seeking to understand differences. What differences exist between diverse media, genres, artifacts, ontology and patterns of expression and what are the historical and cultural reasons for these differences? Only by asking these questions can we begin to elaborate a map of this new territory.

To have knowledge we need to have the map and be willing to understand the territory.

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