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The Language of Digital Genres – a Semiotic Investigation of Style and Iconology on the World Wide Web

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Abstract

The digitalization of communication creates novel answers to familiar questions – in the form of digital products. What must be done to define the genres of digital products? What must be done to enable the user to identify the genre? Such questions are not new. Art history refers to <form> and to <content> with the methods of stylistics and iconology, while the role of <function> divides fine arts from the applied arts. Semiotics define the genre analyzing it in terms of <function>. We propose an investigation of digital genre whereby <content> is understood as a question of iconology and meaning, <form> as one of style and language, <function> as one of perception of the functionality. Thus we define a digital genre by its purpose or <function>, considering the rules "form follows function" and "function follows content".

1. Introduction

We introduce the standpoint of art history which compares <content> to *meaning*. In art history, meaning can be investigated by iconology, i.e. by analyzing the attributes (in the case of mere identification) or, in the case of digital interactive worlds, by translating them into metaphors (section 2). Attributes and metaphors transmit the thoughts or <content> of the sender's world into meaning or <content> in the receiver's world by packaging it into <form>.

One of art history's most successful methods is to compare <form> to a language, which can be investigated by *style* (section 3). The role of style is ambiguous as style may (1) identify the creator of <form> (as is the case in fine arts), and may as well (2) emphasize the <function> of the digital product (as is the case in applied arts). We propose, as others have before, to characterize digital genre by its <function>,

thus to understand it, from the point of view of art history, with applied arts.

The below figure (Fig. 1) is intended to provide an overview of how we understand the frequently used terms:

- *Digital genres*: A classification system for kinds and types of digital products;
- *Digital products*: An entity which encompasses various kinds (and their types) of digital genres;
- *Digital documents*: One kind of digital products, based largely on text information (in the traditional meaning of document = piece of writing);
- A *website*, e.g. is one type of the digital documents;
- A *digital form*, e.g. is one class of digital genres.

Figure 1. Digital products, overview of the classification system

2. About <content: iconology, attributing, and metaphors

2.1. Iconology

Iconology means the science of the image (Greek: icon = image). Iconology is based on iconography (description of images) and serves art history as the primary method of explaining meaning in visual arts. Iconography has been developed especially to denote figures and their surroundings by attributing to them symbols (e.g. St. John is recognizable by his attribute, the eagle, St. Mark with the lion, etc.) Iconology investigates perception (Greek: aesthetics = perception) from the point of view of content and symbolism. Its objective is the interpretation of meaning, while problems of style and quality are subordinated. Today's iconologic method is still based on the preeminent studies of Panofsky [Panofsky 57]. We employ his relation of the term "content" to "meaning".

2.2. Attributing

Attributes determine the identification of something, thus they translate the meaning of the item. Attributing something means that there exists common knowledge about "which part of the whole is an attribute" and "what is the meaning of this attribute (with respect to the context)". For *humans*, there is a century-long history of attributes in the form of symbols, e.g., show a picture of a man with the attributes of a long gown, a beard, a grand key in the hand and a halo, then the man is labeled as depicting „St. Peter, apostle and disciple of Jesus Christ“.

Figure 2. Christian iconography: Halo, calice with blood and the crosses attribute this sheep as the "lamb of God" (Jesus Christ the savior).
Picture: [Sachs 75, p. 229]

Figure 3. High tech assortment of weapons, prominent bosom and combativeness attribute the heroine Lara Croft as "Tombr Raider".
Picture: Ei dos UK, from www.tombr Raider.com

For *products*, there is quite an extensive history with commercials - commercialized products get attributed with catchwords or slogans in the shape of emotionally loaded texts, images and photos, e.g., add to a commercial depicting a whisky bottle and its logo, a photo of a seductive, sleek young lady at sunset, then the whisky gets associated with "exotic, attractive, romance, special moment...".

For complex *environments* as e.g. digital virtual worlds, we are still in the development phase of comprehensive attributing by the means of metaphors.

2.3. Metaphors

Metaphors (Greek: metaphora = transfer) serve to translate the semantics of one world's context into the semantics of another world's context. This is more than just an identification of the other side. Metaphors allow both parties to interfere with and to manage the semantics of the other side. The successful solution for this problem, thus far, has been to explain the unknown world as shadows or reflections of the world we know. (Using metaphors has been successful, proceeding from Plato through today. Also see [Toms, Campbell 99]).

Metaphors are especially apt when illustrating abstract and complex processes by relating them to well-known processes found in another world. To apply a metaphor, one needs to understand the complexity and significance of an environment in the one world and to redesign it all, comparably, in the other world. To wit, metaphors are more than a random selection of signs: they convey a logical system, which generates signs, thereby forming one "picture".

Metaphors are particularly needed to design the powerful world of digitalization, which is affecting all cultures worldwide. Some of the digital interface metaphors are already well known and have become a standard metaphor. This is the case with most menu bars displayed at your PC. There you may see the picture of a white sheet with a bent edge, meaning: click here to create a new digital document; or you see the picture of an opened yellow folder, saying: click here to view or process an existing digital document, and so on. You understand the interface because it mirrors the world of a real desktop with real objects into the world of a virtual desktop with digital tools.

Attributing digital interactive environments means

1. a translation and
2. a best possible design of that translation.

Figure 4. Desktop iconography: The icons attribute the metaphor "writing, illustrating, processing documents". Picture: from the menu frame of MS Office Software

Whereas the meaning (i.e.: the specification) of <processing documents> remains the same in both worlds, its form of function (i.e. the implementation), the <how to process>, has changed, e.g., the command <fetch a text document> releases different actions in different environments: in an office, not so long ago, one used to go to a place, open a drawer of a file cabinet, then flip through a range of folders, select one, take it out, open it, turning over a number of paper sheets, take one out (maybe leaving a note that the user has borrowed it temporarily to inform any colleagues, who might look for the same document), etc. etc. In today's offices (which basically consists in your networked PC), recalling a document means just clicking the mouse, while remaining seated in front of the computer screen.

In the old office as well as in the digital one there is writing, copying, cutting and filing. Formerly, this was effected by physical tools. Today, it is done by software tools. Although we have arrived in the digital world, we communicate in the iconology of former days. In our digital environment, we still are surrounded by scissors, pencils, brushes, sheets of paper, the magnifying glass,

the waste paper basket and other items of a handicraft atelier. Though there are no "real" pencils, no drawers or scissors at hand. It is all metaphors (Fig. 5).

Figure 5. Digital archive iconography: Filing documents. Pictures: MS Office Explorer

3. About <form>: visual and functional recognition for genres

3.1. Style: Visual recognition for genres

Style (Latin: *stilus* = stylus, graver, also: type of writing), refers to form, and is divided into a variety of types. Art history distinguishes (a) the *style of peoples* (ethnic style, e.g. Egyptian, Etruscan, Greek style); (b) the *style of a period* (epoch or era style, e.g. Gothic, Renaissance, Baroque, modern style); (c) three *style phases*, after J.J. Winckelmann [Winckelmann 1764], i.e. the division of an epoch style into (c-1) its beginning, which is called the archaic or early phase, (c-2) its high peak, which is called the classic or high phase, and (c-3) its fall, which is called its decline or mannerism phase.

Stylistics, the science of style, encompasses – in addition to prescriptive stylistics such as rhetorical applications – (a) style *theory* (style definition), which investigates the making of types of style, e.g. using ornamental or metaphorical or bold elements; (b) style *analysis*, which applies style theory in order to arrive at an interpretation of the style in question, thus identifying origin and author. A. Riegl [Riegl 1893] and H. Wölfflin [Wölfflin 1915] introduced the notion of style as a *attribute*, leaving behind value and rating of styles. [Bauer 86])

We understand style as a *language*, which the producer (of digital products) employs, in order to be understood by the user. (Note, that a successful producer must know the language of the user, not vice versa). A language denotes a community's shared

understanding of their world, the context within which an information is perceived and interpreted into a new state of knowledge of the community. We use the term "style" to discuss the form of a (digital) product. Now, how to apply style e.g., to web pages?

Figure 6. Ornamental Layout: A Nanjing online news site [www.jlonline.com]

Figure 7. Focused Layout: A New York online news site [www.times.com]

3.1.1. Ethnic styles on the Web. Although the World Wide Web is a British invention (born at CERN European Laboratory for Particle Physics in Geneva Switzerland), and although the mass and lead of webdesign today is American, it is clear that different peoples are developing different webdesign preferences with regard to layout, abundance of colors, picture usage and varieties of fonts.

If you look at e.g., Chinese homepages, you see that they like to divide the screen layout into many independently focused spaces. The multiple perspective and preference to "browse" with the eyes rather than to focus has been characteristic for Chinese painting and art, as well as the fact, that they rather write a painting than compose it as a space [A.Cheng in [Margolin, Buchanan 98], p. 227]. As a contrast, western style prefers a focused layout, with a picture as the visual attractor and center, arranging the rest around it in a orthogonal way. This imperative to focus recalls the western quest for the true perspective, be it in painting, be it in the layout of printed matter or, of course, of webdesign.

Compare the figures 6 and 7 with each other: the ornamental layout of the Chinese Nanjing Newspaper [www.jlonline.com] and the focused layout of the New York Newspaper [www.times.com].

3.1.2. Style phases on the Web (web generations). There is not yet enough history of webdesign to divide it into epochs. For the same reason, the classic style division into a beginning, peak and decline phase of webdesign cannot be treated yet. But experts do talk about web "generations", although the World Wide Web has not yet reached the equivalent age of a teenager. These technically inducted generations with the style phases as defined above will not be examined, but with general regard to style, the design differences of a first, a second, a third and a fourth generation webpage will be viewed, under the guidelines expounded by Siegel [Siegel 98]:

Early webpages display a gray background with linear top-to-bottom and left-to-right sequences of texts, interspersed with carriage returns, bullets and horizontal rules (until 1995, see Fig. 8).

Second-generation sites introduced icons to replace words, tiled images for background, replaced headlines with banners and buttons with beveled edges. Words could be made to blink. The setup was strictly hierarchical with a homepage and some other subordinated pages (1996-97, see Fig. 9).

Third-generation sites introduced visual design. For the first time one encounters novel and true webdesign, where the visitor is pulled in through metaphors and

well-known models of consumer psychology. Websites become beautiful and invite exploration (1997-98, see Fig. 10).

Fourth-generation sites focus on the architecture of databases with dynamic content. They prefer quick, associative and consumer-orientated processing of information, while the entertaining function of visual design is scaled back. Web-catalogs and search-engines offer personal profiles and various plug-ins while the layout is intended to maximize the power of the contents (1999, see Fig. 11).

Figure 8. 1st generation webstyle

Figure 9. 2nd generation webstyle

Figure 10. 3rd generation webstyle

Figure 11. 4th generation webstyle

3.1.3. Style patterns for genre. Attributes, in the field of publishers, focus on creating quick (visual) understanding and orientation. Style and adjustment of fonts and types, as well as coloring, size and layout of pictures, follow a centuries-old tradition in the field of printing and editing. During those intervening centuries of practice, various style „patterns“ eventually evolved, which precisely denote the various document genres. In the meantime, a quick glance at a piece of paper reveals its purpose in its pattern. This can be showed easily:

Figure 12. "Letter" pattern

The visual pattern for the product <letter> is simple, as a letter is a message from one person to another. To

seize the appertaining design, 4 components are needed: The self-introduction of the sender (header), his address to the receiver (postal address, addressing words), the text body which is the message, and the signature, where the sender takes his or her leave (Fig. 12).

Figure 13. "Form" pattern

The visual pattern for the product <form> shows many blank areas and some text lines scattered over the paper sheet. Usually, there is a line at the bottom edge, where the client is to insert the date and his signature (Fig. 13).

Figure 14. "Newspaper" pattern

The visual pattern for the product <newspaper> is strongly related to the newspaper *frontpage*. First of all we see the name of the newspaper – the brand, in

boldface type. The number of columns with narrowly typed text reveals that there is a lot of content. They are interrupted by some headings and one or two bigger photographs. Typically, there is a table of contents, brought into prominence, mostly at the left rim. (This is a constitutive element of print media, where the contents, first, are confined to a limited display area and therefore, second, must be organized in a categorical and hierarchical structure). Such is the layout of many traditional newspapers (Fig 14).

There is no standard visual pattern for the product <homepage>, but there are some components, which are constitutive for webdesign. Should we roughly sketch a homepage, we would scatter emphasized words, which indicate the hyperlinks. Indispensable and placed with the best visibility is the link to a full text search engine with the typical small search bar. This embodies the great achievements of the World Wide Web: no limits hinder a display of even huge quantities of contents, subsequently, there is no need to elaborate strict top-down procedures to retrieve the information contained (i.e. no tables of content at the left rim, see above). All information is (should be) retrievable by inserting a keyword or the name of an information object - with one click it is there. Forget about learning the ABC order by heart. - See Fig. 11.

3.2. Functional recognition for genres

3.2.1. The function of style. Hitherto, we have compared <form> to a language which can be investigated by style. The role of style is not unequivocal, though. Taking up the theme of <function> means we have to go deeper into this.

On the one side, style shows the *"hand"* of the one who created a product. Or, to stick with the metaphor of language: style reveals the author's dialectical peculiarity. This is of interest to art critics, as style allows to ascribe a piece of art to a particular artist. In this case, style refers to the <form> of a product.

On the other side, style reveals the *purpose* of a product. In this case, style refers to the <function> of the product. In art history, the role of <function> traditionally divides the "noble" fine arts from the "humble" applied arts in the sense that fine art has no goal of usefulness other than esthetics – its form is the content, as an end in itself (<form> = <content>) – and that the applied arts are serving a purpose. There, the shaping of a product emphasizes its usefulness, as is the case with a tool.

3.2.2. Form follows function follows meaning.

<Function> has a wide range of denotation, especially in architecture (there, <function> understood as "functionalism" released ardent debates between 1900 and 1945). <Function> thus may fix on economic, politic, technical, aesthetic, ethic or environmental factors, where it may denote the goal of *usefulness* [Petroski 97], the goal of *the affordable* (Martin Krampen, in [Margolin, Buchanan 98], p. 89), the goal of *attracting attention* [Siegel 98], and so on.

(1) Experts in the study of digital genres put forth, that genres be defined by their <function> ([Shepherd, Watters 99], [Orlikowski, Yates 94]). We could interpret this as: <Function> denotes a digital product's semantics, thus <function> largely equals <content>.

(2) A classical rule for architects and industrial product designers says "form follows function". This has been the basic motor for modern design.

Combining the two statements, we could say that "form follows meaning" (as others did e.g., Klaus Krippendorff in [Margolin, Buchanan 98], p. 161). We take into account that consumers are becoming increasingly involved in the designing of a product, not only because digital products are interactive but also because a product is no longer a stand-alone item: it is "launched" in a community. And, in a mass media society, it is the community, which creates the meaning of things. This is where *design* comes in.

3.2.3. About design. The term design (Latin verb: *de + signare* = distinguishing something by a sign) originally meant "to label" a thing. Still, for a long time, design was confined to simply refer to a plan or pattern. Today it stands for the purposeful shaping, forming, and fashioning of a product. The modern meaning of the term has much to do with the history of specialization of arts and crafts, with western industrialization, with the alienation between creator, producer and customer of a product and with the quest for quality in mass production.

Moreover, if we speak of design today, we more and more think of the *designer*. This has much to do with the increasing value attached to applied arts versus fine arts, i.e. with the growing self-reference (or autopoiesis which is constitutive for the fine arts) of designers' products. This has also much to do with the new media industry, which "launches" products: product semantics today are shifting

- from <function> in the sense of usefulness-of-the-product-to-the-user
- to <function> in the sense of sharing-the-community-of-users-of-the-same-product.

Giving <function> a recognizable form today means also: designing the environment in which the product is launched. This calls for a design-management rather than for design alone.

4. About the language of digital genres

4.1. Structural modeling

After the above, we conclude that the language of digital genres can be investigated by adapting the structure of the *semiotic triad after Peirce* [Peirce 53, p. 228], as depicted in Fig. 15. Peirce refers to G.W.F. Hegel who introduced (in his „Phänomenologie des Geistes“, 1807) the three universal categories, which belong to each other and can be labelled as

- Firstness (Erstheit), referring to a user;
- Secondness (Zweitheit), referring to a sign, and
- Thirdness (Dritttheit), referring the referent.

„Firstness is a plain entity, clear, without reference to anything else; Secondness is an entity which is referring to something else, but not referring to any third thing; Thirdness produces a Secondness (there is no Fourthness, which is other than Thirdness)“ ([Peirce 83, p. 55], translated by author).

Figure 15. Semiotic triad, after Peirce (adapted)

Note that the above mentioned autopoiesis (self-reference, e.g. in poetry and the fine arts) eliminates the relationship between form (secondness) and content (thirdness), thus our triad becomes a direct bilateral reference between firstness (user) and secondness (sign).

4.2. Dynamic modeling

To model the dynamic relations of <content>, <form> and <function> of digital genres, which we understand this:

- <form> follows <function>;
- <function> determines <content>.

we refer to the *reference model of Schmid* [Schmid 99a, 99b] which he developed in the frame of his new media concept [Schmid 97, Schmid 98]. According to him, the life cycle of a product is a design process which can be dismantled into the following steps:

1. *idea* for a product
as <content> determines <function>:
2. *specification* of <function>
as <function> determines <form>:
3. *design I: shaping* of the product (form),
4. *design II: implementation* of the product (technique),
5. *design III: communicating* the product (media management)
6. *consumption* of the product
7. *feedback* for a redesign of <function>.

We suggest to concentrate on <content> as "specification of <function>" and on <form> as "implementation of <function>", as follows (Fig. 16):

Figure 16. Reference model, after Schmid (adapted)

The dynamic model of Schmid shows the emphasis placed on design, as design encompasses three steps: one of form-giving, one of technical implementation and one of "launching" it into an environment. Especially the third step is of importance for the digital genre.

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