ALTERNATIVE NOW

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There is Only Software

Academics, media artists, and journalists have been writing extensively about "new media" since the early 1990s. In many of these discussions, a single term came to stand for the whole set of new technologies, new expressive and communicative possibilities, and new forms of community and sociality which were developing around computers and internet. The term was "digital." It received its official seal of approval, so to speak, in 1996 when the director of MIT Media Lab Nicholas Negroponte collected his *Wired* columns into the book *Being Digital*. Fifteen years later, this term still dominates both popular and academic understanding of what new media is about.

When I did Google searches for "digital," "interactive," and "multimedia" on March 2, 2011, the first search returned 1,390,000,000 results; the other two only returned between 276,000,000 and 456,000,000 each. Doing searches on Google Scholar produced similar results: 3,830,000 for "digital", 2,270,000 for "interactive", 1,900,000 for "multimedia." Based on these numbers, Negroponte appears to be right.

I don't need to convince anybody today about the transformative effects internet, participatory media, mobile computing already had on human culture and society, including creation, sharing, and access to media artifacts. What I do want to point out is the centrality of another element of IT which until recently received less theoretical attention in relation to its role in defining what "media" is. This element is *software*.

None of the new media authoring and editing techniques we associate with computers is simply a result of media "being digital." The new ways of media access, distribution, analysis, generation and manipulation are all due to software. Which means that are they the result of the particular choices made by individuals, companies, and consortiums who develop software. Some of these choices concern basic principles and protocols which govern modern computing environment: for instance, "cut and paste" commands built into all software running under GUI (or newer media user interfaces such as iOS), or one-way hyperlinks as implemented in web technology. Other choices are specific to particular types of software (for instance, illustration programs) or individual software packages.

If particular software techniques or interface metaphors which appear in one particular application become popular with its users, often we would soon see them in other applications. For example, after Flickr added "tag clouds" to its interface, they soon become a standard feature of numerous web sites. The appearance of particular techniques in applications can also be traced to the economics of software industry – for instance, when one software company buys another company, it may merge its existing package with the software from the company it bought.

All these software mutations and "new species" of software techniques are social in a sense that they don't simply come from individual minds or from some "essential" properties of a digital computer or a computer network. They come from software developed by groups of people and marketed to large numbers of users.

In short: the techniques and the conventions of computer metamedium and all the tools available in software applications are not the the result of a technological change from "analog" to "digital" media. They are the result of software which is constantly evolving and which is a subject to market forces and constraints.

This means that the terms "digital media" and "new media" do not capture very well the uniqueness of the "digital revolution." Why? Because all the new qualities of "digital media" are not situated "inside" the media objects. Rather, they all exist "outside" – as commands and techniques of media viewers, email clients, animation, compositing, and editing applications, game engines, and all other software "species." Thus, while digital representation makes possible for computers to work with images, text, forms, sounds and other media types in principle, it is the software which determines what we can do with them. So while we are indeed "being digital," the actual *forms* of this "being" come from software.

Accepting the centrality of software puts in question a fundamental concept of modern aesthetic and media theory – that of "properties of a medium." What does it mean to refer to a "digital medium" as having "properties"? For example, is it meaningful to talk about unique properties of digital photographs, or electronic texts, or web sites, or computer games?

Or, what about the most basic media types – text, images, video, sound, maps? Obviously, these media types have different representational and expressive capabilities; they can produce different emotional effects; they are processed by different networks of neurons; and they also likely correspond to different types of mental processes and mental representations. These differences have been discussed for thousand of years – from ancient philosophy to classical aesthetic theory to modern art theory and contemporary neuroscience. For example, sound, video and animation can represent temporal processes, language can be used to specify logical relations; and so on. Software did not changed much here.

What it did fundamentally changed, however, is how concrete instances of such media types (and their various combinations) function in practice. The result is that any such instance lost much of its unique identity. What as users we experience as particular properties of a piece of media come from software used to create, edit, present and access this content.

On the one hand, interactive software adds a new set of capabilities shared by all these media types: editing by selecting discrete parts, separation between data structure and its display, hyperlinking, visualization, searchibility, findability, etc.) On the other hand, when we are dealing with a particular digital cultural object, its "properties" can vary

dramatically depending on the software application which we use to interact with this object.

Let's look at one example - a photograph. In the analog era, once a photograph was printed, whatever this photograph represented/expressed was contained in this print. Looking at this photograph at home or in an exhibition did not make any difference. Certainly, a photographer could produce a different print with a higher contrast and in this way change the content of the origina image – but this required creating a whole new physical object (i.e., a new photographic print).

Now, lets consider a digital photograph. We can capture a photo with a dedicated digital camera or a mobile phone, we scan it from an old magazine, we download it from an online archive, etc. – this part does not matter. In all cases we will end with a digital file which contains an array of pixel color values, and a file header which may typically specify image dimensions, information about the camera and shot conditions (such as exposure) and other metadata. In other words, we end up with what is normally called "digital media" – a file containing numbers which mean something to us. (The actual file formats may be much more complex, but the description I provided captures the essential concepts.)

However, unless you are a programmer, you never directly deal with these numbers – instead, you interact with digital media files through some application software. And here comes the crucial part. *Depending on which software you use to access it, what you can do with the same digital file can change dramatically.* Email software on your phone may simply display this photo – and nothing else. Free media viewers/players which runs on desktops or over the web usually give you more functions. For instance, a desktop version of Google's Picassa includes crop, auto color, red eye reduction, variety of filters (soft focus, glow, etc.) and a number of other functions. It can also display the same photo as color or black and white without any changes to the file itself. It also allows you to zoom into the photo many times examining its details in way which my mobile phone software can't. Finally, if I open the same photo in professional application such as Photoshop, I can do much much more. For instance, I can instruct Photoshop to combine the photo with many others, to replace certain colors, to, make visible its linear structure by running edge detection filter, to blur it in a dozen of different ways, and so on.

As this example illustrates, depending on the software I am using, the "properties" of a media object can change dramatically. Exactly the same file with the same contents can have a varirty of identities depending on the software used by a user.

What does this finding means in relation to the persisting primacy of the term "digital" in understanding new media? Let me answer this as clear and direct as I can. *There is no such thing as "digital media."* There is only software – as applied to media (or "content".)

To rephrase: for users who can only interact with media content through application software, "digital media" does not have any unique properties by itself. What used to be "properties of a medium" are now operations and affordances defined by software.

If you want to escape our prison "prison-house" of software – or at least better

understand what media now is – stop downloading Apps created by others. Instead, learn to program.

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Manovich is the author of Software Takes Command (Olivares: Milan; English version released under CC license, 2008), Black Box - White Cube (Merve Verlag Berlin, 2005), Soft Cinema DVD (The MIT Press, 2005), The Language of New Media (The MIT Press, 2001), Metamediji (Belgrade, 2001), Tekstura: Russian Essays on Visual Culture (Chicago University Press, 1993) as well as over 100 articles which have been published in 30 countries and reprinted over 300 times.

The Language of New Media is translated into Italian, French, Spanish, Polish, Latvian, Greek, and Korean and is used a textbook in hundreds of programs around the world. According to the reviewers, this book offers "the first rigorous and far-reaching theorization of the subject" (CAA reviews); "it places [new media] within the most suggestive and broad ranging media history since Marshall McLuhan" (Telepolis).

In 2007 Manovich founded Software Studies Initiative. The lab is developing a new paradigm of Cultural Analytics: data analysis and interactive visualization of patterns and trends in media and visual cultures.

Manovich is in demand to lecture on digital culture around the world. Since 1999 he presented 450 lectures, seminars and master classes in North and South America, Asia, and Europe.

Manovich was born in Moscow where he studied fine arts, architecture and computer programming. He moved to New York in 1981, receiving an M.A. in Experimental Psychology (NYU, 1988) and a Ph.D. in Visual and Cultural Studies from University of Rochester (1993). His Ph.D. dissertation The Engineering of Vision from Constructivism to Computers traces the origins of computer media, relating it to the avant-garde art of the 1920s.

Manovich has been working with computer media as am artist, computer animator, designer, and programmer since since 1984. His art projects have been presented by, among others, Chelsea Art Museum (New York), ZKM, The Walker Art Center, KIASMA, Centre Pompidou, and the ICA (London).

He received grants from National Science Foundation (NSF), National Endowment for the Arts (NEH), Singapore Ministry of Education, and other institutions. He was awarded Guggenheim Fellowship, Digital Cultures Fellowship from UC Santa Barbara, a fellowship from The Zentrum für Literaturforschung, Berlin, and Mellon Fellowship from Cal Arts.

In addition to teaching at UCSD since 1996, Manovich was a visiting professor at California Institute of the Arts, SCI-ARC, UCLA, University of Amsterdam, Stockholm University, University of Art and Design (Helsinki), Hong Kong Art Center, University of Siegen, Gothenberg School of Art, Goldsmiths College (University of London), De Montford University, and University of New South Wales. Currently he on the faculty of European Graduate School (EGS).